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DEPARTMENT OF EDUCATION

2016 Pennsylvania System of School Assessment Technical Report
Mathematics, English Language Arts, and Science

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GLOSSARY OF COMMON TERMS

The following table contains some terms used in this technical report and their meanings. Some of these terms are used universally in the assessment community, and some of these terms are used commonly by psychometric professionals. A glossary of accommodation terms as applied to the PSSA is provided in Chapter Ten.

Table G–1. Glossary of Terms

Term	Common Definition
Ability	In Rasch scaling, ability is a generic term indicating the level of an individual on the construct measured by an exam. As an example for the PSSA, a student’s reading ability is measured by how the student performed on the PSSA Reading test. A student who answered more items correctly has a higher ability than a student who answered fewer items correctly.
Adjacent Agreement	A score/rating difference of one (1) point in value usually assigned by two different raters under the same conditions (e.g., two independent raters give the same paper scores that differ by one point).
Alternate Forms	Two or more versions of a test that are considered exchangeable, i.e., they measure the same constructs in the same ways, are intended for the same purposes, and are administered using the same directions. More specific terminology applies depending on the degree of statistical similarity between the test forms (e.g., parallel forms, equivalent forms, and comparable forms) where parallel forms refers to the situation in which the test forms have the highest degree of similarity to each other.
Average	A measure of central tendency in a score distribution that usually refers to the arithmetic mean of a set of scores. In this case, it is determined by adding all the scores in a distribution and then dividing the obtained value by the total number of scores. Sometimes people use the word average to refer to other measures of central tendency such as the median (the score in the middle of a distribution) or mode (the score value with the greatest frequency).
Bias	In a statistical context, bias refers to any source of systematic error in the measurement of a test score. In discussing test fairness, bias may refer to construct-irrelevant components of test scores that differentially affect the performance of different groups of test takers (e.g., gender, ethnicity, etc.). Attempts are made to reduce bias by conducting item fairness reviews and various differential item functioning (DIF) analyses, detecting potential areas of concern, and either removing or revising the flagged test items prior to the development of the final operational form of the test (see also Differential Item Functioning).
Validity	The degree to which accumulated evidence and theory support specific interpretations of test scores entailed by the purposed uses of a test. There are various ways of gathering validity evidence.
Writing Prompt	A type of constructed-response item found in the ELA assessment that requires the test taker to compose a mode-specific (opinion (Grades 3–5)/argumentative (Grades 6–8), informative/explanatory, or narrative) essay that is scored on a holistic, mode-specific scoring guideline on a 1–4 point scale.
Constructed-Response Item	A constructed-response (CR) item is an item that requires examinees to create their own responses, which can be expressed in various forms (e.g., written essay, created table/graph, formulated calculation, etc.). Such items are frequently scored using more than two score categories, that is, polytomously (e.g., 0, 1, 2, and 3). This format is in contrast to when students make a choice from a supplied set of answer options (e.g., multiple-choice (MC) items which are typically dichotomously scored as right = 1 or wrong = 0). When interpreting item difficulty and discrimination indices it is important to consider whether an item is polytomously or dichotomously scored.
Content Validity Evidence	Evidence regarding the extent to which a test provides an appropriate sampling of a content domain of interest (e.g., assessable portions of a state’s Grade 6 mathematics curriculum in terms of the knowledge, skills, objectives, and processes sampled).
Core-Linking Item	Items that are utilized during the linking process (see also Linking). They are a subset of the PSSA operational items and so they 1) are the same on all test forms for any grade/subject-area test and 2) contribute to student total raw scores and scaled scores.
Criterion- Referenced Interpretation	When a score is interpreted as a measure of a student’s performance with respect to an expected level of mastery, educational objective, or standard. The types of resulting score interpretations provide information about what a student knows or can do with respect to a given content area.

Term	Common Definition
Cut Score	A specified point on a score scale such that scores at or above that point are interpreted or acted upon differently from scores below that point (e.g., a score designated as the minimum level of performance needed to pass a competency test). One or more cut scores can be set for a test that results in dividing the score range into various proficiency level ranges. Methods for establishing cut scores vary. For the PSSA, three cut scores are used to place students into one of four performance levels (see also Performance Level Setting).
Decision Consistency	The extent to which classifications based on test scores would match the decisions based on scores from a second, parallel form of the same test. It is often expressed as the proportion of examinees who are classified the same way from the two test administrations.
Differential Item Functioning (DIF)	A statistical property of a test item in which different groups of test takers (who have the same total test score) have different average item scores. In other words, students with the same ability level but different group memberships do not have the same probability of answering the item correctly (see also Bias).
Distractor	An incorrect option in a multiple-choice item (also called a foil).
Equating	The strongest of several linking methods used to establish comparability between scores from multiple tests. Equated test scores should be considered exchangeable. Consequently, the criteria needed to refer to a linkage as equating are strong and somewhat complex (equal construct and precision, equity, and invariance). In practical terms, it is often stated that it should be a matter of indifference to a student if he/she takes any of the equated tests (see also Linking).
Equating Block (EB) Items	The PSSA uses multiple test forms for each grade/subject-area test. Each form is composed of operational (OP) items, equating block (EB) items, and field-test (FT) items. EB items are utilized during the linking process (see also Linking). Each test form includes a set of EB items. EB items are not part of any student scores.
Error of Measurement	The amount by which the score actually received (an observed score) differs from a hypothetical true score (see also Standard Error of Measurement).
Evidence-Based Selected-Response Item	A type of item that has two parts and requires the test taker to select a response from a group of possible answer choices in Part One, one of which is the correct answer (or key) to the question posed, and to then select one or two responses from a group of possible answer choices in Part Two, which provide evidence to support the correct answer in Part One.
Exact Agreement	When identical scores/ratings are assigned by two different raters under the same conditions (e.g., two independent raters give a paper the same score).
Field-Test (FT) Items	The PSSA uses multiple test forms for each grade/subject-area test. Each form is composed of operational (OP) items, equating block (EB) items, and field-test (FT) items. An FT item is a newly developed item that is ready to be tried out to determine its statistical properties (see also <i>P</i> -value and Point-Biserial Correlation). Each test form includes a set of FT items. FT items are not part of any student scores.
Frequency	The number of times that a certain value or range of values (score interval) occurs in a distribution of scores.
Frequency Distribution	A tabulation of scores from low to high or high to low showing the number and/or percent of individuals who obtain each score or who fall within each score interval or category.
Infit/Outfit	Statistical indicators of the agreement of the data and the measurement model (see also Outfit/Infit).
Item Difficulty	For the Rasch model, the dichotomous item difficulty represents the point along the latent trait continuum where an examinee has a 0.50 probability of making a correct response. For a polytomous item, the difficulty is the average of the item's step difficulties (see also Step Difficulty).
Key	The correct response option or answer to a test item.
Linking	A generic term referring to one of a number of processes by which scores from one or more tests are made comparable to some degree. Linking includes several classes of transformations (equating, scale alignment, prediction, etc.). Equating is associated with the strongest degree of comparability (exchangeable scores). Other linkages may be very strong but fail to meet one or more of the strict criteria required of equating (see also Equating).

Term	Common Definition
Logit	In Rasch scaling, logits are units used to express both examinee ability and item difficulty. When expressing examinee ability, a student who answers more items correctly has a higher logit than a student who answers fewer items correctly. Logits are transformed into Scaled Scores through a linear transformation. When expressing item difficulty, logits are transformed p -value (see also P -value). The logit difficulty scale is inversely related to p -values. A higher logit value would represent a relatively harder item, while a lower logit value would represent a relatively easier item.
Mean	Also referred to as the arithmetic mean of a set of scores, is found by adding all the score values in a distribution and dividing by the total number of scores. For example, the mean of the set {66, 76, 85, 97} is 81. The value of a mean can be influenced by extreme values in a score distribution.
Measure	In Rasch scaling, measure generally refers to a specific estimate of an examinee's ability (often expressed as logits) or an item's difficulty (again, often expressed as logits). As an example for the PSSA, a student's reading measure might be equal to 0.525 logits. Or, a PSSA Reading test item might have logit equal to -0.905.
Median	The middle point or score in a set of rank-ordered observations that divides the distribution into two equal parts such that each part contains 50 percent of the total data set. More simply put, half of the scores are below the median value and half of the scores are above the median value. As an example, the median for the following ranked set of scores {2, 3, 6, 8, 9} is 6.
Multiple-Choice Item	A type of item that requires the test taker to select a response from a group of possible choices, one of which is the correct answer (or key) to the question posed (see also Constructed-Response Item).
N-count	Sometimes designated as N or n , it is the number of observations (usually individuals or students) in a particular group. Some examples include the number of students tested, the number of students tested from a specific subpopulation (e.g., females), the number of students who attained a specific score, etc. In the follow set {23, 32, 56, 65, 78, 87}, $n = 6$.
Open-Ended Item	A type of constructed-response item found in the mathematics and science assessments that requires examinees to create their own responses, which can be expressed in various forms (e.g., written description, created table/graph, formulated calculation, etc.). Such items are frequently scored using more than two score categories, that is, polytomously (e.g., 0, 1, 2, 3, and 4). This format is in contrast to when students make a choice from a supplied set of answer options (e.g., multiple-choice (MC) items which are typically dichotomously scored as right = 1 or wrong = 0.) When interpreting item difficulty and discrimination indices it is important to consider whether an item is polytomously or dichotomously scored.
Operational Item	The PSSA uses multiple test forms for each grade/subject-area test. Each form is composed of operational (OP) items, equating block (EB) items, and field-test (FT) items. OP items are the same on all forms for any grade/subject-area test. Student total raw scores and scaled scores are based exclusively on the OP items.
Outfit/Infit	Statistical indicators of the agreement of the data and the measurement model. Infit and Outfit are highly correlated, and both are highly correlated with the point-biserial correlation. Underfit can be caused when low-ability students correctly answer difficult items (perhaps by guessing or atypical experience) or high-ability students incorrectly answer easy items (perhaps because of carelessness or gaps in instruction). Any model expects some level of variability, so overfit can occur when nearly all low-ability students miss an item while nearly all high-ability students get the item correct.
Percent Correct	When referring to an individual item, the percent correct is the item's p -value expressed as a percent (instead of a proportion). When referring to a total test score, it is the percentage of the total number of points that a student received. The percent correct score is obtained by dividing the student's raw score by the total number of possible points and multiplying the result by 100. Percent Correct scores are often used in criterion-referenced interpretations and are generally more helpful if the overall difficulty of a test is known. Sometimes Percent Correct scores are incorrectly interpreted as Percentile Ranks.
Percentile	The score or point in a score distribution at or below which a given percentage of scores fall. It should be emphasized that it is a value on the score scale, not the associated percentage (although sometimes in casual usage this misinterpretation is made). For example, if 72 percent of the students score at or below a Scaled Score of 1500 on a given test, then the Scaled Score of 1500 would be considered the 72nd percentile. As another example, the median is the 50th percentile.

Term	Common Definition
Percentile Rank	The percentage of scores in a specified distribution falling at/below a certain point on a score distribution. Percentile Ranks range in value from 1 to 99, and indicate the status or relative standing of an individual within a specified group by indicating the percent of individuals in that group who obtained equal or lower scores. An individual's percentile rank can vary depending on which group is used to determine the ranking. As suggested above, Percentiles and Percentile Rank are sometimes used interchangeably; however, strictly speaking, a percentile is a value on the score scale.
Performance Level Descriptors	Descriptions of an individual's competency in a particular content area, usually defined as ordered categories on a continuum, often labeled from Below Basic to Advanced, that constitute broad ranges for classifying performance. The exact labeling of these categories, and narrative descriptions, may vary from one assessment or testing program to another.
Performance Level Setting	Also referred to as standard setting, a procedure used in the determination of the cut scores for a given assessment that is used to measure students' progress towards certain performance standards. Standard setting methods vary (e.g., modified Angoff, Bookmark Method, etc.), but most use a panel of educators and expert judgments to operationalize the level of achievement students must demonstrate in order to be categorized within each performance level.
Point-Biserial Correlation	In classical test theory this is an item discrimination index. It is the correlation between a dichotomously scored item and a continuous criterion, usually represented by the total test score (or the corrected total test score with the reference item removed). It reflects the extent to which an item differentiates between high-scoring and low-scoring examinees. This discrimination index ranges from -1.00 to $+1.00$. The higher the discrimination index (the closer to $+1.00$), the better the item is considered to be performing. For multiple-choice items scored as 0 or 1, it is rare for the value of this index to exceed 0.5.
<i>P</i> -value	An index indicating an item's difficulty for some specified group (perhaps grade). It is calculated as the proportion (sometimes percent) of students in the group who answer an item correctly. <i>P</i> -values range from 0.0 to 1.0 on the proportion scale. Lower values correspond to more difficult items and higher values correspond to easier items. <i>P</i> -values are usually provided for multiple-choice items or other items worth one point. For open-ended items or items worth more than one point, difficulty on a <i>p</i> -value-like scale can be estimated by dividing the item mean score by the maximum number of points possible for the item (see also Logit).
Raw Score	Sometimes abbreviated by RS—it is an unadjusted score usually determined by tallying the number of questions answered correctly, or by the sum of item scores (i.e., points). (Some rarer situations might include formula-scoring, the amount of time required to perform a task, the number of errors, application of basal/ceiling rules, etc.). Raw scores typically have little or no meaning by themselves and require additional information—like the number of items on the test, the difficulty of the test items, norm-referenced information, or criterion-referenced information.
Reliability	The expected degree to which test scores for a group of examinees are consistent over exchangeable replications of an assessment procedure, and therefore, are considered dependable and repeatable for an individual examinee. A test that produces highly consistent, stable results (i.e., relatively free from random error) is said to be highly reliable. The reliability of a test is typically expressed as a reliability coefficient or by the standard error of measurement derived by that coefficient.
Reliability Coefficient	A statistical index that reflects the degree to which scores are free from random measurement error. Theoretically, it expresses the consistency of test scores as the ratio of true score variance to total score variance (true score variance plus error variance). This statistic is often expressed as correlation coefficient (e.g., correlation between two forms of a test) or with an index that resembles a correlation coefficient (e.g., calculation of a test's internal consistency using Coefficient Alpha). Expressed this way, the reliability coefficient is a unitless index. The higher the value of the index (closer to 1.0), the greater the reliability of the test (see also Standard Error of Measurement).
Scaled Score	A mathematical transformation of a raw score developed through a process called scaling. Scaled scores are most useful when comparing test results over time. Several different methods of scaling exist, but each is intended to provide a continuous and meaningful score scale across different forms of a test.
Selected-Response Item	See Multiple-Choice Item.

Term	Common Definition
Short-Answer Item	A type of constructed-response item found in the grade 3 ELA assessment that requires the test taker to compose an answer based on a passage or passage set the student has read. Each short-answer (SA) item is scored using an item-specific scoring guideline based on a 0–3 point general scoring guideline.
Spiraling	A packaging process used when multiple forms of a test exist and it is desired that each form be tested in all classrooms (or other grouping unit (e.g., schools)) participating in the testing process. This process allows for the random distribution of test booklets to students. For example, if a package has four test forms labeled A, B, C, and D, the order of the test booklets in the package would be A, B, C, D, A, B, C, D, A, B, C, D, etc.
Standard Deviation (SD)	A statistic that measures the degree of spread or dispersion of a set of scores. The value of this statistic is always greater than or equal to zero. If all of the scores in a distribution are identical, the standard deviation is equal to zero. The further the scores are away from each other in value, the greater the standard deviation. This statistic is calculated using the information about the deviations (distances) between each score and the distribution’s mean. It is equivalent to the square root of the variance statistic. The standard deviation is a commonly used method of examining a distribution’s variability since the standard deviation is expressed in the same units as the data.
Standard Error of Measurement (SEM)	The amount an observed score is expected to fluctuate around the true score. As an example, across replications of a measurement procedure, the true score will not differ by more than plus or minus one standard error from the observed score about 68 percent of the time (assuming normally distributed errors). The SEM is frequently used to obtain an idea of the consistency of a person’s score in actual score units or to set a confidence band around a score in terms of the error of measurement. Often a single SEM value is calculated for all test scores. On other occasions, however, the value of the SEM can vary along a score scale. Conditional standard errors of measurement (CSEMs) provide an SEM for each possible scaled score.
Step Difficulty	Step difficulty is a parameter estimate in Master’s partial credit model (PCM) that represents the relative difficulty of each score step (e.g., going from a score of 1 to a score of 2). The higher the value of a particular step difficulty, the more difficult a particular step is relative to other score steps (e.g., is it harder to go from a 1 to a 2, or to go from a 2 to a 3).
Strand	On score reports, a strand often refers to a set of items on a test measuring the same contextual area (e.g., Number Sense in Mathematics). Items developed to measure the same reporting category would be used to determine the strand score (sometimes called “subscale” score).
Technical Advisory Committee (TAC)	A group of individuals, most often professionals in the field of testing, who are either appointed or selected to make recommendations for and to guide the technical development of a given testing program.
Text-Dependent Analysis Item	A type of constructed-response item found in the ELA assessment in Grades 4–8 that requires the test taker to compose an essay based on a passage or passage set that the student has read during the test event. Test takers must draw on basic writing skills while inferring and synthesizing information from the passage in order to develop the response. The text-dependent analysis (TDA) item is scored on a holistic scoring guideline on a 1–4 point scale.
Validity	The degree to which accumulated evidence and theory support specific interpretations of test scores entailed by the purposed uses of a test. There are various ways of gathering validity evidence.
Writing Prompt	A type of constructed-response item found in the ELA assessment that requires the test taker to compose a mode-specific (opinion (Grades 3–5)/argumentative (Grades 6–8), informative/explanatory, or narrative) essay that is scored on a holistic, mode-specific scoring guideline on a 1–4 point scale.

PREFACE: AN OVERVIEW OF ASSESSMENTS FROM 2003 TO THE PRESENT

The period from 2003 through 2006 brought significant structural changes to the test blueprint for the Pennsylvania System of School Assessment (PSSA). These changes necessitated extensive test development and field testing activity along with phased-in implementation of the operational assessment. Included in this process was the development and implementation of assessments at additional grade levels.

For mathematics and reading, content changes for Grades 5, 8, and 11 were developed in 2003, field tested in spring 2004, and implemented in spring 2005. The *2005 PSSA Technical Report for Reading and Mathematics* provides a description of test development activities including a review of open-ended tasks and multiple-choice items, field testing, selection of items, statistical analysis of assessment data, reliability, validity, standard setting, and other technical characteristics of the operational 2005 PSSA. Test development for the new grade levels of 4, 6, and 7 began in 2004, with field testing in 2005, and full implementation in 2006. Similarly, the *2006 PSSA Technical Report for Reading and Mathematics: Grades 4, 6, and 7* provides a complete description of test development activities, item review, field testing, statistical analysis, item selection, and technical characteristics of the operational 2006 PSSA for these grade levels. In 2007, the Grade 3 reading and mathematics assessment became DRC's responsibility and is covered in the *2007 PSSA Technical Report for Reading and Mathematics*, along with the remaining grades.

Changes implemented in the writing assessment of spring 2006 were designed to sharpen the focus on what is assessed with respect to Academic Standards 1.4 and 1.5. To support this effort, a shift in grade levels assessed was made, moving from Grades 6 and 9 to Grades 5 and 8, thereby aligning assessment to the end of elementary and middle school years. The writing testing window was changed from fall to February 2006 for Grades 5 and 8, making it consistent with Grade 11. Mode-specific scoring guidelines replaced domain scoring, and the introduction of stimulus-based passages and associated multiple-choice items measuring revising and editing expanded the basis of the conventions score. An account of the development of writing prompts and stimulus-based, multiple-choice items, review processes, field testing and item analysis, standard setting, and other technical characteristics of the operational 2006 PSSA may be found in the *2006 PSSA Technical Report for Writing*.

The introduction of an operational science assessment in 2008 moved closer to reality with a major standalone field test at Grades 4, 8, and 11 in April–May of 2007. A description of the development of science scenarios and related multiple-choice, short answer open-ended, and extended open-ended questions, item review processes, statistical analysis of field test data, and selection of items for the 2008 operational science test may be found in the *2008 PSSA Preliminary Technical Report for Science*. Subsequently, the first operational science assessment took place in the spring of 2008, along with standard setting and reporting of results.

With the exception of some shifting of test windows, the spring assessments of 2009, 2010, 2011, and 2012 were conducted without change in content structure of the PSSA test instruments.

A transition to begin measuring the Pennsylvania Core Standards (PCS) in Mathematics and English Language Arts was initiated with standalone and embedded field test events in 2013 for Grades 3, 4, and 5. The transition continued in 2014 with standalone field tests in Grades 6, 7, and 8 and embedded field tests in Grades 3 through 8. As a part of this transition, starting in spring 2013, the Grade 11 PSSA and the Grade 12 PSSA Retest were dropped in favor of the Keystone Exams in Algebra I, Biology, and Literature. The 2015 administration of the PSSA marked the completion of the transition to the PCS in Mathematics and English Language Arts. Mathematics and ELA were administered in separate testing windows as separate test and answer booklets (in contrast to the combined Mathematics and Reading test and answer booklets used previously) and students in all grades participated in both the Writing and Reading portions of the ELA assessment.

The following pages provide an overview of the year-to-year changes to the PSSA. Tables and descriptions show the subject areas assessed, time of year the testing activity took place, and the type of testing that occurred (e.g., operational, field testing, Grade 12 retest) for each year.

To access any of the PSSA technical reports referenced in the Preface, please go to the Pennsylvania Department of Education website, www.education.pa.gov. Hover over K-12 in the blue banner at the top of the page and select “Assessment and Accountability.” Then select “Pennsylvania System of School Assessment (PSSA)” followed by “PSSA Technical Reports” in the column on the right under “PSSA and AYP Results.”

ASSESSMENT ACTIVITIES OCCURRING IN THE 2003–04 SCHOOL YEAR

Table P–1 outlines the operational assessments and field tests administered during the 2003–04 school year. (A spring operational assessment in mathematics and reading took place at Grades 3, 5, 8, and 11.)

As a result of new Assessment Anchor Content Standards (Assessment Anchors) developed by the Pennsylvania Department of Education (PDE) during 2003, new test items were developed (see Chapter Two of the *2005 PSSA Technical Report for Reading and Mathematics*). Following the spring operational assessment, a separate, standalone field test of new items for Grades 5, 8, and 11 was conducted. Note that Grade 11 students also took an operational writing assessment in February, and Grades 6 and 9 students participated in a fall writing assessment. Lastly, Grade 12 students who as 11th graders in the preceding spring failed to attain at least the Proficient level in any subject area were offered an opportunity to retest.

Table P–1. Operational Assessment and Field Testing During the 2003–04 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test (conducted by CTB/McGraw-Hill)	April 2004
5	Operational mathematics and reading	April 2004
5	Standalone field test in mathematics and reading	April/May 2004
6	Operational writing	October 2004
8	Operational mathematics and reading	April 2004
8	Standalone field test in mathematics and reading	April/May 2004
9	Operational writing	October 2004
11	Operational mathematics and reading	April 2004
11	Standalone field test in mathematics and reading	April/May 2004
11	Operational writing	February 2004
12	Retest opportunity for students who as Grade 11 students in the spring of 2003 failed to reach at least the Proficient level in mathematics, reading, or writing	October/ November 2004

ASSESSMENT ACTIVITIES OCCURRING IN THE 2004–05 SCHOOL YEAR

Table P–2 displays the operational assessments and field tests that took place during the 2004–05 school year. The operational assessment at Grades 5, 8, and 11 used items chosen from the spring 2004 field test. This was the first operational assessment that reflected the Pennsylvania Assessment Anchors and Eligible Content. Fulfilling the No Child Left Behind Act of 2001 (NCLB) requirement that states must implement a test at Grades 3–8, a major field test in mathematics and reading was administered at Grades 4, 6, and 7. Item development for these new grade levels took place during 2004.

The Grades 6 and 9 writing assessment was reevaluated in favor of moving the writing assessment to Grades 5 and 8. This accounts for the separate (standalone) field test at these grade levels. There was also a test administration change from October to February. In addition, the writing assessment underwent changes to align the test to the Academic Standards for writing. New writing prompts and stimulus-based multiple-choice items were also field tested at Grade 11 as part of the operational assessment, hence the reference to an embedded field test. No assessment activity of any kind occurred at Grade 9. As in fall 2003, the retest opportunity at Grade 12 continued.

Table P-2. Operational Assessment and Field Testing During the 2004–05 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test (conducted by CTB/McGraw-Hill)	April 2005
4	Standalone field test for mathematics and reading	April 2005
5	Operational mathematics and reading with embedded field test	April 2005
5	Standalone field test in writing	February 2005
6	Standalone field test for mathematics and reading	April 2005
7	Standalone field test for mathematics and reading	April 2005
8	Operational mathematics and reading with embedded field test	April 2005
8	Standalone field test in writing	February 2005
11	Operational mathematics and reading with embedded field test	April 2005
11	Operational writing with embedded field test	February 2005
12	Retest opportunity for students who as Grade 11 students in the spring of 2004 failed to reach at least the Proficient level in mathematics, reading, or writing	October/ November 2004

ASSESSMENT ACTIVITIES OCCURRING IN THE 2005–06 SCHOOL YEAR

Table P-3 shows the assessment activities that occurred during the 2005–06 school year. Note that the reading and mathematics operational assessments ran consecutively in Grades 3–8 and Grade 11. For Grades 4, 6, and 7, it was the first year for operational assessments. Field testing for mathematics and reading was embedded as part of the operational assessment at each grade level. At Grade 3, the reference to field testing with items developed by DRC reflects the transition of shifting the assessment from CTB/McGraw-Hill to DRC in 2007. As in previous years, the retest opportunity at Grade 12 continued.

The first operational assessments for writing at Grades 5 and 8 took place in the 2005–06 school year, while the Grade 11 writing assessment continued in the same February testing window. For all three grade levels, the operational writing assessments featured mode-specific scoring guidelines, stimulus-based multiple-choice items, and a grade-specific emphasis shift in writing modes assessed. See the *2006 PSSA Technical Report for Writing: Grades 5, 8, and 11* for further information about the new writing assessments. Since extensive field testing in February 2005 produced a pool of prompts for use over several years, no additional writing prompts were field tested in 2006. However, new multiple-choice items were field tested in the 2006 writing assessment.

Table P-3. Operational Assessment and Field Testing During the 2005-06 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test of DRC-written items (conducted by CTB/McGraw-Hill)	April 2006
4	Operational mathematics and reading with embedded field test	March 2006
5	Operational mathematics and reading with embedded field test	March 2006
5	Operational writing with embedded field test	February 2006
6	Operational mathematics and reading with embedded field test	March 2006
7	Operational mathematics and reading with embedded field test	March 2006
8	Operational mathematics and reading with embedded field test	March 2006
8	Operational writing with embedded field test	February 2006
11	Operational mathematics and reading with embedded field test	March 2006
11	Operational writing with embedded field test	February 2006
12	Retest opportunity for students who as Grade 11 students in the spring of 2005 failed to reach at least the Proficient level in mathematics, reading, or writing	October/ November 2005

ASSESSMENT ACTIVITIES OCCURRING IN THE 2006-07 SCHOOL YEAR

Table P-4 shows the assessment plan for the 2006-07 school year. Note that the mathematics and reading assessments ran consecutively in Grades 3-8 and Grade 11. For Grades 4, 6, and 7, it was the second year for operational assessments and the first year in which these grade levels were included in the adequate yearly progress (AYP) calculations. Field testing for mathematics and reading continued to be embedded as part of the operational assessments at each grade level. This was the first year in which DRC was responsible for the Grade 3 assessment, as the transition from CTB/McGraw-Hill was complete. As in previous years, the retest opportunity at Grade 12 continued.

The operational assessment for writing at Grades 5, 8, and 11 continued in the same February testing window featuring the mode-specific scoring guidelines, stimulus-based multiple-choice items, and a grade-specific emphasis in writing modes assessed, which were introduced in 2006. Since extensive field testing in February 2005 produced a pool of prompts for use over several years, no additional writing prompts needed to be field tested in 2007. However, new multiple-choice items were field tested in the 2007 writing assessment.

Following the spring operational assessments in writing, reading, and mathematics, a separate, standalone field test in science was administered for Grades 4, 8, and 11 with full implementation scheduled for 2008.

Table P-4. Operational Assessment and Field Testing During the 2006–07 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test	March 2007
4	Operational mathematics and reading with embedded field test	March 2007
4	Standalone field test in science	April/May 2007
5	Operational mathematics and reading with embedded field test	March 2007
5	Operational writing with embedded field test	February 2007
6	Operational mathematics and reading with embedded field test	March 2007
7	Operational mathematics and reading with embedded field test	March 2007
8	Operational mathematics and reading with embedded field test	March 2007
8	Operational writing with embedded field test	February 2007
8	Standalone field test in science	April/May 2007
11	Operational mathematics and reading with embedded field test	March 2007
11	Operational writing with embedded field test	February 2007
11	Standalone field test in science	April/May 2007
12	Retest opportunity for students who as Grade 11 students in the spring of 2006 failed to reach at least the Proficient level in mathematics, reading, or writing	October/ November 2006

ASSESSMENT ACTIVITIES OCCURRING IN THE 2007–08 SCHOOL YEAR

Table P-5 shows the assessment plan for the 2007–08 school year. Note that the mathematics and reading assessments ran consecutively in Grades 3–8 and Grade 11. For Grades 4, 6, and 7, it was the third year for operational assessments and the second year in which these grade levels were included in the AYP calculations. Field testing for mathematics and reading continued to be embedded as part of the operational assessments at each grade level. This was the second year in which DRC was responsible for the Grade 3 assessment. As in previous years, the retest opportunity at Grade 12 continued.

The operational assessment for writing at Grades 5, 8, and 11 continued in the same February testing window featuring the mode-specific scoring guidelines, stimulus-based multiple-choice items, and a grade-specific emphasis in writing modes assessed, which was introduced in 2006. Since extensive field testing in February 2005 produced a pool of prompts for use over several years, no additional writing prompts needed to be field tested in 2007. However, new multiple-choice items were field tested in the 2008 writing assessment.

Joining the spring operational assessments in writing, reading, and mathematics was science at Grades 4, 8, and 11. See the *2008 PSSA Technical Report for Science: Grades 4, 8, and 11* for further information about the new science assessments

Table P-5. Operational Assessment and Field Testing During the 2007-08 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test	March/April 2008
4	Operational mathematics and reading with embedded field test	March/April 2008
4	Operational science with embedded field test	April/May 2008
5	Operational mathematics and reading with embedded field test	March/April 2008
5	Operational writing with embedded field test	February 2008
6	Operational mathematics and reading with embedded field test	March/April 2008
7	Operational mathematics and reading with embedded field test	March/April 2008
8	Operational mathematics and reading with embedded field test	March/April 2008
8	Operational writing with embedded field test	February 2008
8	Operational science with embedded field test	April/May 2008
11	Operational mathematics and reading with embedded field test	March/April 2008
11	Operational writing with embedded field test	February 2008
11	Operational science with embedded field test	April/May 2008
12	Retest opportunity for students who as Grade 11 students in the spring of 2007 failed to reach at least the Proficient level in mathematics, reading, or writing	October/ November 2007

ASSESSMENT ACTIVITIES OCCURRING IN THE 2008-09 SCHOOL YEAR

Table P-6 shows the assessment plan for the 2008-09 school year. The mathematics and reading assessments continued to be operational for Grades 3-8 and Grade 11. Field testing for mathematics and reading continued to be embedded as part of the operational assessments at each grade level. As in previous years, the fall retest opportunity at Grade 12 continued.

The operational assessment for writing at Grades 5, 8, and 11 continued with a February testing window featuring mode-specific scoring guidelines; stimulus-based, multiple-choice items; and a grade-specific emphasis in writing modes assessed. An embedded field test of writing prompts was incorporated in the 2009 assessment along with a set of embedded field test multiple-choice items.

The second operational assessment in science took place in April/May. Similar to the other operational assessments, field testing for science was embedded as part of the operational assessments at each grade level.

Table P-6. Operational Assessment and Field Testing During the 2008–09 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test	March 2009
4	Operational mathematics and reading with embedded field test	March 2009
4	Operational science with embedded field test	April/May 2009
5	Operational mathematics and reading with embedded field test	March 2009
5	Operational writing with embedded field test	February 2009
6	Operational mathematics and reading with embedded field test	March 2009
7	Operational mathematics and reading with embedded field test	March 2009
8	Operational mathematics and reading with embedded field test	March 2009
8	Operational writing with embedded field test	February 2009
8	Operational science with embedded field test	April/May 2009
11	Operational mathematics and reading with embedded field test	March 2009
11	Operational writing with embedded field test	February 2009
11	Operational science with embedded field test	April/May 2009
12	Retest opportunity for students who as Grade 11 students in the spring of 2008 failed to reach at least the Proficient level in mathematics, reading, or writing	October/ November 2008

ASSESSMENT ACTIVITIES OCCURRING IN THE 2009–10 SCHOOL YEAR

Table P-7 shows the assessment plan for the 2009–10 school year. A notable change from previous years was that all assessments and make-ups were completed during the testing window from April through the first week of May.

The mathematics and reading assessments continued to be operational for Grades 3–8 and Grade 11. Field testing for mathematics and reading continued to be embedded as part of the operational assessments at each grade level. As in previous years, the fall retest opportunity at Grade 12 continued.

The operational assessment for writing at Grades 5, 8, and 11 continued to feature mode-specific scoring guidelines, stimulus-based multiple-choice items, and a grade-specific emphasis in writing modes assessed. An embedded field test of writing prompts was included in the 2010 assessment along with a set of embedded field test multiple-choice items.

The operational assessment for science at Grades 4, 8, and 11 included multiple-choice and open-ended questions. Students responded to standalone multiple-choice and open-ended questions (all grades) as well as scenario-based multiple-choice (Grades 8 and 11) and open-ended (Grade 11 only) questions. Field testing was embedded as part of the operational assessments at each grade level.

Table P-7. Operational Assessment and Field Testing During the 2009–10 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test	April/May 2010
4	Operational mathematics and reading with embedded field test	April/May 2010
4	Operational science with embedded field test	April/May 2010
5	Operational mathematics and reading with embedded field test	April/May 2010
5	Operational writing with embedded field test	April/May 2010
6	Operational mathematics and reading with embedded field test	April/May 2010
7	Operational mathematics and reading with embedded field test	April/May 2010
8	Operational mathematics and reading with embedded field test	April/May 2010
8	Operational writing with embedded field test	April/May 2010
8	Operational science with embedded field test	April/May 2010
11	Operational mathematics and reading with embedded field test	April/May 2010
11	Operational writing with embedded field test	April/May 2010
11	Operational science with embedded field test	April/May 2010
12	Retest opportunity for students who as Grade 11 students in the spring of 2009 failed to reach at least the Proficient level in mathematics, reading, science, or writing	October/ November 2009

ASSESSMENT ACTIVITIES OCCURRING IN THE 2010–11 SCHOOL YEAR

Table P-8 shows the assessment plan for the 2010–11 school year. A change from the previous year is an earlier testing window, beginning in mid-March for mathematics and reading, late-March to April for writing, and early April for science. A make-up period extended into mid-April for all assessments.

The mathematics and reading assessments continued to be operational for Grades 3–8 and Grade 11. Field testing for mathematics and reading continued to be embedded as part of the operational assessments at each grade level. As in previous years, the fall retest opportunity at Grade 12 continued.

The operational assessment for writing at Grades 5, 8, and 11 continued to feature mode-specific scoring guidelines, stimulus-based multiple-choice items, and a grade-specific emphasis in writing modes assessed. An embedded field test of writing prompts was included in the 2011 assessment along with a set of embedded field test multiple-choice items.

The operational assessment for science at Grades 4, 8, and 11 included multiple-choice and open-ended questions. Students responded to standalone multiple-choice and open-ended questions (all grades) as well as scenario-based multiple-choice (Grades 8 and 11) and open-ended (Grade 11 only) questions. Field testing was embedded as part of the operational assessments at each grade level.

Table P–8. Operational Assessment and Field Testing During the 2010–11 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test	March/April 2011
4	Operational mathematics and reading with embedded field test	March/April 2011
4	Operational science with embedded field test	March/April 2011
5	Operational mathematics and reading with embedded field test	March/April 2011
5	Operational writing with embedded field test	March/April 2011
6	Operational mathematics and reading with embedded field test	March/April 2011
7	Operational mathematics and reading with embedded field test	March/April 2011
8	Operational mathematics and reading with embedded field test	March/April 2011
8	Operational writing with embedded field test	March/April 2011
8	Operational science with embedded field test	March/April 2011
11	Operational mathematics and reading with embedded field test	March/April 2011
11	Operational writing with embedded field test	March/April 2011
11	Operational science with embedded field test	March/April 2011
12	Retest opportunity for students who as Grade 11 students in the spring of 2010 failed to reach at least the Proficient level in mathematics, reading, science, or writing	October/ November 2010

ASSESSMENT ACTIVITIES OCCURRING IN THE 2011–12 SCHOOL YEAR

Table P–9 shows the assessment plan for the 2011–12 school year. The testing window for mathematics and reading began in mid-March, while writing and science began in mid to late April. The make-up period for mathematics and reading extended into late March, while writing and science extended into early May.

The mathematics and reading assessments continued to be operational for Grades 3–8 and Grade 11. Field testing for mathematics and reading continued to be embedded as part of the operational assessments at each grade level. As in previous years, the fall retest opportunity at Grade 12 continued.

The operational assessment for writing at Grades 5, 8, and 11 continued to feature mode-specific scoring guidelines, stimulus-based multiple-choice items, and a grade-specific emphasis in writing modes assessed. An embedded field test of writing prompts was included in the 2012 assessment along with a set of embedded field test multiple-choice items.

The operational assessment for science at Grades 4, 8, and 11 included multiple-choice and open-ended questions. Students responded to standalone multiple-choice and open-ended questions (all grades) as well as scenario-based multiple-choice (Grades 8 and 11) and open-ended (Grade 11 only) questions. Field testing was embedded as part of the operational assessments at each grade level.

Table P–9. Operational Assessment and Field Testing During the 2011–12 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test	March 2012
4	Operational mathematics and reading with embedded field test	March 2012
4	Operational science with embedded field test	April 2012
5	Operational mathematics and reading with embedded field test	March 2012
5	Operational writing with embedded field test	April 2012
6	Operational mathematics and reading with embedded field test	March 2012
7	Operational mathematics and reading with embedded field test	March 2012
8	Operational mathematics and reading with embedded field test	March 2012
8	Operational writing with embedded field test	April 2012
8	Operational science with embedded field test	April 2012
11	Operational mathematics and reading with embedded field test	March 2012
11	Operational writing with embedded field test	April 2012
11	Operational science with embedded field test	April 2012
12	Retest opportunity for students who as Grade 11 students in the spring of 2011 failed to reach at least the Proficient level in mathematics, reading, science, or writing	October/ November 2011

TRANSITION TO THE PENNSYLVANIA CORE STANDARDS

The 2012–13 school year began the initial transition for the PSSA Mathematics, Reading, and Writing tests to align to the newly-developed Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards (PCS). The two-stage transition from the Legacy PSSA Mathematics, Reading, and Writing tests to the new PCS-based PSSA tests was proposed to occur during the operational 2013–14 and 2014–15 administrations, with Grades 3, 4, and 5 part of the first phase, and Grades 6, 7, and 8 part of the second phase. (The final decision was made for a single operational transition, to occur during the operational 2014–15 administration.)

As a part of the PCS transition, the Legacy PSSA Reading test and the Legacy PSSA Writing test were phased out and were replaced with an English Language Arts test aligned to the PCS. As part of this transition, there was a standalone field test for the Writing component of the English Language Arts test. This standalone field test included standalone multiple-choice items (as opposed to stimulus-based multiple-choice items on the Legacy Writing test) and writing prompts at each grade. In addition, at Grade 3 there were open-ended items on the standalone ELA Writing test. For Grades 3, 4, and 5, this standalone field test took place during a two-week testing window in early to mid February 2013. A similar standalone field test took place in February 2014 for Grades 6, 7, and 8. The Reading component of the new PCS ELA test was embedded in the 2013 Reading field test in Grades 3 through 5; additional items for the Reading component of the new PCS ELA test were embedded in the 2014 Reading field test in Grades 3 through 5. The Reading component of the new PCS ELA test in Grades 6 through 8 was embedded in the 2014 Reading field test.

ASSESSMENT ACTIVITIES OCCURRING IN THE 2012–13 SCHOOL YEAR

Table P–10 shows the assessment plan for the 2012–13 school year. PDE modified the order of the testing windows for writing, reading and mathematics, and science. Writing took place earlier than reading and mathematics instead of at the same time as science. The testing window for writing began mid March; mathematics and reading began early to mid April, while science began mid to late April. The make-up period for writing extended into mid to late March, while mathematics, reading, and science extended into early May. These operational assessments were all offered in an online format in addition to the paper/pencil format used in previous assessments.

An additional change from previous years was the removal of Grade 11 from the Mathematics, Reading, Science, and Writing. As Grade 11 was no longer a part of the assessments, the fall retest opportunity at Grade 12 was no longer available. Operational tests continued to be available for Mathematics and Reading at Grades 3–8, Science at grades 4 and 8, and Writing at grades 5 and 8.

Field testing for mathematics and reading continued to be embedded as part of the operational assessments at each grade level. The embedded field test items for Grades 3, 4, and 5 were aligned to the Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards, while the embedded field test items for Grades 6, 7, and 8 continued to be aligned to the previous Assessment Anchor Content Standards.

The operational assessment for Science at Grades 4 and 8 included multiple-choice and open-ended questions. Students responded to standalone multiple-choice and open-ended questions (all grades) as well as scenario-based multiple-choice questions (Grades 8 only). Field testing was embedded as part of the operational assessments at each grade level.

The operational assessment for Writing at Grades 5 and 8 continued to feature mode-specific scoring guidelines, stimulus-based multiple-choice items, and a grade-specific emphasis in writing modes assessed. An embedded field test of writing prompts along with a set of embedded field test multiple-choice items was included in the 2013 assessment at Grade 8. The operational assessment at Grade 5 included placeholder multiple-choice items for consistency in the length of the multiple-choice section of the assessment; however, students responded to only two writing prompts at Grade 5, as a field-test writing prompt was not needed due to the standalone field test at that grade.

Table P–10. Operational Assessment and Field Testing During the 2012–13 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test (field test aligned to the PCS)	April 2013
3	Standalone field test in ELA: writing (aligned to the PCS)	February 2013
4	Operational mathematics and reading with embedded field test (field test aligned to the PCS)	April 2013
4	Operational science with embedded field test	April 2013
4	Standalone field test in ELA: writing (aligned to the PCS)	February 2013
5	Operational mathematics and reading with embedded field test (field test aligned to the PCS)	April 2013
5	Operational writing	March 2013
5	Standalone field test in ELA: writing (aligned to the PCS)	February 2013
6	Operational mathematics and reading with embedded field test	April 2013
7	Operational mathematics and reading with embedded field test	April 2013
8	Operational mathematics and reading with embedded field test	April 2013
8	Operational writing with embedded field test	March 2013
8	Operational science with embedded field test	April 2013

ASSESSMENT ACTIVITIES OCCURRING IN THE 2013–14 SCHOOL YEAR

Table P–11 shows the assessment plan for the 2013–14 school year. The 2013–14 school year continued the transition for the PSSA Mathematics, Reading, and Writing tests to align to the newly-developed Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards (PCS), as field-test items were aligned to the PCS-aligned Assessment Anchors and Eligible Content. The operational assessments in Mathematics, Reading, and Writing were comprised of items that align to both the PCS and the existing Assessment Anchors and Eligible Content. Reporting in 2013–14 continued to use the previous content structure. The transition from the Legacy PSSA Mathematics, Reading, and Writing tests to the new PCS-based PSSA tests was planned to occur during the operational 2014–15 administration.

As a part of the PCS transition, the Legacy PSSA Reading test and the Legacy PSSA Writing test were phased out and were replaced with an English Language Arts test aligned to the PCS. As part of this transition, there was a standalone field test at Grades 6, 7, and 8 for the Writing component of the English Language Arts test. This standalone field test included standalone multiple-choice items (as opposed to stimulus-based multiple-choice items on the Legacy Writing test) and writing prompts at Grades 6, 7, and 8. This standalone field test took place during a two-week testing window in early to mid February. The Reading component of the new PCS ELA test was embedded in the 2014 Reading field test for Grades 6, 7, and 8 and in the 2013 and 2014 Reading field test for

Grades 3, 4, and 5.

Writing took place after reading and mathematics but before science. The testing window for mathematics and reading began mid March; writing began late March to early April; and science began late April. The make-up period for mathematics and reading extended into early April, while the make-up period for writing extended into early to mid April and science extended into early May. These operational assessments continued to be offered in an online format in addition to the paper/pencil format used in previous assessments.

Field testing for mathematics and reading continued to be embedded as part of the operational assessments at each grade level. The embedded field test items were aligned to the Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards.

The operational assessment for science at Grades 4 and 8 included multiple-choice and open-ended questions. Students responded to standalone multiple-choice and open-ended questions (all grades) as well as scenario-based multiple-choice questions (Grades 8 only). Field testing was embedded as part of the operational assessments at each grade level.

The operational assessment for writing at Grades 5 and 8 continued to feature mode-specific scoring guidelines, stimulus-based multiple-choice items, and a grade-specific emphasis in writing modes assessed. Students responded to only two writing prompts, as a field-test writing prompt was not needed due to the upcoming transition to the ELA assessments.

Table P–11. Operational Assessment and Field Testing During the 2013–14 School Year

Grade	Assessment Activity	Date
3	Operational mathematics and reading with embedded field test	March 2014
4	Operational mathematics and reading with embedded field test	March 2014
4	Operational science with embedded field test	April-May 2014
5	Operational mathematics and reading with embedded field test	March 2014
5	Operational writing	March-April 2014
6	Operational mathematics and reading with embedded field test	March 2014
6	Standalone field test in ELA: writing	February 2014
7	Operational mathematics and reading with embedded field test	March 2014
7	Standalone field test in ELA: writing	February 2014
8	Operational mathematics and reading with embedded field test	March 2014
8	Operational writing with embedded field test	March-April 2014
8	Operational science with embedded field test	April-May 2014
8	Standalone field test in ELA: writing	February 2014

ASSESSMENT ACTIVITIES OCCURRING IN THE 2014–15 SCHOOL YEAR

Table P–12 shows the assessment plan for the 2014–15 school year. The 2014–15 school year completes the transition for the PSSA Mathematics, Reading, and Writing tests to align to the newly-developed Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards (PCS), as both operational and field-test items were aligned only to the PCS-aligned Assessment Anchors and Eligible Content. Reporting in 2014–15 also transitioned to the new content structure. The transition from the Legacy PSSA Mathematics, Reading, and Writing tests to the new PCS-based PSSA Mathematics and ELA tests occurred during the operational 2014–15 administration.

The testing window for English Language Arts began in mid April followed by the testing windows for Mathematics in mid to late April and then Science in late April to early May. These operational assessments continued to be offered in an online format in addition to the paper/pencil format used in previous assessments. The online assessment became available for students to take on iPads and Chromebooks beginning with the 2015 administration.

Field testing for mathematics and reading continued to be embedded as part of the operational assessments at each grade level. The embedded field test items continued to be aligned to the Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards.

The operational assessment for science at Grades 4 and 8 included multiple-choice and open-ended questions. Students responded to standalone multiple-choice and open-ended questions (both grades) as well as scenario-based multiple-choice questions (Grades 8 only). Field testing was embedded as part of the operational assessments at each grade level.

Table P–12. Operational Assessment and Field Testing During the 2014–15 School Year

Grade	Assessment Activity	Date
3	Operational mathematics with embedded field test	April 2015
3	Operational ELA with embedded field test	April 2015
4	Operational mathematics with embedded field test	April 2015
4	Operational ELA with embedded field test	April 2015
4	Operational science with embedded field test	April-May 2015
5	Operational mathematics embedded field test	April 2015
5	Operational ELA with embedded field test	April 2015
6	Operational mathematics with embedded field test	April 2015
6	Operational ELA with embedded field test	April 2015
7	Operational mathematics with embedded field test	April 2015
7	Operational ELA with embedded field test	April 2015
8	Operational mathematics with embedded field test	April 2015
8	Operational ELA with embedded field test	April 2015
8	Operational science with embedded field test	April-May 2015

ASSESSMENT ACTIVITIES OCCURRING IN THE 2015–16 SCHOOL YEAR

Table P–13 shows the assessment plan for the 2015–16 school year. The PSSA tests administered in the 2015–16 school year will continue to be aligned to the Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards.

The testing window for English Language Arts began early to mid April followed by the testing windows for Mathematics in mid April and then Science in late April. Makeup assessments were available through early May. These operational assessments continued to be offered in an online format in addition to the paper/pencil format used in previous assessments. The online assessment were available for students to take on iPads and Chromebooks.

Field testing for mathematics and English language arts continued to be embedded as part of the operational assessments at each grade level. The embedded field test items continued to be aligned to the Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards.

The operational assessment for science at Grades 4 and 8 included multiple-choice and open-ended questions. Students responded to standalone multiple-choice and open-ended questions (both grades) as well as scenario-based multiple-choice questions (Grades 8 only). Field testing was embedded as part of the operational assessments at each grade level.

Table P–13. Operational Assessment and Field Testing During the 2015–16 School Year

Grade	Assessment Activity	Date
3	Operational mathematics with embedded field test	April 2016
3	Operational ELA with embedded field test	April 2016
4	Operational mathematics with embedded field test	April 2016
4	Operational ELA with embedded field test	April 2016
4	Operational science with embedded field test	April 2016
5	Operational mathematics embedded field test	April 2016
5	Operational ELA with embedded field test	April 2016
6	Operational mathematics with embedded field test	April 2016
6	Operational ELA with embedded field test	April 2016
7	Operational mathematics with embedded field test	April 2016
7	Operational ELA with embedded field test	April 2016
8	Operational mathematics with embedded field test	April 2016
8	Operational ELA with embedded field test	April 2016
8	Operational science with embedded field test	April 2016

ASSESSMENT ACTIVITIES PLANNED FOR THE 2016–17 SCHOOL YEAR

Table P–14 shows the assessment plan for the 2016–17 school year. The PSSA tests administered in the 2016–17 school year will continue to be aligned to the Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards.

The testing window for English Language Arts will be in mid-April followed by the testing windows for Mathematics in mid to late April and then Science in early May. The makeup assessments will be available through early May. These operational assessments will continue to be offered in an online format in addition to the paper/pencil format.

Field testing for mathematics and English language arts will continue to be embedded as part of the operational assessments at each grade level. The embedded field test items will continue to be aligned to the Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards.

The operational assessment for science at Grades 4 and 8 will continue to include multiple-choice and open-ended questions. Students will respond to standalone multiple-choice and open-ended questions (both grades) as well as scenario-based multiple-choice questions (Grades 8 only). Field testing will be embedded as part of the operational assessments at each grade level.

Table P-14. Operational Assessment and Field Testing During the 2016-17 School Year (Planned)

Grade	Assessment Activity	Date
3	Operational mathematics with embedded field test	April 2017
3	Operational ELA with embedded field test	April 2017
4	Operational mathematics with embedded field test	April 2017
4	Operational ELA with embedded field test	April 2017
4	Operational science with embedded field test	May 2017
5	Operational mathematics embedded field test	April 2017
5	Operational ELA with embedded field test	April 2017
6	Operational mathematics with embedded field test	April 2017
6	Operational ELA with embedded field test	April 2017
7	Operational mathematics with embedded field test	April 2017
7	Operational ELA with embedded field test	April 2017
8	Operational mathematics with embedded field test	April 2017
8	Operational ELA with embedded field test	April 2017
8	Operational science with embedded field test	May 2017

CHAPTER ONE: BACKGROUND, PURPOSE, AND INTENDED USES OF THE PENNSYLVANIA SYSTEM OF SCHOOL ASSESSMENT (PSSA)

This brief overview of the Pennsylvania System of School Assessment (PSSA) summarizes the history of the current program's development process, the program's intent and purpose, recent changes to the program, and the student population that participates in the assessments. Pennsylvania's involvement in state-wide assessment actually began in the 1969–70 school year with a purely school-based assessment known as *Educational Quality Assessment (EQA)*, which continued through the 1987–88 school year. A state mandated student competency testing program called *Testing for Essential Learning and Literacy Skills (TELLS)* also operated from the school years of 1984–85 through 1990–91.

THE PENNSYLVANIA SYSTEM OF SCHOOL ASSESSMENT

The Pennsylvania System of School Assessment program was instituted in 1992 as a school evaluation model with reporting at the school level only. Test administration took place in February/March, and school district participation was every third year based on the strategic planning cycle. Mathematics and reading were assessed at Grades 5, 8, and 11; districts could choose to participate in the writing assessment at Grades 6 and 9. The State Board of Education's revisions to Chapter 5 in November 1994 brought major changes to the PSSA, beginning with the spring 1995 assessment. These changes included the following:

- All districts were required to participate in the mathematics and reading assessment each year.
- Student-level reports were generated in addition to school reports.
- The Grades 6 and 9 writing assessments became mandatory on a three-year cycle corresponding with the district's strategic planning cycle.

Yearly administration of the PSSA in 1996, 1997, and 1998 continued at the assessed grades for mathematics and reading, utilizing essentially the same test structure, reporting practices, and testing window. Writing assessment continued on the established mandatory cycle; however, an increasing number of districts chose to participate every year on a voluntary basis.

PENNSYLVANIA ACADEMIC STANDARDS AND THE PSSA

A major structural change took place in test content with the State Board of Education's adoption of the Pennsylvania Academic Standards for Reading, Writing, Speaking and Listening, and Mathematics in January 1999 (Pennsylvania State Board of Education, 1999). These new, more rigorous standards aimed to better prepare students for the 21st century work force. The Academic Standards, which are part of *Chapter 4 Regulations on Academic Standards and Assessment*, detailed what students should know (knowledge) and be able to do (skills) at various grade levels. Subsequently, the State Board approved a set of criteria defining Advanced, Proficient, Basic, and Below Basic levels of performance. Mathematics and reading performance level results were reported at both the student and school levels for the 2000 PSSA. At that point, the PSSA became a standards-based, criterion-referenced assessment measuring student attainment of the Academic Standards while simultaneously determining the extent to which school programs enabled students to achieve proficiency of the Academic Standards. The regulations also stipulated that appropriate results be broadly disseminated to an array of audiences including students, parents, educators, citizens, and state policymakers, including the State Senate, the General Assembly, and the State Board. School reporting was to include the aggregate performance of all students and for relevant subgroups, such as those students with an Individualized Education Plan (IEP). Finally, the data was intended to inform educators regarding school program strengths and weaknesses in order to guide the improvement of curricula and instructional strategies. The data was also intended to be used in the development of strategic plans.

The mathematics and reading assessments from 2001 through 2004 underwent various content enhancements to improve alignment to the Academic Standards. For example, the reading assessment transitioned to utilizing more passages of shorter length and fewer items to improve the range of topics to which students responded. Various reporting modifications were introduced to more effectively communicate results.

ASSESSMENT ANCHOR CONTENT STANDARDS, CONTENT STRUCTURE, AND NEW GRADE LEVELS FOR MATHEMATICS AND READING

Assessment in 2005 was marked by major structural changes to the PSSA. Assessment Anchor Content Standards (Assessment Anchors) developed during the previous school year to clarify content structure and improve articulation between assessment and instruction were implemented in terms of test design and reporting. At the same time, field testing of mathematics and reading occurred at Grades 4, 6, and 7. As specified by PL 107–110, the *No Child Left Behind Act of 2001* (NCLB), states, school districts, and schools must achieve a minimum level of improvement each year, known as adequate yearly progress, or AYP. Accordingly, the third year of calculations for AYP were conducted and reported for Grades 5, 8, and 11.

The 2006 operational mathematics and reading assessment incorporated Grades 4, 6, and 7 for the first time. The assessed grade levels for 2006 included Grades 3–8 and 11. The fourth year of calculations for AYP were conducted and reported for Grades 5, 8, and 11 and, for the first time, Grade 3.

In 2007 the operational mathematics and reading assessment continued in Grades 3–8 and 11. AYP calculations for Grades 4, 6, and 7 took place in 2007 when they were assessed for the second time.

The operational mathematics and reading assessments of 2008, 2009, 2010, 2011, and 2012 continued in Grades 3–8 and 11, utilizing the same content structure. AYP calculations continued for all grades. The operational mathematics and reading assessments continued for Grades 3–8 in 2013 utilizing the same content structure.

TRANSITION TO PENNSYLVANIA CORE STANDARDS-ALIGNED ASSESSMENTS IN ENGLISH LANGUAGE ARTS AND MATHEMATICS

As a part of the transition to align to the Pennsylvania Core Standards, the operational mathematics and reading assessments for Grades 3–8 in 2014 aligned to both the previous Assessment Anchors (those aligned to the Pennsylvania Academic Standards) and the newly developed Assessment Anchors aligned to the Pennsylvania Core Standards. The operational assessments of 2015 in Grades 3–8 marked the completion of the transition to alignment with the Pennsylvania Core Standards in mathematics and English language arts. The 2016 PSSA had nine field test forms per grade in Grades 3–8, each with core items as well as placeholder items to ensure consistency in the length of the assessment in future years when equating block items are again included in the test design. More information about the operational layout for mathematics and English language arts can be found in Chapter Three.

Preliminary performance level descriptors were developed for mathematics and English language arts in the spring of 2012. These descriptions of the expectations of students at each performance level (Basic, Proficient, and Advanced) were used to guide development of items aligned to the PCS-aligned Assessment Anchors and Eligible Content that were field tested in 2013 (Grades 3, 4, and 5) and in 2014 (Grades 3–8). These performance level descriptors were validated by committees of Pennsylvania educators in February 2015 prior to standard setting in June 2015.

More information regarding the 2016 mathematics and reading tests may be found in Chapter Two and in the following Pennsylvania Department of Education publications available on the PDE website: *PSSA Assessment Handbook*, *PSSA English Language Arts Preliminary Item and Scoring Sampler* (one per assessed grade level), and *PSSA Mathematics Preliminary Item and Scoring Sampler* (one per assessed grade level). These materials can be accessed by going to the PDE website, www.education.pa.gov. Hover over K-12 in the blue banner at the top of the page and select “Assessment and Accountability.” Then select “Pennsylvania System of School Assessment (PSSA).”

THE PENNSYLVANIA SCIENCE ASSESSMENT

In accordance with the NCLB requirement to implement an operational science assessment in 2008, a major test development effort in science took place during 2006, followed by a large-scale, standalone field test in April/May of 2007. A full implementation of an operational science assessment at Grades 4, 8, and 11 first occurred in April–May 2008. The 2009 PSSA operational science assessment continued with the same content structure and testing window as in 2008.

Several historical milestones were significant to the development of a science test in Pennsylvania. These include the following:

- The adoption of Act 16 or Pennsylvania Senate Bill 652 in 2000, which redefined the PSSA “as a test developed and implemented by the Department of Education to determine only academic achievement relating directly to objective Academic Standards in the areas of reading, mathematics, and science.” (See the *Science Assessment Handbook*, PDE, November 2006).
- Pennsylvania State Board of Education adoption of the *Science and Technology Standards* on July 12, 2001, and the *Environment and Ecology Standards* on January 5, 2002.

Aligned to the *Pennsylvania Science Assessment Anchor Content Standards* and Eligible Content, the science test is designed to measure and report results in four major categories:

- The Nature of Science
- Biological Sciences
- Physical Sciences
- Earth and Space Sciences

Students use their content knowledge and science process skills to answer a set of multiple-choice items and open-ended questions that are standalone or related to a scenario. A science scenario consists of a description of a class project, an experiment, or other research and typically contains text, graphs, charts, and/or tables. Science test questions at Grade 4 consist of standalone multiple-choice and 0–2-point short answer open-ended items. At Grade 8, multiple-choice questions consist of both standalone and scenario-based items. All open-ended items at Grade 8 are standalone 0–2-point questions. More information may be found in Chapter Two and in the following Pennsylvania Department of Education publications available on the PDE website: *PSSA Assessment Handbook* and *PSSA Science Item and Scoring Sampler Supplement* (one per assessed grade level). These handbooks can be accessed by going to www.education.pa.gov. Hover over K-12 in the blue banner at the top of the page and select “Assessment and Accountability,” then select “Pennsylvania System of School Assessment (PSSA).” The item and scoring sampler for science is found under “Science Resources.” The establishment of performance levels for science, utilizing the Bookmark method, took place during the summer of 2008. See Chapter Thirteen of this technical report for a brief summary.

PURPOSE AND INTENDED USES OF THE PSSA

The preceding discussion provides some important background and rationale for the development of the PSSA. Although the topic of test validity is covered in detail in Chapter 19 of this report, some introductory remarks to frame how a validity argument is linked to test purpose and use is appropriate here. Validity is often defined as, the degree to which theory and evidence support the intended purpose and use of test scores. As such, the beginning of any validation process is to clearly articulate test purpose and intended uses. The purpose of the PSSA is to measure how well students acquire the knowledge and skills described in the *Pennsylvania Assessment Anchor Content Standards* (Assessment Anchors) as defined by the Eligible Content for mathematics, ELA, and Science. The intended uses of the PSSA are to:

1. Provide information for use in school and district accountability systems
2. Improve curricular and instructional practices in order to help students reach proficiency in the Pennsylvania Core Standards (ELA and Mathematics) or the Pennsylvania Academic Standards (Science)

It follows, then, that a validity argument must be developed to support claims that PSSA test scores are appropriate for these uses. The *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014) links the concept of validity, test purpose, and test use to this need for evidence that test scores are appropriate for their intended purpose and uses. Briefly, a validity argument is characterized as an accumulation of five sources, or types, of evidence that test scores are appropriate for their intended use, including evidence related to test content, its internal structure and relation to other variables, examinee response processes, and testing consequences. Complete definitions of these sources, and corresponding evidence that PSSA scores may be interpreted as intended is provided in Chapter 19.

CHAPTER TWO: OVERVIEW OF THE PSSA FRAMEWORK

PENNSYLVANIA CORE STANDARDS, PENNSYLVANIA ACADEMIC STANDARDS, ASSESSMENT ANCHOR CONTENT STANDARDS, AND ELIGIBLE CONTENT PSSA ENGLISH LANGUAGE ARTS, MATHEMATICS, AND SCIENCE

The PSSA Assessment Anchor Content Standards and Eligible Content are based on the Pennsylvania Core Standards in English language arts and mathematics and the Pennsylvania Academic Standards in science. Although the Academic Standards indicated what students should know and be able to do, educator concerns regarding the number and breadth of Academic Standards led to an initiative by the Pennsylvania Department of Education (PDE) to develop Assessment Anchor Content Standards (Assessment Anchors) to indicate which parts of the Academic Standards (Instructional Standards) would be assessed on the PSSA. Based on recommendations from Pennsylvania educators, the Assessment Anchors were designed as a tool to improve the articulation of curricular, instructional, and assessment practices.

With Pennsylvania’s decision to adopt the Pennsylvania Core Standards based on the Common Core State Standards, committees of Pennsylvania educators met in October 2011 to write, review, and approve the Assessment Anchors and Eligible Content statements. To provide initial focus, each content and grade span committee was presented with materials specific to the content and grade span in question, including a basic blueprint structure, the Pennsylvania Academic Standards, the Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Academic Standards, the Common Core State Standards, and draft Eligible Content statements. Committees then completed an iterative process of reviewing and revising the draft Eligible Content statements followed by discussions across grade-span committees to ensure vertical articulation across the grades. The results from the committee work were evaluated by national, state, and local subject experts, and following revisions, they were ultimately validated by another committee of Pennsylvania educators. Following committee approval, the Pennsylvania Core Standards-aligned Assessment Anchors and Eligible Content for English Language Arts and Mathematics were approved by the State Board of Education in September 2013.

The Assessment Anchors clarify what is expected across each grade span and focus the content of the standards into what is assessable on a large-scale test. The Assessment Anchor documents also serve to communicate Eligible Content, also called assessment limits, or the range of knowledge and skills from which the PSSA would be designed.

The Assessment Anchor’s coding is read like an outline. The coding includes the content, grade level, Reporting Category, Assessment Anchor, descriptor (Sub-Assessment Anchor), and Eligible Content. Thus, S.4.A.1.3.1 would be Science, Grade 4, Reporting Category A, Assessment Anchor 1, descriptor (Sub-Assessment Anchor) 3, and Eligible Content 1.

Each of the Assessment Anchors has one or more descriptors (Sub-Assessment Anchors) and Eligible Content varying to reflect grade-level appropriateness. The Assessment Anchors form the basis of the test design. In turn, this hierarchy is the basis for organizing the total content scores (based on the core [common] sections).

Achieve, Inc., Washington, D.C., conducted a preliminary review of the science Assessment Anchors in 2003 to evaluate the alignment with the Academic Standards and produced a follow-up report on the anchors in 2005.

The complete set of Assessment Anchors and Eligible Content aligned to the Pennsylvania Academic Standards can be referenced at PDE’s website: www.education.pa.gov. Hover over K-12 in the blue banner at the top of the page and select “Assessment and Accountability.” Then select “Pennsylvania System of School Assessment (PSSA)” followed by “Assessment Anchors” in the column on the right under “Other Materials.”

OVERVIEW OF THE 2016 PSSA MATHEMATICS ASSESSMENT MEASURES

The Assessment Anchors are organized into four classifications, as listed below.

- A = Numbers and Operations
- B = Algebraic Concepts
- C = Geometry
- D = Data Analysis and Probability

These four classifications are used throughout the grade levels. In addition to these classifications, there are five Reporting Categories for each grade level. The first letter of each Reporting Category represents the classification, and the second letter represents the Domain as stated in the Pennsylvania Core Standards for Mathematics. These Reporting Categories are listed below.

- A = Numbers and Operations
 - A-T = Numbers and Operations in Base Ten (grades 3–5)
 - A-F = Numbers and Operations—Fractions (grades 3–5)
 - A-N = The Number System (grades 6–8)
 - A-R = Ratios and Proportional Relationships (grades 6, 7)
- B = Algebraic Concepts
 - B-O = Operations and Algebraic Thinking (grades 3–5)
 - B-E = Expressions and Equations (grades 6–8)
 - B-F = Functions (grade 8)
- C = Geometry
 - C-G = Geometry (grades 3–8)
- D = Data Analysis and Probability
 - D-M = Measurement and Data (grades 3–5)
 - D-S = Statistics and Probability (grades 6–8)

The PSSA mathematics assessment employs two types of test items: multiple-choice and open-ended. These item types assess different levels of knowledge and provide different kinds of information about mathematics achievement. Psychometrically, multiple-choice items are very useful and efficient tools for collecting information about a student's academic achievement. Open-ended performance tasks generally generate fewer scoreable points than multiple-choice items in the same amount of testing time; however, they provide tasks that are more realistic and are better at sampling higher-level thinking skills. Furthermore, well-constructed scoring guides have made it possible to include open-ended tasks in large-scale assessments such as the PSSA. Trained scorers can apply the scoring guides to efficiently score large numbers of student papers in a highly reliable way. The design of the PSSA attempts to achieve a reasonable balance between the two item types.

Furthermore, the Standards for Mathematical Practice is included in the development and review process of each item. Some items may align to none of the practices while others may align to multiple practices. The Standards for Mathematical Practice originated in the Common Core State Standards for Mathematics and were adopted by Pennsylvania as part of the Academic Standards for Mathematics.

MATHEMATICS MULTIPLE-CHOICE ITEMS

The majority of the mathematics items included on the PSSA are multiple-choice (selected-response) items. This item type is especially efficient for measuring a broad range of content. In the PSSA mathematics assessment, each multiple-choice item has four response options, only one of which is correct. The student is awarded one point for choosing the correct response. Distractors typically represent incorrect concepts, incorrect logic, incorrect application of an algorithm, or computational errors.

Multiple-choice items are used to assess a variety of skill levels, from short-term recall of facts to problem solving. PSSA items involving application emphasize the requirement to carry out some mathematical process to find an answer, rather than simply recalling information from memory.

OPEN-ENDED TASKS FOR MATHEMATICS

Open-ended, or constructed-response, tasks require students to read a problem description and to develop an appropriate solution. The open-ended items are designed to take about ten minutes per item. Most of the open-ended items have several components to the overall task that may enable students to enter or begin the problem at different places. In some items, each successive component is designed to assess progressively more difficult skills or higher knowledge levels. Certain components ask students to explain their reasoning for engaging in particular mathematical operations or for arriving at certain conclusions. The types of tasks utilized do not necessarily require computations. Students may also be asked to perform such tasks as constructing a graph, shading some portion of a figure, or listing object combinations that meet specified criteria.

Open-ended tasks are especially useful for measuring students' problem-solving skills in mathematics. They offer the opportunity to present real-life situations that require students to solve problems using mathematics abilities learned in the classroom. Students must read the task carefully, identify the necessary information, devise a method of solution, perform the calculations, enter the solution directly in the response space, and, when required, offer an explanation. This provides insight into the students' mathematical knowledge, abilities, and reasoning processes.

The open-ended mathematics items are scored on a 0–4 point scale using an item-specific scoring guideline. The item-specific scoring guideline outlines the requirements for each score point. Item-specific scoring guidelines are based on the "General Description of Mathematics Scoring Guidelines for Open-Ended Items". The general guidelines describe a hierarchy of responses, which represent the five score levels. See Appendix A or the *Mathematics Item and Scoring Samplers* available on the PDE website.

ENGLISH LANGUAGE ARTS ASSESSMENT MEASURES

The content blueprints for the English language arts assessment are shown in the following tables. The blueprints are organized around three Reporting Clusters (Reading, Writing, and Text-Dependent Analysis) based on the expressed emphasis contained within the Pennsylvania Core Standards.

- Reading
 - A = Literature Text
 - B = Informational Text
 - A-K and B-K = Key Ideas and Details
 - A-C and B-C = Craft and Structure/Integration of Knowledge and Ideas
 - A-V and B-V = Vocabulary Acquisition and Use
- Writing
 - C = Writing
 - D = Language
- Text-Dependent Analysis
 - E = Text-Dependent Analysis (Grades 4–8 only)

Within the Reading Reporting Cluster, each Eligible Content aligns to a Genre Reporting Category (Literature Text or Informational Text) as well as a Core Competency Reporting Category (Key Ideas and Details; Craft and Structure/Integration of Knowledge and Ideas; or Vocabulary Acquisition and Use) as shown in the table below.

Table 2–1. English Language Arts Eligible Content Blueprint

Genre	Key Ideas and Details (Key Ideas)	Craft and Structure/Integration of Knowledge and Ideas (CSI)	Vocabulary Acquisition and Use (Vocabulary)
Literature Text	A-K.1.1.1	A-C.2.1.1	A-V.4.1.1
Literature Text	A-K.1.1.2	A-C.3.1.1	A-V.4.1.2
Literature Text	A-K.1.1.3	NA	NA
Informational Text	B-K.1.1.1	B-C.2.1.1	B-V.4.1.1
Informational Text	B-K.1.1.2	B-C.2.1.2	B-V.4.1.2
Informational Text	B-K.1.1.3	B-C.3.1.1	NA
Informational Text	NA	B-C.3.1.2	NA
Informational Text	NA	B-C.3.1.3	NA

The English language arts assessment employs several types of test questions, including standalone and passage-based Multiple-Choice questions (MC), Evidence-Based Selected-Response (EBSR) questions, Short-Answer (SA) questions (Grade 3 only), Text-Dependent Analysis (TDA) questions (Grades 4–8) and mode-specific Writing Prompts (WP).

PASSAGE-BASED MULTIPLE-CHOICE ITEMS

Passage-based multiple-choice items measure how well students comprehend the overall meaning of a passage or make basic inferences about it. At times, asking students to choose a preferred answer is the best way to determine whether they have gleaned certain information from a story. Such information may include setting, central idea, or main events and their sequence. These multiple-choice items are aligned to Reporting Categories within the Reading Reporting Cluster.

Each reading multiple-choice item has four response options, only one of which is correct. The student is awarded one point for choosing the correct response. Incorrect response choices, or distractors, typically represent some kind of misinterpretation, predisposition, unsound reasoning, or casual reading of the item and/or stimuli.

STANDALONE MULTIPLE-CHOICE ITEMS

Standalone multiple-choice items require that a student demonstrate both passive (recognizing and identifying grammatical and mechanical errors in text, such as misspellings, errors in word choice, errors in verb tense, or pronoun usage) and active (choosing the appropriate correction of an embedded error, such as deleting an irrelevant detail, changing the sequence of details, or placing correct marks of punctuation) language skills related to conventions of standard English and knowledge of language. These multiple-choice items are aligned to the Language Reporting Category within the Writing Reporting Cluster.

All language multiple-choice items have four response options that include only one correct answer. The student is awarded one raw score point for choosing the correct response. Incorrect response choices, or distractors, typically represent some kind of misinterpretation or predisposition, unsound reasoning, or casual reading of the item and/or stimuli.

EVIDENCE-BASED SELECTED-RESPONSE ITEMS

Each two-part evidence-based selected-response (EBSR) question is designed to elicit an evidence-based response from a student who has read either a Literature or Informational Text passage. In Part One, which is similar to a multiple-choice question, the student analyzes a passage and chooses the best answer from four answer choices. In Part Two, the student elicits evidence from the passage to select one or more answers based on his/her response to Part One. Part Two is different from a multiple-choice question in that there may be more than four answer options and more than one correct answer. Each EBSR test question is worth either two or three points, and students can receive partial credit for providing a correct response to Part One or for providing one or more correct responses in Part Two. The student is awarded one raw score point for choosing each correct response. Incorrect response choices, or distractors, in both Part One and Part Two typically represent some kind of misinterpretation, predisposition, unsound reasoning, or casual reading of the item and/or stimuli.

SHORT-ANSWER ITEMS (GRADE 3)

Constructed response tasks such as the short-answer questions included on the assessment for Grade 3 require written responses. These items are designed to address comprehension of text in ways that multiple-choice items cannot. These short written responses require about five minutes per item and allow a student to prepare an answer using supporting details or examples derived from the text. Prior to 2013, these test questions were called “open-ended” items due to the many possible responses students could construct compared to the four static options available in a multiple-choice item. These items began to be labeled as short-answer items during the 2013 administration. The shift in labeling, from “open-ended” to “short-answer,” was implemented to draw a greater contrast to the new “Text-Dependent Analysis” questions which require substantial student writing. By comparison, responses to the short-answer items are simpler and require less explication and almost no analysis.

The reading short-answer items are scored on a 0–3-point scale using an item-specific scoring guideline. This scale is consistent with the scale used on the National Assessment of Educational Progress (NAEP). The change from the former 0–4-point scale improves the alignment with the types of tasks required. Each task is text-dependent and is carefully constructed with the scoring guideline reflecting the task requirements. All item-specific scoring guidelines are based on the “General Scoring Guidelines for Short-Answer Reading Items.” The general guidelines describe a hierarchy of responses, which represent the four score levels. See Appendix A or the *English Language Arts Item and Scoring Samplers* available on the PDE website.

TEXT-DEPENDENT ANALYSIS ITEMS (GRADES 4–8)

Text-dependent analysis questions require students to draw on basic writing skills while inferring and synthesizing information from a passage or passage set they have read during the test event, in order to develop a comprehensive, holistic essay response. Both Literature and Informational Texts are addressed through this item type. The demand required of a student’s reading and writing skills in response to a TDA coincides with the similar demands required for a student to be college and career ready. The essay responses developed for this item type require approximately thirty minutes. These items are reported under the Text-Dependent Analysis Reporting Category, which is found in the Reporting Cluster of the same name.

The text-dependent analysis items are scored on a 1–4-point scale using the holistic “PSSA Text-Dependent Analysis Scoring Guidelines.” The TDA scoring guidelines describe a hierarchy of responses, which represent the four score levels, and include comprehension, writing, and analysis skills. See Appendix A or the *English Language Arts Item and Scoring Samplers* available on the PDE website.

WRITING PROMPTS

At each grade level, students respond to writing prompts developed to measure composition of writing as specified in the Pennsylvania Core Standards for Text Types and Purposes. A student response to a prompt requires approximately 30 minutes per prompt, though students are allowed more time to finish their responses if necessary.

The writing prompts were field tested in a standalone field test in February 2013 for Grades 3, 4, and 5 and in February 2014 for Grades 6, 7, and 8. Prompt modes and prompts were spiraled across the total number of available forms. Spiraling is accomplished by administering each student one of many available field test prompts in a sequential manner. For example, the first student received Prompt 1, the second student Prompt 2, and so

on until every prompt was administered. If there were more students than prompts, the sequence was repeated, starting with the first prompt until every student was assigned a prompt. This process ensured that each prompt was administered to approximately equal and representative student populations in regard to demographics like gender, ethnicity, school size, and location in the state.

With the transition to the Pennsylvania Core Standards, students are expected to receive instruction in all three modes of writing at all grade levels, and students may be assessed in any of the three modes at each grade level. These modes include Narrative, Informative/Explanatory, and Opinion (Grades 3–5) or Argumentative (Grades 6–8). Beginning with the operational assessment in 2015, students respond to one pre-selected operational prompt chosen from across the three modes. See Table 2–2 for more information about the modes selected for use during the 2015 administration.

The responses to writing prompts are scored on a 1–4-point scale using the mode-specific holistic scoring guidelines. These writing prompt scoring guidelines describe a hierarchy of responses, which represent the four score levels, and include mode-specific writing skills as well as language conventions. See Appendix A or the *English Language Arts Item and Scoring Samplers* available on the PDE website.

PASSAGE COMPLEXITY

The Pennsylvania Core Standards require students to read increasingly complex texts with greater independence and proficiency as they progress toward college- and career-readiness. DRC has worked with PDE to develop a process that measures (1) the quantitative evaluation of the text, and (2) the qualitative evaluation of the text that is reported out on a passage placemat. In addition, a third component, matching reader to text and task, is also taken into consideration during passage evaluation and teacher committee reviews.

QUANTITATIVE EVALUATION

Evaluating the complexity of a passage is essentially a judgmental process by individuals familiar with the classroom context and what is developmentally and linguistically appropriate for students at a given grade level. Although readability indices will be computed and made available on the passage placemat for each passage, we believe that these indices measure different aspects of readability and can result in various interpretations. Because no readability formula is perfect, qualitative measures have been implemented to help determine placement and appropriateness for passages used in the Pennsylvania assessments. These measures include: 1) rubric-based qualitative evaluations, and 2) teacher content review committees to provide expert opinions on grade-level appropriateness as part of matching the reader to text and task considerations.

QUALITATIVE EVALUATION

Rubrics provide the qualitative measures for literary and informational passages. As indicated on these placemats, the quantitative measures suggest the appropriate grade band of the text, while the qualitative rubrics pinpoint the specific grade level. These rubrics provide a powerful and comprehensive way of evaluating a range of stimulus materials that cover the literary and informational scope outlined in the Pennsylvania Core Standards. Passages selected for the Pennsylvania assessments should have evidence of their complexity determination and grade-level placement, based on both quantitative and qualitative measures as specified above.

SCIENCE ASSESSMENT MEASURES

The PSSA science assessment has four major reporting categories: The Nature of Science, Biological Sciences, Physical Sciences, and Earth and Space Sciences. These categories are similar to those used by the National Assessment of Educational Progress (NAEP) and The Third International Mathematics and Science Study (TIMSS). However, the PSSA organizes the categories differently. The science assessment anchors cover seventeen major categories from two sets of standards: Science and Technology Standards (3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, and 3.8) and Environment and Ecology Standards (4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, and 4.9).

The Assessment Anchors are organized into four classifications, as listed below.

- A = Nature of Science
- B = Biological Sciences
- C = Physical Sciences
- D = Earth and Space Sciences

These four reporting categories are used in both grades four and eight. In addition to these reporting categories, there are additional Assessment Anchors for each grade level. The first letter of each Assessment Anchors represents the reporting category, and the second letter represents the Assessment Anchors. These Assessment Anchors are listed below.

- A. The Nature of Science
 - S.A.1. Reasoning and Analysis
 - S.A.2. Processes, Procedures, and Tools of Scientific
 - S.A.3. Systems, Models, and Patterns
- B. Biological Sciences
 - S.B.1. Structure and Function of Organisms
 - S.B.2. Continuity of Life
 - S.B.3. Ecological Behavior and Systems
- C. Physical Sciences
 - S.C.1. Structure, Properties and Interactions of Matter and Energy
 - S.C.2 Forms, Sources, Conversions, and Transfer of Energy
 - S.C.3 Principles of Force and Motion
- D. Earth and Space Sciences
 - S.D.1 Earth Features and Processes that Change Earth and Its Resources
 - S.D.2 Weather, Climate, and Atmospheric Processes
 - S.D.3 Composition and Structure of the Universe

The science assessment employs two types of test items: multiple-choice and open-ended. These item types assess different levels of knowledge and provide different kinds of information about science achievement. The design of the operational 2016 PSSA for science achieves a reasonable balance between the two item types. Concepts include

SCIENCE MULTIPLE-CHOICE ITEMS

The majority of the science items included on the PSSA are multiple-choice (selected-response) items, either as standalone multiple-choice items or as scenario-based multiple-choice items. (Scenario-based multiple-choice items are found in Grade 8 only.) Multiple-choice items are especially efficient for measuring a broad range of content. In the PSSA science assessment, each multiple-choice item has four response options, only one of which is correct. The student is awarded one point for choosing the correct response. Distractors typically represent incorrect concepts, incorrect logic, or incorrect application of a scientific principle.

Multiple-choice items are used to assess a variety of skill levels, from short-term recall of facts to the application of science content. PSSA items involving application emphasize the requirement to utilize science content to find an answer rather than simply recalling information from memory.

OPEN-ENDED ITEMS FOR SCIENCE

At all grades, standalone open-ended science items require students to read a description of a scientific problem and to develop an appropriate solution. Standalone open-ended items require about five minutes per task.

Open-ended tasks are especially useful for measuring students' skills in science. These tasks may present real-life situations that require students to solve problems using science abilities learned in the classroom. Students must read a task carefully, identify the necessary information, devise a method of solution, enter the solution directly into the answer document, and when required, offer an explanation. This provides insight into students' science knowledge, abilities, and reasoning processes.

The open-ended science items are scored on a 0–2-point scale with an item-specific scoring guideline, and each task is carefully constructed with a scoring guideline reflecting the task requirements. The general guidelines describe a hierarchy of responses, which represent the three score levels. Each item-specific scoring guideline outlines the requirements at each score point, and each item-specific scoring guideline is based on the "Science Scoring Guidelines for Open-Ended Items." See Appendix A or the *Science Item and Scoring Samplers* available on the PDE website.

SCIENCE SCENARIOS FOR GRADE 8

In addition to standalone multiple-choice and open-ended items, the science assessment includes scenarios at Grade 8. In consideration of the multidisciplinary and interdisciplinary nature of science content, science scenarios create stronger connections between The Nature of Science/Science Content and the multiple-choice items associated with a scenario. As a result, science scenarios allow the assessment to efficiently address and utilize the connections among the science content domains. A science scenario contains text, graphics, charts, and/or tables and uses these elements to describe the results of a class project, an experiment, or other similar research. Students use the information found in a science scenario as a platform from which to answer multiple-choice questions. Scenarios and questions reach beyond simple fact recollection; they are designed to challenge students to think and to apply the knowledge and skills learned in their classrooms. Scenarios are designed to reflect multi-dimensional classroom activities that incorporate higher cognitive levels of understanding. Science scenarios challenge students to interpret stimulus content and to apply existing knowledge to new data, while using science knowledge and process skills to arrive at their answers.

CHAPTER THREE: ITEM DEVELOPMENT PROCESS

The core portion of the 2016 PSSA operational administration is made up of items that were field tested primarily in the 2015 PSSA administration with the exception of mathematics and English language arts in Grades 3, 4, and 5, which also include items that were field tested in the 2014 PSSA administration. Therefore, the activities that led to the 2016 PSSA operational administration began with the development of the test items that appeared in the field test portion of the 2014 operational administration. In turn, items that appeared on the field test portion of the 2014 operational administration were developed during and prior to 2013. (See Table 3–1 for a graphic representation of the basic process flow and overlap of the development cycles.)

Table 3–1. General Development Timeline Pattern of the PSSA

Operational Admin Year	2011	2012	2013	2014	2015	2016
2013	Initial Item Development →	Field Test →	Operational Core Admin with embedded equating block items→	Core-to-Core Link		
2014		Initial Item Development →	Field Test →	Operational Core Admin with embedded equating block items→	Core-to-Core Link	
2015			Initial Item Development →	Field Test →	Operational Core Admin with embedded equating block items ¹	Core-to-Core Link
2016				Initial Item Development →	Field Test →	Operational Core Admin with embedded equating block items

¹ Core-to-core links did not appear on the 2015 assessments for mathematics and ELA.

Table 3–2. General Timeline Associated with 2013 and 2014 Field Test and 2015–2016 Operational Assessment of ELA and Mathematics at Grades 3, 4, 5, 6, 7, and 8

Time Frame	Assessment	Activity
January 2012– July 2012	'13 FT for '15 OP	Item development for items to embed in 2013 operational test (Grades 3–5 only)
July 2012	'13 FT for '15 OP	Item review for the embedded field test in 2013 operational assessment (Grades 3–5 only)
September 2012– January 2013	'13 OP & '13 FT for '15 OP	Forms construction for 2013 operational assessment with embedded field test (Grades 3–5 only)
January 2013– June 2013	'14 FT for '15 OP	Item development for items to embed on 2014 operational assessment
February 2013	'13 FT for '15 OP	2013 standalone field test for ELA: Writing Grades 3–5
March 2013–May 2013	'13 FT for '15 OP	2013 embedded field test in 2013 operational test (Grades 3–5 only)
June 2013	'14 FT for '15 OP	Item review for the embedded field test in 2014 operational assessment
July 2013	'13 FT for '15 OP	Statistical review of 2013 field tested items (Grades 3–5 only)
September 2013– January 2014	'14 OP & '14 FT for '15 OP	Forms construction for 2014 operational assessment
January 2014– July 2014	'15 FT for '16 OP	Item development for items to embed in 2015 operational test
February 2014	'14 FT for '15 OP	2014 standalone field test for ELA: Writing Grades 6–8
April 2014–May 2014	'14 OP & '14 FT for '15 OP	2014 embedded field test in 2014 operational assessment
June 2014	'15 FT for '16 OP	Item review for the embedded field test in 2015 operational assessment
July 2014	'14 FT for '15 OP	Statistical review of 2014 field tested items
September 2014– January 2015	'15 OP & '15 FT for '16 OP	Forms construction for 2015 operational assessment
April 2015–May 2015	'15 OP & '15 FT for '16 OP	2015 operational assessment
January 2015– July 2015	'15 FT for '16 OP	Item development for items to embed in 2016 operational test
April 2015–May 2015	'14 OP & '14 FT for '15 OP	2015 embedded field test in 2015 operational assessment
June 2015	'15 FT for '16 OP	Item review for the embedded field test in 2015 operational assessment
July 2015	'14 FT for '15 OP	Statistical review of 2015 field tested items
September 2015– January 2016	'16 OP & '16 FT for '17 OP	Forms construction for 2016 operational assessment
April 2016–May 2016	'16 OP & '16 FT for '17 OP	2016 operational assessment

MATHEMATICS AND ENGLISH LANGUAGE ARTS

A series of major activities took place from 2011 through 2015 that led to the 2016 PSSA in mathematics and ELA that is aligned to the Pennsylvania Core Standards. These activities include the development of the Pennsylvania Core Standards Assessment Anchors and Eligible Content; test item development; content review; bias, fairness, and sensitivity review; field testing of items in spring 2013, 2014, and 2015; item review with data; and final selection of items to compose the 2015 PSSA.

These activities are described in some detail in this chapter as well as in Chapters Four and Five. It should also be noted that test items for the 2013 and 2014 field tests were developed by Data Recognition Corporation (DRC) and WestEd.

TEST CONTENT BLUEPRINT FOR 2016 MATHEMATICS AND ENGLISH LANGUAGE ARTS ASSESSMENTS

The 2016 PSSA is based on the Pennsylvania Core Standards. The 2016 PSSA reflects the Assessment Anchors (PDE 2013), which were designed as a means of improving the articulation of curricular, instructional, and assessment practices. The Assessment Anchors serve to clarify the standards assessed on the PSSA and to communicate assessment limits, or the range of knowledge and skills from which the PSSA was designed. Relevant to item development are the refinement and clarification embodied in the Assessment Anchors.

The Assessment Anchors aligned to the Pennsylvania Core Standards were developed during 2011; items aligned to these Assessment Anchors were field tested in 2013 for Grades 3, 4, and 5 and in 2014 for Grades 6, 7, and 8. The PSSA for Grades 3 through 8 in 2016 followed a revised blueprint and testing plan to reflect the new Assessment Anchors and reporting categories.

OPERATIONAL LAYOUT FOR 2016 MATHEMATICS

The mathematics PSSA plan was developed through the collaborative efforts of Data Recognition Corporation (DRC) and PDE. At Grades 4–8, the mathematics assessments are presented in one test booklet and one separate answer booklet. The test booklet contains multiple-choice items. The answer booklet contains scannable pages for multiple-choice (MC) responses, open-ended (OE) mathematics items with response spaces, and demographic data collection areas. At Grade 3, the mathematics assessment is presented in one integrated test/answer booklet. Each MC item is worth 1 point. Mathematics OE items receive a maximum of 4 points (on a scale of 0–4). Each test form contains common items (identical on all forms), along with equating items and embedded field test items. The common items consist of a set of core items taken by all students. The embedded field test items are unique, in most instances, to a form. That is, there can be instances in which an embedded field test item appears on more than one form.

The 2016 PSSA has nine field test forms per grade with a normal core. All of the forms contain the common items identical for all students and sets of generally unique field test items.

Tables 3–3 and 3–4 display the test design for mathematics for each form. The column entries for these tables denote the following:

- Grade level
- Number of unique common, or core, MC items
- Number of psychometric use (equating block) MC items
- Number of embedded MC field test items
- Number of unique common, or core, OE items
- Number of embedded OE field test items
- Total number of MC and OE items in the form
- Total number of operational points (derived from Core MC and Core OE only) for producing a student score

Table 3–3. Mathematics Test Plan 2016 per Operational Form

Grade	Total Core MC (all forms)	Total Psychometric Use MC (all forms)*	Total Embedded Field Test MC (all forms)	Total MC (Core, PS Use, & Field Test) positions (all forms)	Total Core 4 point OE (all forms)	Total Embedded Field Test OE (all forms)	Total OE (Core, PS Use, & Field Test) (all forms)	Total No. of Items per Op. Form MC/OE	Total No. of Core Points per Op. Test
3	60	18	90	168	3	9	12	72/4	72
4	60	18	90	168	3	9	12	72/4	72
5	60	18	90	168	3	9	12	72/4	72
6	60	18	90	168	3	9	12	72/4	72
7	60	18	90	168	3	9	12	72/4	72
8	60	18	90	168	3	9	12	72/4	72

* Psychometric Use is generally for equating purposes. In 2015, these items were used as placeholders only. Some of the psychometric use items may not be unique.

Table 3–4. Mathematics Operational Core Test Plan 2016

Grade	Unique Core MC per Form	Unique Core 4 point OE per Form	Total Number of Core Items (MC/OE)	Total Core Points per Test
3, 4, 5, 6, 7, and 8	60	3	60/3	72

The mathematics core was built from items appearing in the embedded field test positions from the 2015 embedded field test or from the 2014 embedded field test (only for Grades 3–5). For more information concerning the process used to convert the operational layout into forms (i.e., form construction), see Chapter Six. For more information about operational layout across forms and across years (i.e., form equivalency) see Chapter Ten.

OPERATIONAL LAYOUT FOR 2016 ENGLISH LANGUAGE ARTS

The English language arts PSSA plan was developed through the collaborative efforts of Data Recognition Corporation (DRC) and PDE. At Grades 4–8, the English language arts assessments are combined in one test booklet and one separate answer booklet. The test booklet contains standalone multiple-choice items, a writing prompt with a mode-specific writer’s checklist, and reading passages with multiple-choice and evidence-based selected-response items. The answer booklet contains scannable pages for standalone and passage-based multiple-choice (MC) responses, evidence-based selected-response (EBSR) responses, response spaces for the writing prompt, text-dependent analysis questions with a writer’s checklist and response spaces, and demographic data collection areas. At Grade 3, the English language arts assessment is presented in one integrated test/answer booklet.

Each MC item is worth 1 point. Each EBSR item is worth either 2 or 3 points, depending upon the number of responses students are asked to provide. Each writing prompt is worth a maximum of 4 points (on a scale of 1–4). In Grade 3, reading short-answer (SA) items receive a maximum of 3 points (on a scale of 0–3). In Grades 4–8, text-dependent analysis (TDA) items receive a maximum of 4 points (on a scale of 1–4). Each test form contains common items (identical on all forms), along with placeholder items (which will be replaced with equating items in future administrations) and embedded field test items. The common items consist of a set of core items taken by all students. The embedded field test items are unique, in most instances, to a form. That is, there can be instances in which an embedded field test item appears on more than one form.

The 2016 PSSA had nine field test forms per grade with a normal core, as well as unscored placeholder items. All of the forms contain the common items identical for all students and sets of generally unique field test items.

Table 3–5 displays the test design for English language arts for each form. The column entries for these tables denote the following:

- Grade level
- Number of unique common, or core, MC and EBSR items
- Number of psychometric use (equating block) MC items
- Number of embedded MC and EBSR field test items
- Number of unique common, or core, WP and SA or TDA items
- Number of embedded SA or TDA field test items
- Total number of MC, EBSR, WP, and SA or TDA items in the form
- Total number of operational points (derived from Core MC and EBSR and Core WP and SA or TDA only) for producing a student score

Table 3–5. ELA Test Plan 2016 per Operational Form

Grade	Selected Response Passage-Based Multiple Choice (MC) Core	Selected Response Passage-Based Multiple Choice (MC) Psychometric Use*	Selected Response Passage-Based Multiple Choice (MC) Embedded FT	Selected Response Stand Alone MC Core	Selected Response Stand Alone MC Psychometric Use*	Evidence-Based Selected Response (EBSR) Core	Evidence-Based Selected Response (EBSR) Embedded FT	Constructed Response Passage-Based Short-Answer (SA) Core	Constructed Response Passage-Based Short-Answer (SA) Embedded FT	Constructed Response Prompt (WP) Core**	Constructed Response Text Dependent Analysis (TDA) Core**	Constructed Response Text Dependent Analysis (TDA) Core Embedded FT	Total Core Items	Total Core Points (Raw)	Total Core Points (Weighted)
3	20 (4 pass.)	6 (1 pass.)	8 (1 pass.)	18	2	4	2	2	1	1	0	0	42 SR 3 CR	58	62
4	23 (4 pass.)	6 (1 pass.)	8 (1 pass.)	18	2	6	2	0	0	1	1	1	47 SR 2 CR	64	84
5	23 (4 pass.)	6 (1 pass.)	8 (1 pass.)	18	2	6	2	0	0	1	1	1	47 SR 2 CR	64	84
6	23 (4 pass.)	6 (1 pass.)	8 (1 pass.)	18	2	6	2	0	0	1	1	1	47 SR 2 CR	64	84
7	23 (4 pass.)	6 (1 pass.)	8 (1 pass.)	18	2	6	2	0	0	1	1	1	47 SR 2 CR	64	84
8	23 (4 pass.)	6 (1 pass.)	8 (1 pass.)	18	2	6	2	0	0	1	1	1	47 SR 2 CR	64	84

* Psychometric Use is generally for equating purposes. In 2015, these items were used as placeholders only. Some of the psychometric use items may not be unique.

** Weighted (G3: WP x 2; G4-8: WP x 3, TDA x 4)

The English language arts core for 2016 was built from items appearing in the embedded field test positions from the 2015 standalone and embedded field test or from the 2014 standalone and embedded field test (only for Grades 3–5).

For more information concerning the process used to convert the operational layout into forms (i.e., form construction), see Chapter Six. For more information about operational layout across forms and across years (i.e., form equivalency) see Chapter Ten.

TEST SESSIONS AND TIMING FOR 2016 MATHEMATICS ASSESSMENT

The testing window for the 2016 operational mathematics assessment, including make-up sessions, extended from April 18 through May 6, 2016. The mathematics assessments consisted of three sections. Test administration recommendations called for each section to be scheduled as one assessment session, although schools were permitted to combine multiple sections in a single session. Administration guidelines stipulated that the sections be administered in the sequence in which they were printed in the test booklets. Table 3–6 outlines the assessment schedule and estimated times for each section, as well as the number and types of items tested for each grade level. The estimated Student Testing Times shown below do not include time for administrative tasks that occur during the pre- and post-administration activities. These times are estimated separately. Times are approximate and are supplied to test administrators for scheduling purposes only.

Table 3–6. Mathematics—2016 Administration and Testing Times

Test Section	Administration Suggested Times (Total In Minutes)	Student Testing (In Minutes)	Gr 3 Number of Items and Item Type	Gr 4 Number of Items and Item Type	Gr 5 Number of Items and Item Type	Gr 6 Number of Items and Item Type	Gr 7 Number of Items and Item Type	Gr 8 Number of Items and Item Type
1	70 to 85	55 to 65	24 MC 2 CR					
2	65 to 80	50 to 60	24 MC 1 CR					
3	65 to 80	50 to 60	24 MC 1 CR					

*MC=Multiple Choice, CR=Constructed Response

During the assessment, students may request an extended assessment period if they indicate that they have not completed the task. Such requests are granted if the test administrator finds the request to be educationally valid. See Chapter Seven for more information about testing sessions.

TEST SESSIONS AND TIMING FOR 2016 ENGLISH LANGUAGE ARTS ASSESSMENT

The testing window for the 2016 operational ELA assessment, including make-up sessions, extended from April 11 through May 6, 2016. The ELA assessment consisted of four sections. Test administration recommendations called for each section to be scheduled as one assessment session, although schools were permitted to combine multiple sections in a single session. Administration guidelines stipulated that the sections be administered in the sequence in which they were printed in the test booklets. Table 3–7 outlines the assessment schedule and estimated times for each section, as well as the number and types of items tested for each grade level. The estimated Student Testing Times shown below do not include time for administrative tasks that occur during the pre- and post-administration activities. These times are estimated separately. Times are approximate and are supplied to test administrators for scheduling purposes only.

Table 3–7. English Language Arts—2016 Administration and Testing Times

Test section & Content	Administration Suggested Times (Total In Minutes)	Student Testing (In Minutes)	Gr 3 Number of Items and Item Type	Gr 4 Number of Items and Item Type	Gr 5 Number of Items and Item Type	Gr 6 Number of Items and Item Type	Gr 7 Number of Items and Item Type	Gr 8 Number of Items and Item Type
1 ELA: Writing	70 to 85	55 to 65	20 MC 1 WP					
2 ELA: Reading	55 to 95	40 to 75	12 MC/ EBSR 1 SA	22 MC/ EBSR	23 MC/ EBSR	23 MC/ EBSR	22 MC/ EBSR	22 MC/ EBSR
3 ELA: Reading	60 to 100	45 to 80	16 MC/ EBSR 1 SA	16 MC 1 TDA				
4 ELA: Reading	55 to 80	40 to 60	12 MC/ EBSR 1 SA	7 MC/ EBSR 1 TDA	6 MC/ EBSR 1 TDA	6 MC/ EBSR 1 TDA	7 MC/ EBSR 1 TDA	7 MC/ EBSR 1 TDA

*MC=Multiple Choice, WP=Writing Prompt, EBSR=Evidence Based Selected Response, TDA=Text Dependent Analysis, SA=Short Answer

During the assessment, students may request an extended assessment period if they indicate that they have not completed the task. Such requests are granted if the test administrator finds the request to be educationally valid. See Chapter Seven for more information about testing sessions.

REPORTING CATEGORIES AND POINTS DISTRIBUTIONS FOR 2016 MATHEMATICS AND ENGLISH LANGUAGE ARTS ASSESSMENTS

The content blueprints for the PCS-based mathematics assessment are shown in the following table. The blueprint is organized around four thematic Reporting Clusters (Numbers and Operations, Algebraic Concepts, Geometry, and Data Analysis and Probability) based on the expressed emphasis contained within the PCS. Each cluster is broken down into Reporting Categories that are associated with specific grades or grade-spans. The corresponding Reporting Categories are as follows (grade associations are shown in parentheses):

- A = Numbers and Operations
 - A-T = Numbers and Operations in Base Ten (Grades 3–5)
 - A-F = Numbers and Operations – Fractions (Grades 3–5)
 - A-N = The Number System (Grades 6–8)
 - A-R = Ratios and Proportional Relationships (Grades 6, 7)
- B = Algebraic Concepts
 - B-O = Operations and Algebraic Thinking (Grades 3–5)
 - B-E = Expressions and Equations (Grades 6–8)
 - B-F = Functions (Grade 8)
- C = Geometry
 - C-G = Geometry (Grades 3–8)
- D = Data Analysis and Probability
 - D-M = Measurement and Data (Grades 3–5)
 - D-S = Statistics and Probability (Grades 6–8)

Table 3–8. Mathematics Reporting Categories

Reporting Category	Grade 3	Grade 4	Grade 5	Reporting Category	Grade 6	Grade 7	Reporting Category	Grade 8
A-T	14–17%	18–22%	24–28%	A-N	18–22%	14–17%	A-N	14–17%
A-F	14–17%	20–25%	26–30%	A-R	17–21%	24–28%	B-E	30–35%
B-0	26–32%	24–28%	14–17%	B-E	26–30%	24–28%	B-F	20–25%
C-G	14–17%	14–17%	14–17%	C-G	14–17%	18–22%	C-G	17–21%
D-M	26–32%	17–21%	17–21%	D-S	18–22%	14–17%	D-S	14–17%
Total	100%	100%	100%	Total	100%	100%	Total	100%

The content blueprints for the PCS-based ELA assessment (beginning with the 2015 PSSA administration) are shown in the following table. The blueprints are organized around three Reporting Clusters (Reading, Writing, and TDA) based on the expressed emphasis contained within the PCS. As stated in the released PDE Assessment Anchor and Eligible Content documents, the Reporting Categories are as follows:

- A = Literature Text
- B = Informational Text
- C = Writing
- D = Language
- E = Text Dependent Analysis

In addition to the above, the first two Reporting Categories (Literature Text and Informational Text) are understood to be the “Genre Reporting Categories.” The Genre Reporting Categories A and B for ELA will be mapped as part of a dual-alignment into Core Competencies Reporting Categories. There are three themes prevalent throughout the PCS-ELA Standards, and these themes appear in both Literature Text and Informational Text that will appear on the PCS-based PSSA ELA test. The following table shows how the results of specific PCS-based Assessment Anchors and Eligible Content will be mapped to provide for a second layer of reporting. These three additional (dual) Reporting Categories are as follows:

- A-K/B-K: Key Ideas and Details [Key Ideas]
- A-C/B-C: Craft and Structure, and Integration of Knowledge and Ideas [CSI]
- A-V/B-V: Vocabulary Acquisition and Use [Vocabulary]

Table 3–9. Reading Reporting Categories

Cluster	Reporting Category	Gr 3	Gr 4	Gr 5	Gr 6	Gr 7	Gr 8
Reading	A	24–34%	18–27%	18–27%	18–27%	18–27%	18–27%
Reading	B	24–34%	18–27%	18–27%	18–27%	18–27%	18–27%
Writing	C*	13%	14%	14%	14%	14%	14%
Writing	D	29%	21%	21%	21%	21%	21%
TDA	E*	NA	19%	19%	19%	19%	19%
	All Areas Total	100%	100%	100%	100%	100%	100%

*Reflect the impact of weighted values

ASSESSMENT ANCHOR CONTENT STANDARDS SUBSUMED WITHIN REPORTING CATEGORIES FOR 2016 MATHEMATICS AND ENGLISH LANGUAGE ARTS ASSESSMENTS

For mathematics, there are four classifications that are used throughout the grade levels. In addition to these classifications, there are five Reporting Categories for each grade level. Within those Reporting Categories are Assessment Anchors that represent categories of subject matter (skills and concepts) that anchor the content of the PSSA. The Assessment Anchors differ across grades. The number of Assessment Anchors in each grade is shown in the list below.

- Grade 3: 10 Assessment Anchors
- Grade 4: 12 Assessment Anchors
- Grade 5: 11 Assessment Anchors
- Grade 6: 9 Assessment Anchors
- Grade 7: 9 Assessment Anchors
- Grade 8: 10 Assessment Anchors

For English language arts in Grade 3, there are eleven Assessment Anchors aligned to the Pennsylvania Core Standards. Within each of Reading Literature and Informational text, four Assessment Anchors pertain to Key Ideas and Details; Craft and Structure; Integration of Knowledge and Ideas; and Vocabulary Acquisition and Use. Within Writing is an Assessment Anchor for Text Types and Purposes which is further subdivided into three Anchor Descriptors for the three modes of writing. Two additional Assessment Anchors represent the language skills and concepts of Conventions of Standard English and Knowledge of Language. These same Assessment Anchors are found in Grades 4–8 in addition to Evidence-Based Analysis of Text, which makes use of both Literature and Informational texts.

Mathematics and ELA scores are based on the core (common) sections. Also reported are the student's mathematics and ELA performance levels. See Appendix B for a summary by grade level and content.

SCIENCE

In 2003, the existing Science, Technology, Environment, and Ecology (STEE) test was deferred, and PDE began efforts to develop a new science assessment. In the winter of 2006, a series of cognitive labs or item pilots were conducted across Pennsylvania with the primary focus of ascertaining language and contextual issues within the draft open-ended test items (Grade 4), scenario-based multiple-choice items (Grades 8 and 11), and scenario-based open-ended items (Grade 11), as well as determining the relative difficulty of the test items, the time required to complete the individual tasks, and the opportunity to know factors related to the implementation of the new science Assessment Anchors and Eligible Content by the participating schools. (See the section on the science cognitive labs discussed later in this chapter.)

Following the series of successful cognitive labs or item pilots, DRC developed another set of test items for the proposed voluntary, standalone field test. During the development phase, PDE made the determination to change the designation of the field test from a voluntary assessment to a census-based assessment. Leading up to the administration of the standalone field test, both content review and bias, fairness, and sensitivity reviews were conducted in Pennsylvania with Pennsylvania educators. In the spring of 2007, the initial standalone field test was administered to the census populations at Grades 4, 8, and 11, followed by a rangefinding for the open-ended items. After the scoring was completed, an item review with data was conducted for the field test items administered in 2007. Table 3–10 shows a timeline for development of the science assessment.

Table 3–10. Science Development Implementation Timeline

Year	Event
2003	Science, Technology, Environment, and Ecology test put on hold
2004–2005	New assessment plan developed by PDE
2006	Item Pilot (Cognitive Labs) to try out scenario-based science items
2007	Initial Standalone Field Test for Grades 4, 8, and 11
2008	Initial Operational Administration with core, matrix, and embedded field test positions
2009	Second Operational Administration with core, equating block, and embedded field test positions
2010–2016	Continuation of Operational Administration with core, equating block, and embedded field test positions

TEST CONTENT BLUEPRINT FOR THE 2016 OPERATIONAL SCIENCE TEST

The PSSA is based on the Pennsylvania Academic Standards as defined by the Eligible Content. The PSSA science assessment for 2016 reflects the Assessment Anchor Content Standards, which were designed as a means of improving the articulation of curricular, instructional, and assessment practices. The Assessment Anchors serve to clarify the Academic Standards assessed on the PSSA and to communicate assessment limits, or the range of knowledge and skills from which the PSSA would be designed. Relevant to item development are the refinement and clarification embodied in the Assessment Anchors (PDE, 2004).

The Assessment Anchors are rooted in the Academic Standards adopted by the State Board of Education in January of 2002, and the standards—under two documents: *Science and Technology Standards* and the *Environment and Ecology Standards*—cover seventeen major categories describing what students need to know. Rather than attempting to report results for all seventeen standards, the categories are organized into only four. These categories are similar to those used by the National Assessment of Educational Progress (NEAP) and The Third International Mathematics and Science Study (TIMSS). However, the PSSA organizes the categories differently.

Achieve, Inc. conducted a preliminary review of the anchors in 2003 and produced a follow-up report on the anchors in 2005. More information about the Assessment Anchors and the Eligible Content can be found by referencing the Pennsylvania Science Assessment Anchors located on PDE’s website at www.education.pa.gov.

More information on the Assessment Anchors can be found in Chapter Two.

OPERATIONAL LAYOUT FOR 2016 SCIENCE

The ninth operational administration of the PSSA science test took place in 2016. Critical to the preparation for this operational assessment, the design of the operational assessment had to be configured to meet NCLB requirements as well as other test development and psychometric requirements. The preliminary science PSSA plan was developed in 2004 through the collaborative efforts of DRC and PDE based on the recommendations of the Pennsylvania Technical Advisory Committee (TAC). At Grades 4 and 8, the science assessment consists of one test booklet and one separate answer booklet. The test booklet contains multiple-choice items and at Grade 8 contains stimulus scenario text. The answer booklet contains scannable pages for multiple-choice (MC) responses (answer grids), open-ended (OE) items with response spaces, and demographic data collection areas.

All MC items are worth 1 point. Standalone OE items receive a maximum of 2 points (on a scale of 0–2). Each test form contains common items (that are identical on all forms) along with equating block (equating items) and embedded field test items. The common items consist of a set of core items taken by all students. The equating block items and the embedded field test items are unique, in most instances, to a form. That is, there can be instances in which an equating block or embedded field test item appears on more than one form.

At Grades 4 and 8, the 2016 PSSA science assessment is composed of 12 forms per grade. All of the forms contain common items identical for all students and sets of generally unique items that fulfill two purposes:

1. Field testing new items
2. Using items from the previous years' assessments for the purpose of linking

Tables 3–11 through 3–13 display the 2015 operational test design for science.

Table 3–11. 2016 Science Test Plan per Operational Form

Grade	No. of Unique Core MC per Op. Form	No. of Core-to-Core MC per Op. Form	No. of Equating Block MC per Op. Form	No. of Embedded FT MC per Op. Form	No. of Unique Core OE per Op. Form	No. of Core-to-Core OE per Op. Form	No. of Equating Block OE per Op. Form	No. of Embedded FT OE per Op. Form	Total No. of Items per Op. Form MC/OE	Total No. of Core Points per Op Test*
4	42	16	2	8	3 (2 pt)	2 (2 pt)	0	1 (2 pt)	68 MC/6 OE	68
8	38 + 4 scenario-based	16	2	6 + 4 scenario-based	3 (2 pt)	2 (2 pt)	0	1 (2 pt)	70 MC/6 OE	68

*Some equating block items may not be unique to each form.

Since an individual student's score is based solely on the common (or core) items, the total number of operational points is 68 for both grades. The total score is obtained by combining the points from the core MC and OE portions of the test as follows:

Table 3–12. 2016 Science Core Plan per Grade

Grade	Standalone MC Items	Scenario-based MC Items	Standalone OE Items	Scenario-based OE Items	Total Points
4	58	0	5 (2 pt)	0 (4 pt)	68
8	54	4	5 (2 pt)	0 (4 pt)	68

For more information concerning the process used to convert the operational layout into forms (i.e., form construction), see Chapter Six. For more information about operational layout across forms and across years (i.e., form equivalency), see Chapter Ten.

LINKING FOR 2016 SCIENCE ASSESSMENT

Linking provides a statistical bridge between assessment administrations. The 2016 administration is linked back to the 2015 administration through the use of linking items in the core (core-to-core linking items) and the equating block (equating items).

MULTIPLE-CHOICE ITEMS

For Grades 4 and 8, science used 16 core-to-core linking MC items and 24 equating block MC items per grade.

OPEN-ENDED ITEMS

For both grades, science used two 2-point core-to-core linking OE items and no [zero] equating block OE items per grade.

Table 3–13. 2016 Science Linking Points Plan

Grade	No. of Core-to-Core MC	No. of Equating Block MC	No. of Core-to-Core. OE	No. of Equating Block OE	Max. No. of Linking Points per Op. Test*
4	16	24*	2 (2 pt)	0	44*
8	16	24*	2 (2 pt)	0	44*

*Not all equating block items will be unique; some may appear on more than one form.

The topic of *linking* is discussed thoroughly in Chapter Fifteen.

TEST SESSIONS AND TIMING FOR 2016 SCIENCE ASSESSMENT

The testing window for the 2016 science operational assessment extended from April 25 through May 6, 2016, including make-up sessions. The science assessments consisted of two sections in each grade. Test administration recommendations call for each section to be scheduled as one assessment session, although schools are permitted to combine both sections in a single session. Administration guidelines stipulate that the sections be administered in the sequence in which they are printed in the booklets. Table 3–14 outlines the assessment schedule and estimated times for each section and the number and types of items tested for each grade level. The estimated student testing times did not include time for administrative tasks that occur during the pre- and post-administration activities.

Table 3–14. Science – 2016 Administration and Testing Times

Test section	Administration Suggested Times (Total In Minutes)	Student Testing (In Minutes)	Gr 4 Number of Items and Item Type	Gr 8 Number of Items and Item Type
1	60 to 80	45 to 60	34 MC 3 OE	35 MC 3 OE
2	60 to 80	45 to 60	34 MC 3 OE	35 MC 3 OE

During the assessment, students were allowed to request an extended assessment period if they indicated that they had not completed the task. Such requests were granted if the assessment administrator found them to be educationally valid. See Chapter Seven for more information about testing sessions.

REPORTING CATEGORIES AND POINTS DISTRIBUTIONS

The science assessment results will be reported in four categories, coded as A through D:

- A. The Nature of Science
- B. Biological Sciences
- C. Physical Sciences
- D. Earth and Space Sciences

The distribution of science items into these four categories is shown in Table 3–15.

Table 3–15. Science Reporting Categories

Grade	A: Nature of Science	B: Biological Sciences	C: Physical Sciences	D: Earth & Space Sciences
4	~50%	~17%	~17%	~17%
8	~50%	~17%	~17%	~17%

The Reporting Categories are further subdivided for specificity and Eligible Content limits. Each subdivision is coded by adding an additional numeral, such as A.1. These subdivisions are called Assessment Anchors, Descriptors (Sub-Assessment Anchors), and Eligible Content.

ASSESSMENT ANCHOR CONTENT STANDARDS SUBSUMED WITHIN REPORTING CATEGORIES FOR 2016 SCIENCE ASSESSMENT

Distributed across the four Reporting Categories are a dozen Sub-Reporting Categories. Each of the 12 Assessment Anchors exists at each grade level, with the Assessment Anchors and Eligible Content varying to reflect grade-level appropriateness. The numbers of Assessment Anchors targeted by grade level are 21 at Grade 4 and 23 at Grade 8.

Total science scores reported at the student level are based on the core (common) sections. School and district-level scores are reported at the Eligible Content level under the Assessment Anchors and are based on the core (common) positions. See Appendix B for a summary by grade level and subject.

2006 SCIENCE ITEM PILOT

Prior to the initial field test in 2007, DRC, in collaboration with PDE, conducted a science cognitive lab/item pilot in selected schools throughout the Commonwealth from February 27 through March 17, 2006. A sample of 507 students from urban, suburban, and rural school districts from across the Commonwealth participated in the PSSA Science Item Tryout Project. The impetus for this study was Pennsylvania’s response to the mandatory science assessment component of the No Child Left Behind legislation to create a rigorous science test for Grades 4, 8, and 11 by 2008. The primary purpose of the cognitive lab or item tryout was to pilot the use of the new science scenarios at Grade 8 and Grade 11 and to pilot the multiple-choice items at Grade 4.

The project involved development of science scenarios, refinement of science test items, creation of survey questions, and design of interview protocols to be administered using a cognitive laboratory technique. The cognitive laboratory technique was developed in the early 1980s through an interdisciplinary effort by survey methodologists and psychologists (Willis, 1999; Erickson & Simon, 1993). Different models of the cognitive process to solve a test item have evolved over the years, but all have four major processes in common: 1) comprehension of the question, 2) retrieval of relevant information, 3) decision process, and 4) response process (Tourangeau, 1984).

In the development and execution of the cognitive laboratory project, DRC customized the techniques employed specifically to meet PDE’s goal and expectations. The goal of the project was to gather relevant information about the thinking processes of students enrolled in science in Grades 4, 8, and 11 in order to create a better science assessment for Pennsylvania students.

LOGISTICS AND DEMOGRAPHICS

PDE provided DRC with a list of the Science, Technology, Environment, and Ecology Assessment Advisory Committee (STEEAAC) members who agreed to participate and to facilitate the PSSA Science Item Tryout Project in their respective districts. Distributed throughout Pennsylvania, participating districts provided a representative sample of students enrolled in science in Grades 4, 8, and 11 in urban, suburban, and rural schools. Participating districts are listed in Table 3–16.

Table 3–16. Participating Districts by Region

Region of Commonwealth	School District
Western	Athens Area, Grove City Area, Penn Hills, Pittsburgh Public Schools
Central	Manheim Township, Newport, State College Area, West Shore, Wilkes-Barre Area
Eastern	Haverford Township, Lower Merion, Mid-Valley, Philadelphia City SD, Upper Merion

PROCESS AND PROCEDURES FOR THE 2006 ITEM PILOT

Two parallel forms of the science assessment were designed for each grade level, with a designated administration time of thirty minutes. No attempt was made to replicate the design of a PSSA science operational test for the cognitive lab or pilot test because of testing-time limitations and the objectives of this study. The items were representative of items from each of the proposed PSSA's four reporting categories (i.e., The Nature of Science, Biological Sciences, Physical Sciences, and Earth and Space Sciences). All test items were approved by PDE before inclusion in the PSSA Science Item Tryout Project.

In Grade 4, each form of the test consisted of ten multiple-choice items, 70 percent of which included graphs, graphics, charts, or tables with relevant information associated with the item. All four reporting strands were assessed in each Grade 4 test form. In Grades 8 and 11, age/grade-appropriate science scenarios were developed. The scenarios included graphics, charts, tables, graphs, and diagrams to support the scenario text. A set of test items associated with each science scenario was developed. In Grade 8, each test form included items from all four reporting strands. In Grade 11, scenarios in test Form A assessed the biological, earth and space, and nature of science reporting strands, while test Form B assessed the physical, earth and space, and nature of science reporting strands.

Scenarios and questions reached beyond simple fact recollection; they were designed to challenge students to think and to apply knowledge and skills learned in their classrooms. The science scenarios were based on Pennsylvania Assessment Anchors and Eligible Content. Scenarios were designed to reflect multi-dimensional classroom activities that incorporate higher cognitive levels of understanding. Each scenario was stimulus-based and included passages with graphics, charts, graphs, or a combination of all three media. Science scenarios challenged students to interpret passage content while using science knowledge and process skills to determine their answers.

IMPLEMENTATION AND TEST ADMINISTRATION FOR 2006 ITEM PILOT

Two classrooms within one geographic region participated in the project each day. At least two test development specialists were present at all but one school district during the pilot study project sessions; in addition, representatives from PDE attended most sessions. The PSSA Science Item Tryout Project field work occurred during a three-week window, beginning on February 27 and concluding on March 16.

TEST DEVELOPMENT CONSIDERATIONS: ALL ASSESSMENTS

The major considerations in the item development process were the alignment to the Pennsylvania Core Standards-aligned Assessment Anchors and Eligible Content (mathematics and ELA), alignment to the Pennsylvania Academic Standards-aligned Assessment Anchors and Eligible Content (science only), grade-level appropriateness (reading/interest level, etc.), depth of knowledge, cognitive level, item/task level of complexity, estimated difficulty level, relevancy of context, rationale for distractors, style, accuracy, and correct terminology. The *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 2014) and the *Principles of Universal Design* (Thompson, Johnstone, & Thurlow, 2002) guided the development process. In addition, DRC's manual, *Fairness in Testing: Guidelines for Training on Bias, Fairness, and Sensitivity Issues* was used for developing items. All items were reviewed for fairness by bias and sensitivity committees and for content by Pennsylvania educators and field-specialists. Items were also reviewed for adherence to the Principles of Universal Design by representatives from the National Center for Educational Outcomes (NCEO). In addition, the items were reviewed for adherence to the guidelines outlined in the Pennsylvania publication *Principles, Guidelines and Procedures for Developing Fair Assessment Systems: Pennsylvania Assessment Through Themes* (PATT).

BIAS, FAIRNESS, AND SENSITIVITY: ALL ASSESSMENTS

At every stage of the item and test development process, DRC employs procedures that are designed to ensure that items and tests met Standard 7.4 of the Standards for Educational and Psychological Testing (AERA, APA, NCME, 2014).

Standard 7.4: Test developers should strive to identify and eliminate language, symbols, words, phrases, and content that are generally regarded as offensive by members of racial, ethnic, gender, or other groups, except when judged to be necessary for adequate representation of the domain.

To meet Standard 7.4, DRC employs a series of internal quality steps. DRC provides specific training for test developers, item writers, and reviewers on how to write, review, revise, and edit items for issues of bias, fairness, and sensitivity (as well as for technical quality). Training also includes an awareness of and sensitivity to issues of cultural diversity. In addition to providing *internal* training in reviewing items in order to eliminate potential bias, DRC also provides *external* training to the review panels of minority experts, teachers, and other stakeholders.

DRC's guidelines for bias, fairness, and sensitivity include instruction concerning how to eliminate language, symbols, words, phrases, and content that might be considered offensive by members of racial, ethnic, gender, or other groups. Areas of bias that are specifically targeted include, but are not limited to, stereotyping, gender, regional/geographic, ethnic/cultural, socioeconomic/class, religious, and biases against a particular age group (ageism) or persons with disabilities. DRC catalogues topics that should be avoided and maintains balance in gender and ethnic emphasis within the pool of available items and passages.

UNIVERSAL DESIGN: ALL ASSESSMENTS

As stated above, the Principles of Universal Design were incorporated throughout the item development process to allow participation of the widest possible range of students in the PSSA. The following checklist was used as a guideline:

- Items measure what they are intended to measure.
- Items respect the diversity of the assessment population.
- Items have a clear format for text.
- Stimuli and items have clear pictures and graphics.
- Items have concise and readable text.
- Items allow changes to other formats, such as Braille, without changing meaning or difficulty.
- The arrangement of the items on the test has an overall appearance that is clean and well organized.

A more extensive description of the application of the Principles of Universal Design is described in Chapter Four.

DEPTH OF KNOWLEDGE: ALL ASSESSMENTS

An important element in statewide assessment is the alignment between the overall assessment system and the state's standards. A methodology developed by Norman Webb (1999) offers a comprehensive model that can be applied to a wide variety of contexts. With regard to the alignment between standards statements and the assessment instruments, Webb's criteria include five categories, one of which deals with content. Within the content category is a useful set of levels for evaluating depth of knowledge (DOK). According to Webb (1999), "depth-of-knowledge consistency between standards and assessments indicates alignment if what is elicited from students on the assessment is as demanding cognitively as what students are expected to know and do as stated in the standards" (p. 7–8). The four levels of cognitive complexity (i.e., depths of knowledge) are as follows:

- Level 1: Recall
- Level 2: Application of Skill/Concept
- Level 3: Strategic Thinking
- Level 4: Extended Thinking

Depth-of-knowledge levels were incorporated in the item writing and review process, and items were coded with respect to the level they represented. Generally, multiple-choice items are written to DOK levels 1 and 2, evidence-based selected-response items are written to DOK levels 2 and 3, and constructed-response items are written to DOK level 3.

PASSAGE READABILITY

Evaluating the readability of a passage is essentially a judgmental process by individuals familiar with the classroom context and what is linguistically appropriate at a given grade level as described in the section on reading passage selection later in this chapter. Although various readability indices were computed and reviewed, it is recognized that such methods measure different aspects of readability and are often fraught with particular interpretive liabilities. Thus, the commonly available readability formulas were not used in a rigid way, but more informally to provide for several snapshots of a passage that senior test development staff considered along with experience-based judgments in guiding the passage selection process. In addition, passages were reviewed by committees of Pennsylvania educators who evaluated each passage for readability and grade-level appropriateness.

TEST ITEM READABILITY: ALL ASSESSMENTS

Careful attention was given to the readability of the items to make certain that the assessment focus of the item did not shift based on the difficulty of reading the item. Subject areas such as mathematics or science contain many content-specific vocabulary terms. As a result, readability formulas were not used. However, wherever it was practicable and reasonable, every effort was made to keep the vocabulary one grade level below the tested grade level for non-reading tests. There was a conscious consideration made to ensure that each test question was evaluating a student's ability to build toward mastery of the mathematics standards or the science standards versus the student's reading ability. Resources used to verify the vocabulary level were the *EDL Core Vocabularies* and the *Children's Writer's Word Book*.

In addition, every test question is brought before several different committees comprised of grade-level experts in the field of mathematics education and science education. They review each question from the perspective of the students they teach, and they determine the validity of the vocabulary used and work to minimize the level of reading required.

Vocabulary was also addressed at the Bias, Fairness, and Sensitivity Review, although the focus was on how certain words or phrases may represent a possible source of bias or issue of fairness or sensitivity.

TEST DEVELOPMENT PROCESS: ALL ASSESSMENTS

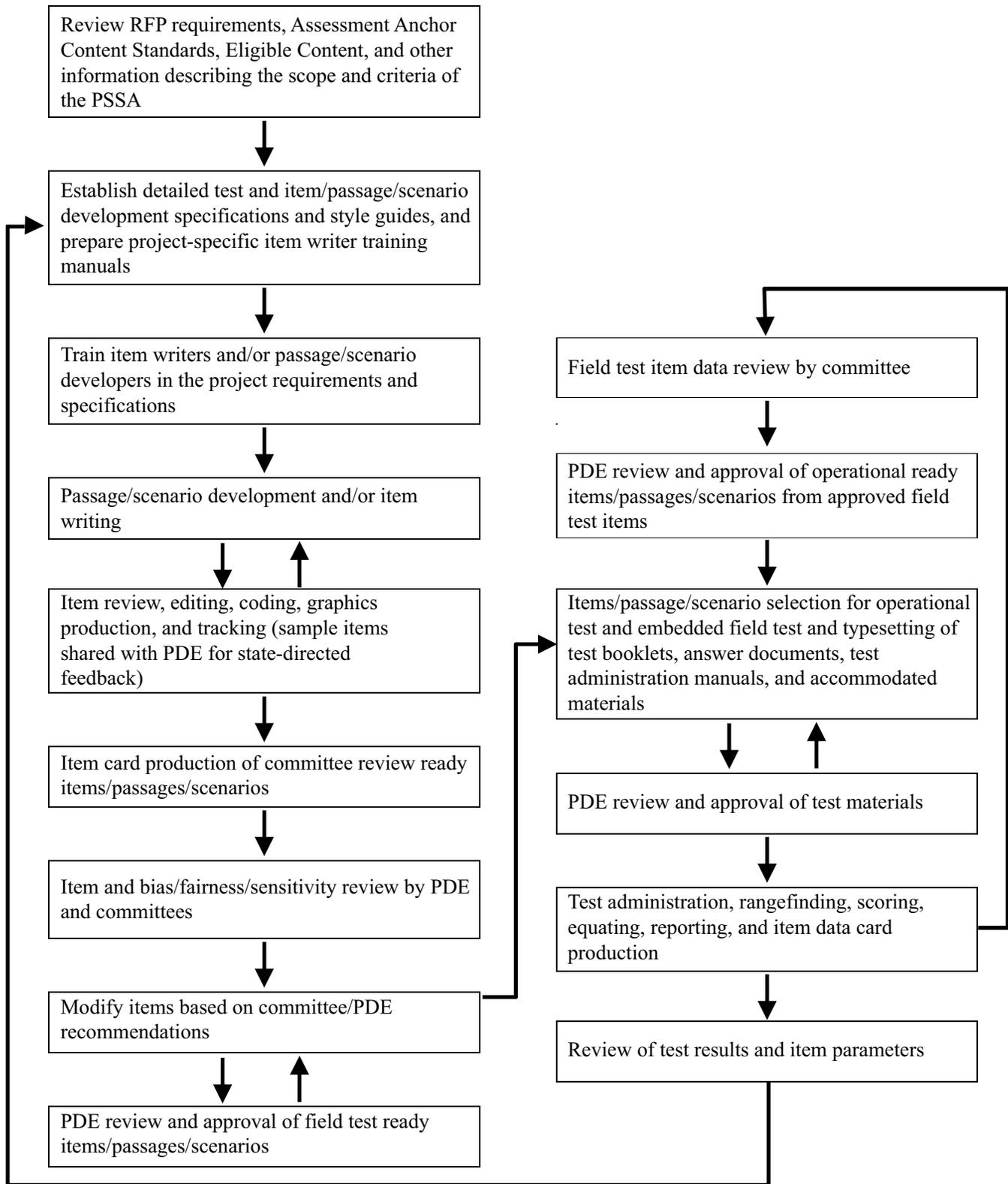
The test development process for passages, scenarios, and items followed a logical timeline, which is outlined below in Figure 3–1. On the front end of the schedule, tasks were generally completed with the goal of presenting field test candidate items to committees of Pennsylvania educators. On the back-end of the schedule, all tasks lead to the field test data review.

Figure 3–1. Item and Test Development Cycle and Timeline

Steps in Development Cycle	Timeline Before/After New Item Review		
Development planning	Fall	↓	-12 to -9 months
Reading passage selection	Fall	↓	-12 to -9 months
Item writer training	Fall/Winter	↓	-9 months
Initial item authoring	Winter/Spring	↓	-9 to -4 months
Internal reviews and PDE reviews	Spring/Summer	↕	-8 to -1 month
Bias, Fairness, and Sensitivity Review	Summer/Fall	↓	+/- 0 months
New Item Content Review	Summer/Fall	⇒	+/- 0 months
Post-review resolution and clean-up	Summer/Fall	↓	+1 to +2 months
Build test forms	Fall	↓	+2 to +4 months
Internal form reviews and PDE reviews	Fall/Winter	↕	+3 to +4 months
Form printing, packaging, and shipping	Winter/Spring	↓	+4 to +8 months
Test administration	Spring	↓	+9 months
Material/data processing, rangefinding, and scoring	Spring/Summer	↓	+10 to +12 months
Field Test Item Data Review	Summer	⇒	+12 months
Select operational items	Summer/Fall	↓	+13 to +15 months

The process flowchart in Figure 3–2 illustrates the interrelationship among the steps in the process that occur in a normal year of development (i.e., when the items for field testing are primarily from new development, as opposed to being selected from an existing item bank). In addition, a detailed process table describing the item and test development processes also appears in Appendix C.

Figure 3–2. DRC Item and Test Development Process



The following paragraphs describe the processes which lead up to the operational test in a normal round of development. These processes were used to develop all the 2013 field test items used as operational items in the 2014 administration.

ITEM DEVELOPMENT PLANNING MEETING: ALL ASSESSMENTS

Prior to the start of any item development work, DRC's test development staff meets with PDE's assessment office to discuss the test development plans for the next PSSA administration, including the test blueprint, the field test plan (including development counts), procedures, timelines, etc. With a complete development cycle lasting several years (from item authoring through field test, data review, and operational usage), the initial planning begins well in advance of the anticipated administration. For the 2015 operational administration, the initial planning meeting for the item authoring process for the 2014 field test occurred in fall 2012. Item authoring began early in 2013, with the item review meetings occurring in June 2013. See Table 3–2.

ITEM WRITER TRAINING: ALL ASSESSMENTS

Item writers were selected and trained for the content areas of mathematics, English language arts, and science. Qualified writers were college graduates with teaching experience and a demonstrated base of knowledge in the content area. Many of these writers were content assessment specialists and curriculum specialists. The writers were trained individually and had previous experience in writing selected-response and constructed-response items. Prior to developing items for the PSSA, the cadre of item writers was trained with regard to the following:

- Pennsylvania Core Standards, Assessment Anchors, and Eligible Content (mathematics and ELA)
- Pennsylvania Academic Standards, Assessment Anchors, and Eligible Content (science)
- Webb's Four Levels of Cognitive Complexity: Recall, Basic Application of Skill/Concept, Strategic Thinking, and Extended Thinking
- General Scoring Guidelines for Each Content Area
- Specific and General Guidelines for Item Writing
- Bias, Fairness, and Sensitivity Guidelines
- Principles of Universal Design
- Item Quality Technical Style Guidelines
- Reference Information
- Sample Items

READING PASSAGE SELECTION

The task of searching for passages was conducted by DRC professionals with classroom experience in reading/language arts. These professionals also underwent specialized training (provided by DRC) in the characteristics of acceptable passages. Guidelines for passage selection included appropriate length, text structure, density, and vocabulary for the grade level. A judgment was also made about whether the reading level required by a particular passage was at the independent level, that is, where the average student should be able to read 90 percent of words in the text independently. Passage finders were given the charge to search for a specified number of passages for each genre. Generally, at least twice as many passages as needed were sought. Most passages acquired for the 2014 field test were authentic in that they were culled from published materials. Approval to reprint was secured from the publishers as necessary. Passages underwent an internal review by several test development content editors to judge their merit with regard to the following criteria:

- Passages have interest value for students.
- Passages are grade-appropriate in terms of text complexity, vocabulary, and language characteristics.
- Passages are free of bias, fairness, and sensitivity issues.
- Passages represent different cultures.
- Passages are from a variety of sources.
- Passages are able to stand the test of time.
- Passages are sufficiently rich to generate a variety of SR and CR items.

- Passages are complete with all necessary permissions documentation.
- Passages avoid dated subject matter unless a relevant historical context is provided.
- Passages should not require students to have extensive background knowledge in a certain discipline or area to understand a text.

Once through the internal review process, those passages deemed potentially acceptable were reviewed by the Reading Content Committee and Bias, Fairness, and Sensitivity Committee for final approval.

ITEM AUTHORIZING AND TRACKING: ALL ASSESSMENTS

Initially, items are generated with software-prepared PSSA Item Cards, which allows for preliminary sorting and reviewing. Although very similar, the PSSA Item Card for Multiple-Choice Items differs from the PSSA Item Card for Evidence-Based Selected-Response Items and the PSSA Item Card for Constructed-Response Items in that the former has a location at the bottom of the card for comments regarding the distractors. Examples of these three cards are shown in Appendix D. In both instances a column against the right margin includes codes to identify the subject area, grade level, content categories, passage information (in the case of reading), item type, depth of knowledge (cognitive complexity), estimated difficulty, answer key (for MC items), and calculator use (for mathematics items).

All items undergoing field testing in 2014 were entered into the DRC Item Development and Educational Assessment System (IDEAS), which is a comprehensive, secure, online item banking system. It accommodates item writing, item viewing and reviewing, and item tracking and versioning. IDEAS manages the transition of an item from its developmental stage to its approval for use within a test form. The system supports an extensive item history that includes item usage within a form, item-level notes, content categories and subcategories, item statistics from both classical and Rasch item analyses, and classifications derived from analyses of differential item functioning (DIF). A sample IDEAS Data Card is presented in Appendix D.

INTERNAL REVIEWS AND PDE REVIEWS: ALL ASSESSMENTS

To ensure that the items produced were sufficient in number and adequately distributed across subcategories and levels of difficulty, item writers were informed of the required quantities of items. As items were written, an item authoring card was completed. It contained information about the item, such as grade level, content category, and subcategories. Based on the item writer's classroom teaching experience, knowledge of the content area curriculum, and cognitive demands required by the item, estimates were recorded for level of cognitive complexity and difficulty level. Items were written to provide for a range of difficulty.

As part of the item construction process, each item was reviewed by content specialists and editors at DRC, at WestEd, or at both companies (depending on the grade level and content). Content specialists and editors evaluated each item to make sure that it measured the intended Eligible Content and/or Assessment Anchor Content Standard. They also assessed each item to make certain that it was appropriate for the intended grade and that it provided and cued only one correct answer (MC items only). In addition, the difficulty level, depth of knowledge, graphics, language demand, and distractors were also evaluated. Other elements considered in this process included, but were not limited to, Universal Design, bias, source of challenge, grammar/punctuation, and PSSA style.

Following this internal process, items were reviewed by content specialists at the Pennsylvania Department of Education. PDE staff then consulted with DRC about any general issues or concerns (e.g., style, format, interpretation of Assessment Anchors and Eligible Content) and about edits to specific items. Following PDE's review, the items were prepared for the content review meetings conducted with Pennsylvania educators.

ITEM CONTENT REVIEW IN SUMMER 2013: ALL ASSESSMENTS

Prior to the 2014 field testing, all newly-developed test items were submitted to content committees for review. The content committees consisted of Pennsylvania educators from school districts throughout the Commonwealth of Pennsylvania, some with postsecondary university affiliations. The primary responsibility of the content committee was to evaluate items with regard to quality and content classification, including grade-level appropriateness, estimated difficulty, depth of knowledge, and source of challenge. With source of challenge, items are identified

where the cognitive demand is focused on an unintended content, concept, or skill (Webb, 2002). In addition, source of challenge may be attributed if the reason that an answer could be given results from a cultural bias, an inappropriate reading level, or a flawed graphic in an item, or if an item requires specialized, non-content related knowledge to answer. Source of challenge could result in a student who has mastered the intended content or skill answering the item incorrectly or a student who has not mastered the intended content or skill answering the item correctly. Committee members were asked to note any items with a source of challenge and to suggest revisions to remove the source of challenge. They also suggested revisions and made recommendations for reclassification of items. In some cases when an item was deleted, the committee suggested a replacement item and/or reviewed a suggested replacement item provided by the facilitators. The committee also reviewed the items for adherence to the Principles of Universal Design, including language demand and issues of bias, fairness, and sensitivity.

The content review was held June 24–26, 2013, for science, June 24–28, 2013, for ELA, and June 24–27, 2013, for mathematics. Committee members were approved by PDE, and PDE-approved invitations were sent to them by DRC. PDE also selected internal staff members for attendance. The meeting commenced with a welcome by PDE and DRC. This was followed by an overview of the test development process by DRC. PDE, along with DRC, also provided training on the procedures and forms to be used for item content review.

DRC content assessment specialists facilitated the reviews and were assisted by representatives of PDE and WestEd. Committee members, grouped by grade level and content area, worked through and reviewed the items for quality and content, as well as for the following categories:

- Assessment Anchor Alignment (classified as Full, Partial, or No)
- Content Limits (classified as Yes or No)
- Grade-Level Appropriateness (classified as At Grade Level, Below Grade Level, or Above Grade Level)
- Difficulty Level (classified as Easy, Medium, or Hard)
- Depth of Knowledge (classified as Recall, Application, Strategic Thinking)
- Appropriate Source of Challenge (classified as Yes or No)
- Correct Answer (classified as Yes or No)
- Quality of Distractors (classified as Yes or No)
- Graphics (classified as Yes or No) in regards to appropriateness
- Appropriate Language Demand (classified as Yes or No)
- Freedom from Bias (classified as Yes or No)

The members then came to a consensus and assigned a status to each item as a group: Approved, Accepted with Revision, Move to Another Assessment Anchor or Grade, or Rejected. All comments were recorded, and a master rating sheet was completed. Committee facilitators recorded the committee consensus on the Item Review Rating Sheet. A sample form and rating criteria may be found in Appendix E.

Security was addressed by adhering to a strict set of procedures. Items in binders were distributed for committee review by number and signed for by each member on a daily basis. All attendees, with the exception of PDE staff, were required to sign a confidentiality agreement. All materials not in use at any time were stored in a locked room. Secure materials that did not need to be retained after the meetings were deposited in secure barrels and the contents shredded.

BIAS, FAIRNESS, AND SENSITIVITY REVIEWS IN JUNE 2013: ALL ASSESSMENTS

Prior to 2014 field testing, all newly-developed test items for English language arts, mathematics, and science were also submitted to a Bias, Fairness, and Sensitivity Committee for review. This took place from June 3–7, 2013 and June 11–13, 2013. The committee's primary responsibility was to evaluate items with regard to bias, fairness, and sensitivity issues. They also made recommendations for changes to or deletion of items in order to remove the potential for issues of bias, fairness, and/or sensitivity. Included in the review were proposed reading passages. An expert, multi-ethnic committee composed of men and women was trained by a DRC test development lead to review items for bias, fairness, and sensitivity issues. Training materials included a manual developed by DRC

(DRC, 2003–2013). Members of the committee also had expertise with students with special needs and English Language Learners. PDE staff members were also trained and participated in the review. All mathematics, English language arts, and science items were read by a cross-section of committee members. Each member noted bias, fairness, and/or sensitivity comments on tracking sheets and on the item, if needed for clarification. Committee members individually categorized any concerns as related to ageism, disability, ethnicity/culture, gender, region, religion, socioeconomic status, or stereotyping. These categories were then the framework through which recommendations for modification or rejection of items occurred during the subsequent committee consensus process. The committee then discussed each of the issues as a group and came to a consensus as to which issues should represent the view of the committee. All consensus comments were then compiled, and the suggested actions on these items were recorded and submitted to PDE. This review followed the same security procedures as outlined above, except that the materials were locked up and stored at the DRC offices in Harrisburg. Table 3–17 shows the gender and race/ethnicity composition of the members of the bias committee who reviewed the PSSA items and passages.

Table 3–17. Demographic Composition of the 2013 Bias, Fairness, and Sensitivity Committee

Member #	Gender	Race/Ethnicity	Background
1.	Female	Hispanic American	ELL/Community Leader
2.	Male	Asian American	National Consultant/Retired Educator
3.	Female	Caucasian American	Educator/Special Education
4.	Female	Caucasian American	National Consultant/Special Education
5.	Female	Native American	Retired University Professor/Multicultural Education
6.	Male	African American	PDE Staff Member
Totals	4 Females, 2 Males	1 Hispanic American, 1 Asian American, 2 Caucasian Americans, 1 Native American, 1 African American	

The results from the Bias, Fairness, and Sensitivity Committee review of mathematics are summarized in Table 3–18.

Table 3–18. Number of Items—2013 Bias, Fairness, and Sensitivity Committee Review for Mathematics

Grade	Total items reviewed per grade	Accepted As Is	Accepted With Revision	Rejected
3	112	112	0	0
4	112	112	0	0
5	112	110	2	0
6	112	110	2	0
7	112	108	4	0
8	112	111	1	0
Total	672	663	9	0

The results from the Bias, Fairness, and Sensitivity Committee review of science are summarized in Table 3–19.

Table 3–19. Number of Items—2013 Bias, Fairness, and Sensitivity Committee Review for Science

Grade	Total scenarios reviewed per grade	Total items reviewed per grade	Accepted As Is	Accepted With Revision	Rejected
4	n/a	149	143	6	0
8	7	239	234	5	0
Total	7	388	377	11	0

The results from the Bias, Fairness, and Sensitivity Committee review of ELA: Reading are summarized in Table 3–20.

Table 3–20. Number of Items—2013 Bias, Fairness, and Sensitivity Committee Review for ELA: Reading

Grade	Total passages reviewed per grade	Total items or prompts reviewed per grade	Accepted As Is	Accepted With Revision	Rejected
3	12	147	146	1	0
4	12	160	158	1	1
5	12	161	161	0	0
6	12	146	146	0	0
7	12	143	143	0	0
8	12	146	145	1	0
Total	72	903	899	3	1

CHAPTER FOUR: UNIVERSAL DESIGN PROCEDURES APPLIED IN THE PSSA TEST DEVELOPMENT PROCESS

Universally designed assessments allow participation of the widest possible range of students and contribute to valid inferences about participating students. Principles of Universal Design are based on the premise that each child in school is a part of the population to be tested and that testing results should not be affected by disability, gender, race, or English language ability (Thompson, Johnstone, & Thurlow, 2002). At every stage of the item and test development process, including the 2014 field test, procedures were employed to ensure that items and subsequent tests were designed and developed using the elements of universally designed assessments developed by the National Center for Educational Outcomes (NCEO).

Federal legislation addresses the need for universally designed assessments. The No Child Left Behind Act (Elementary and Secondary Education Act) requires that each state must “provide for the participation in [statewide] assessments of all students” [Section 1111(b)(3)(C)(ix)(I)]. Both Title 1 and IDEA regulations call for universally designed assessments that are accessible and valid for all students, including students with disabilities and English Language Learners. The benefits of universally designed assessments not only apply to these groups of students, but to all individuals with wide-ranging characteristics.

DRC’s test development team was trained in the elements of Universal Design as it relates to developing large-scale statewide assessments. Team leaders were trained directly by NCEO, and other team members were subsequently trained by team leaders. Committees involved in content review included some members who were familiar with the unique needs of students with disabilities and English Language Learners. Likewise some members of the Bias, Fairness, and Sensitivity Committee were conversant with these issues. What follows are the Universal Design guidelines followed during all stages of the item development process for the PSSA.

ELEMENTS OF UNIVERSALLY DESIGNED ASSESSMENTS

After a review of research relevant to the assessment development process and the Principles of Universal Design (Center for Universal Design, 1997), NCEO has produced seven elements of Universal Design as they apply to assessments (Thompson, Johnstone, & Thurlow, 2002). These elements served to guide PSSA item development.

- **Inclusive Assessment Population**

The PSSA target population includes all students at the assessed grades attending Commonwealth schools. For state, district, and school accountability purposes, the target population includes all students except those who will participate in accountability through an alternate assessment.

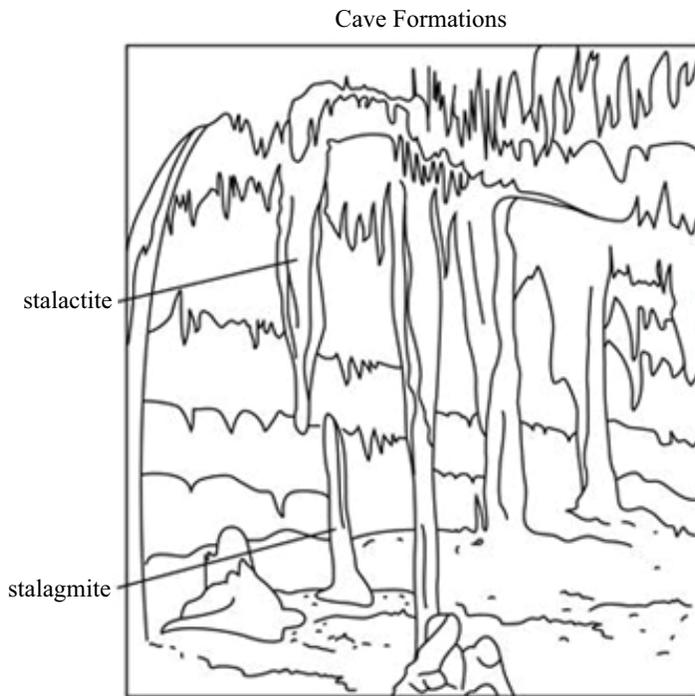
- **Precisely Defined Constructs**

An important function of well-designed assessments is that they actually measure what they are intended to measure. The Pennsylvania Assessment Anchors and Eligible Content provided clear descriptions of the constructs to be measured by the PSSA at the assessed grade levels. Universally designed assessments must remove all non-construct-oriented cognitive, sensory, emotional, and physical barriers.

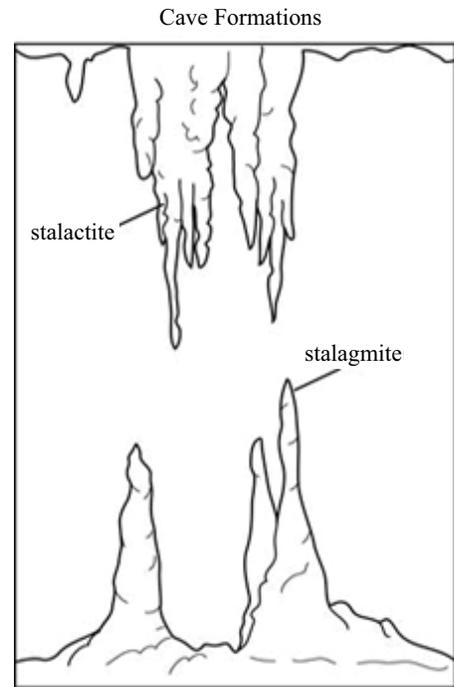
- **Accessible, Non-biased Items**

DRC conducted both internal and external reviews of items and test specifications to ensure that they did not create barriers because of lack of sensitivity to disability, culture, or other subgroups. Items and test specifications were developed by a team of individuals who understand the varied characteristics of items that might create difficulties for any group of students. Accessibility is incorporated as a primary dimension of test specifications, so accessibility was woven into the fabric of the test rather than added after the fact. The following examples show two graphics with the same construct, example 1 being less accessible and example 2 being more accessible.

Example 1 – Less Accessible:



Example 2 – More Accessible:



- **Amenable to Accommodations**

Even though items on universally designed assessments are accessible for most students, there are some students who continue to need accommodations. This essential element of a universally designed assessment requires that the test is compatible with accommodations and a variety of widely used adaptive equipment and assistive technology. (See the section on Assessment Accommodations later in Chapter Four.)

- **Simple, Clear, and Intuitive Instructions and Procedures**

Assessment instructions should be easy to understand, regardless of a student's experience, knowledge, language skills, or current concentration level. Questions that are posed using complex language can invalidate the test if students cannot understand how they are expected to respond to a question. To meet this guideline, directions and questions were prepared in simple, clear, and understandable language that underwent multiple reviews.

- **Maximum Readability and Comprehensibility**

A variety of guidelines exist to ensure the maximum readability and comprehensibility of a test. These features go beyond what is measured by readability formulas. Readability and comprehensibility are affected by many factors, including student background, sentence difficulty, text organization, and others. All of these features were considered as item text was developed.

Plain language is a concept now being highlighted in research on assessments. Plain language has been defined as language that is straightforward and concise. The following strategies for editing text to produce plain language were used during the editing process of the new PSSA items:

- Reduction of excessive length
- Use of common words
- Avoidance of ambiguous words
- Avoidance of irregularly spelled words
- Avoidance of proper names

- Avoidance of inconsistent naming and graphic conventions
- Avoidance of unclear signals about how to direct attention
- **Maximum Legibility**

Legibility is the physical appearance of text, the way that the shapes of letters and numbers enable people to read text easily. Bias can result when tests contain physical features that interfere with a student’s focus on or understanding of the constructs that test items are intended to assess. A style guide developed and updated annually (DRC, 2004–2013) was utilized, with PDE approval, which included dimensions of style consistent with universal design.

GUIDELINES FOR UNIVERSALLY DESIGNED ITEMS

All test items written and reviewed adhered closely to the following guidelines for Universal Design. Item writers and reviewers used a checklist during the item development process to ensure that each aspect was attended to. For more information on the checklist, see the Universal Design: All Assessments section in Chapter Three of this report.

1. **Items measure what they are intended to measure.** Item writing training included ensuring that writers and reviewers had a clear understanding of Pennsylvania’s Core Standards (ELA and mathematics) or Academic Standards (science) and the Assessment Anchors. During all phases of test development, items were presented with content-standard information to ensure that each item reflected the intended Assessment Anchor. Careful consideration of the content standards was important in determining which skills involved in responding to an item were extraneous and which were relevant to what was being tested. In certain types of items an additional skill is necessary, such as the mathematics test, which requires the student to read.
2. **Items respect the diversity of the assessment population.** To develop items that avoid content that might unfairly advantage or disadvantage any student subgroup, item writers, test developers, and reviewers were trained to write and review items for issues of bias, fairness, and sensitivity. Training also included an awareness of, and sensitivity to, issues of cultural and regional diversity.
3. **Items have a clear format for text.** Decisions about how items are presented to students must allow for maximum readability for all students. Appropriate fonts and point sizes were employed with minimal use of italics, which is far less legible and is read considerably more slowly than standard typeface. Captions, footnotes, keys, and legends were at least a 12-point size.¹ Legibility was enhanced by sufficient spacing between letters, words, and lines. Blank space around paragraphs and between columns and staggered right margins were used.
4. **Stimuli and items have clear pictures and graphics.** When pictures and graphics were used, they were designed to provide essential information in a clear and uncluttered manner. Illustrations were placed directly next to the information to which they referred, and labels were used where possible. Sufficient contrast between background and text, with minimal use of shading, increased readability for students with visual impairments. Color was not used to convey important information.
5. **Items have concise and readable text.** Linguistic demands of stimuli and items can interfere with a student’s ability to demonstrate knowledge of the construct being assessed. During item writing and review, the following guidelines were used.
 - Simple, clear, commonly-used words were used whenever possible.
 - Extraneous text was omitted.
 - Vocabulary and sentence complexity were appropriate for the grade level being assessed.
 - Technical terms and abbreviations were used only if they were related to the content being measured.

¹ While font size follows specific requirements during online setup of an assessment, the screen resolution used at the local level can impact whether the effective font size is visible to the student.

- Definitions and examples were clear and understandable.
 - Idioms were avoided unless idiomatic speech was being assessed.
 - The questions to be answered were clearly identifiable.
6. **Items allow changes to format without changing meaning or difficulty.** A Braille version of the PSSA was available at each assessed grade. Attention was given to using items that allow for Braille. Specific accommodations were permitted, such as signing to a student, the use of oral presentation under specified conditions, and the use of various assistive technologies. Spanish versions of the PSSA mathematics and PSSA science tests were available for use by English Language Learners who would benefit from this accommodation. In the online format, permitted accommodations included text-to-speech audio, a color overlay, contrasting text options, and American Sign Language videos.
7. **The test has an overall appearance that is clean and organized.** Images, pictures, and text that may not be necessary (e.g., sidebars, overlays, callout boxes, visual crowding, shading) and that could be potentially distracting to students were avoided. Also avoided were purely decorative features that did not serve a purpose. Information was organized in a left-right, top-bottom format.

ITEM DEVELOPMENT

DRC worked closely with the Pennsylvania Department of Education to help ensure that PSSA tests complied with nationally recognized Principles of Universal Design. The implementation of accommodations on large-scale statewide assessments for students with disabilities was supported in the development of the PSSA. In addition to the Principles of Universal Design described in the Pennsylvania Technical Report, DRC applied to each content area assessment the standards for test accessibility described in *Tests Access: Making Tests Accessible for Students with Visual Impairments—A Guide for Test Publishers, Test Developers, and State Assessment Personnel* (Allman, 2004). To this end, DRC embraced the following precepts:

Test directions were carefully worded to allow for alternate responses to constructed-response (e.g., open-ended or short-answer) questions.

- During item and bias reviews, test committee members were made aware of the Principles of Universal Design and of issues that might adversely affect students with disabilities, with the goal of ensuring that PSSA tests were bias-free for all students.
- With the goal of ensuring that the PSSA tests are accessible to the widest range of diverse student populations, PDE instructed DRC to limit item types that were difficult to format in Braille and that might become distorted when published in large print. DRC was instructed to limit the following on the PSSA.
 - Mathematics: Complicated tessellations; charts or graphs that extended beyond one page
 - Reading: Graphics and illustrations that were not germane to the content presented
 - All content areas: Unnecessary boxes and framing of text, unless enclosing the text provided necessary context for the student; use of italics (limited to only when it was absolutely necessary, such as with variables)

ITEM FORMATTING

For all content areas, DRC formatted PSSA tests to maximize accessibility for all students by using text that was in a size and font style easily readable. DRC limited shading, graphics, charts, and the number of items per page so that there was sufficient white space on each page. Whenever possible, DRC ensured that graphics, pictures, diagrams, charts, and tables were positioned on the page with the associated test items. DRC used high contrast for text and background where possible to convey pertinent information. Tests were published on dull-finish paper to avoid the glare encountered on glossy paper. DRC paid close attention to the binding of the PSSA test booklets to ensure that they laid flat for two-page viewing and ease of reading and handling.

DRC ensured consistency across PSSA assessments by following these Principles of Universal Design:

- High contrast and clarity was used to convey detailed information.
- Typically, shading was avoided; when necessary for content purposes, 10 percent screens were used as the standard.
- Overlaid print on diagrams, charts, and graphs was avoided.
- Charts, graphs, diagrams, and tables were clearly labeled with titles and with short descriptions where applicable.
- Only relevant information was included in diagrams, pictures, and graphics.
- Symbols used in keys and legends were meaningful and provided reasonable representations of the topics they depicted.
- Pictures that required physical measurement were true to size.

ASSESSMENT ACCOMMODATIONS

While universally designed assessments provide for participation of the widest range of students, many students require accommodations in order to participate in the regular assessment. Clearly, the intent of providing accommodations for students is to ensure that students are not unfairly disadvantaged during testing and that the accommodations used during instruction, if appropriate, are made available as students take the test. The literature related to assessment accommodations is still evolving and often focuses on state policies regulating accommodations rather than on providing empirical data that supports the reliability and validity of the use of accommodations. On a yearly basis, the Pennsylvania Department of Education examines accommodations policies and current research to ensure that valid, acceptable accommodations are available for students. Accommodations manuals for the PSSA titled *2016 Accommodations Guidelines* and *Accommodations Guidelines for English Language Learners* were developed for use with the 2016 PSSA.

The manuals can be accessed by going to www.education.pa.gov. Hover over K-12 in the blue banner at the top of the page and select “Assessment and Accountability.” Then select “Pennsylvania System of School Assessment (PSSA).” The manuals can be found under the heading “Testing Accommodations.”

In addition, Spanish-language versions, translated from the original English versions, were made available for both the mathematics and science PSSAs. The Spanish-translation versions are discussed in Chapter Six.

CHAPTER FIVE: FIELD TEST LEADING TO THE 2016 CORE

Generally, all non-linking core items appearing on the 2016 assessments came from the 2015 embedded field test positions. PSSA test forms contained common items that were identical on all forms along with embedded field test items and equating block items. The common items consisted of a set of core items taken by all students. The field test items and equating block items were embedded and were unique, in most instances, to a form; however, there were instances in which an embedded field test or equating block item appeared on more than one form. More information on the field test designs for all contents can be found in the content-specific portions of Chapter Three.

The purpose of administering field test items is to obtain statistics for them so they can be reviewed before becoming operational. Based on this statistical review, many of the field test items embedded in the 2015 PSSA were selected for use as common or equating block items in the 2016 PSSA.

STATISTICAL ANALYSIS OF ITEM DATA

All field tested items were analyzed statistically following conventional item analysis methods. For SR items (including multiple-choice and evidence-based selected-response items), traditional or classical item statistics included the corrected point-biserial correlation (Pt. Bis.) for the correct and incorrect responses (distractors), percent correct (p value), and the percent responding to incorrect responses. For constructed-response (CR) items (including open-ended questions, short-answer questions, text-dependent analysis questions, and writing prompts), the statistical indices included the item-test correlation, the point-biserial correlation for each score level, percent in each score category or level, and the percent of non-scoreable responses.

In general, more capable students are expected to respond correctly to easy items and less capable students are expected to respond incorrectly to difficult items. If either of these situations does not occur, the item will be reviewed by DRC test development staff and committees of Pennsylvania educators to determine the nature of the problem and the characteristics of the students affected. The primary way of detecting such conditions is through the point-biserial correlation coefficient for dichotomous (MC) items and the item-total correlation for polytomous (EBSR and CR) items. In each case the statistic will be positive if the total test mean score is higher for the students who respond correctly to MC items (or attain a higher CR item score) and negative when the reverse is true.

Item statistics are used as a means of detecting items that deserve closer scrutiny, rather than being a mechanism for automatic retention or rejection. Toward this end, a set of criteria was used as a screening tool to identify items that needed a closer review by committees of Pennsylvania educators. For an MC item to be flagged, the criteria included any of the following:

- Percent correct less than 0.3 or greater than 0.9
- Point-biserial correlation for the correct response of less than 0.25
- Point-biserial correlation for any incorrect response greater than 0.0
- Percent responding to any incorrect responses greater than the percent correct
- Gender DIF code of either C- or C+
- Any ethnic DIF code of C- or C+

For an EBSR item to be flagged, the criteria included any of the following:

- P-value less than 0.3 or greater than 0.9
- Part One point-biserial correlation for the correct response of less than 0.25
- Part One point-biserial correlation for any incorrect response greater than 0.0
- Part One percent responding to any incorrect responses greater than the percent correct

- Gender DIF code of either C- or C+
- Any ethnic DIF code of C- or C+
- Score proportion < 0.05

For a CR item to be flagged, the criteria included any of the following:

- P-value less than 0.3 or greater than 0.9
- Score Proportion < 0.05
- Gender DIF code of C- or C+
- Any ethnic DIF code of C- or C+

Item analysis results for field test items are presented in Appendix F.

REVIEW OF ITEMS WITH DATA

In the preceding section on Statistical Analysis of Item Data, it was stated that test development content-area specialists used certain statistics from item and DIF analyses of the 2015 field test to identify items for further review. Specific flagging criteria for this purpose were specified in the previous section. Items not identified for this review were those that had good statistical characteristics and, consequently, were regarded as statistically acceptable. Likewise, items of extremely poor statistical quality were regarded as unacceptable and needed no further review. However, there were some items—relatively few in number—that DRC content-area test development specialists and DRC psychometric specialists regarded as needing further review by a committee of Pennsylvania educators. The intent was to capture all items that needed a closer look; thus, the criteria employed tended to over-identify rather than under-identify items.

The review of the items with data was conducted by over 50 Pennsylvania educators (teachers and PDE staff) broken out into subject-area and/or grade level or span committees. Additional information, including gender, ethnicity (when available), and Instructional Unit (geographic location within Pennsylvania), about the participants is provided in Tables 5–1 through 5–5. The review for mathematics Grades 3–5 took place July 28–29, 2015. The review for mathematics Grades 6–8 took place July 28–30, 2015. The review for ELA Grades 3–5 took place July 28–29, 2015. The review for ELA Grades 6–8 took place July 28–30, 2015. The review for science took place on July 28, 2015. In these sessions, committee members were first trained by a representative from DRC’s psychometrics staff with regard to the statistical indices used in item evaluation. This was followed by a discussion with examples concerning reasons that an item might be retained regardless of the statistics. The committee review process involved a brief exploration of possible reasons for the statistical profile of an item (e.g., possible bias, grade appropriateness, instructional issues) and a decision regarding acceptance. DRC content-area test development specialists facilitated the review of the items. Each committee reviewed the pool of field tested items and made recommendations on each item and/or scenario/passage. Further discussion on how this information was used is covered in Chapter Six.

Table 5–1. Demographic Composition of the 2015 Mathematics Grades 3–5 Data Review Committee

Member #	Gender	Race/Ethnicity	Instructional Unit Represented
1.	Female	White	23
2.	Female	White	17
3.	Female	White	3
4.	Female	White	24
5.	Female	White	10
6.	Female	White	Not specified
7.	Female	White	20
8.	Male	White	28
9.	Female	White	11
10.	Male	White	5
11.	Male	White	20
Totals	8 Female, 3 Male	11 White	N/A

Table 5–2. Demographic Composition of the 2015 Mathematics Grades 6–8 Data Review Committee

Member #	Gender	Race/Ethnicity	Instructional Unit Represented
1.	Female	White	23
2.	Male	White	25
3.	Female	White	8
4.	Male	White	14
5.	Female	White	6
6.	Female	White	7
7.	Female	White	26
8.	Female	White	18
9.	Female	White	18
10.	Female	White	29
11.	Female	White	28
12.	Male	White	17
Totals	9 Female, 3 Male	12 White	N/A

Table 5–3. Demographic Composition of the 2015 English Language Arts Grades 3–5 Data Review Committee

Member #	Gender	Race/Ethnicity	Instructional Unit Represented
1.	Female	African American	3
2.	Female	White	21
3.	Female	White	24
4.	Female	White	17
5.	Female	African American	5
6.	Female	White	9
7.	Female	White	NA
8.	Female	White	21
Totals	8 Female	2 African American, 6 White	N/A

Table 5–4. Demographic Composition of the 2015 English Language Arts Grades 6–8 Data Review Committee

Member #	Gender	Race/Ethnicity	Instructional Unit Represented
1.	Female	Multiracial	8
2.	Female	Asian	NA
3.	Female	White	1
4.	Female	White	6
5.	Female	African American	26
6.	Female	White	25
7.	Female	White	14
8.	Female	White	NA
9.	Female	White	20
Totals	9 Female	1 Multiracial, 1Asian, 1 African American, 6 White	N/A

Table 5–5. Demographic Composition of the 2015 Science Data Review Committee

Member #	Gender	Race/Ethnicity	Instructional Unit Represented
1.	Male	White	4
2.	Female	White	5
3.	Male	White	8
4.	Male	White	29
5.	Female	White	22
6.	Female	Multiracial	14
7.	Female	White	5
8.	Female	White	20
9.	Female	White	7
10.	Male	White	15
11.	Male	White	3
12.	Female	White	12
Totals	7 Female, 5 Male	1 Multiracial, 11 White	N/A

Table 5–6. 2015 Data Review Committee Results

Assessment	Grade	No. of Items in 2014 Field Test	SR†	CR*	DIF only*	Total*	% Total *	No. of Items Rejected**	% of Items Rejected**	No. of Items Classified as Rejected***	% of Item Classified as Rejected***
English Language Arts	3	108	21	1	2	22	20%	4	4%	4	4%
English Language Arts	4	108	21	9	1	30	27%	2	2%	3	3%
English Language Arts	5	108	20	9	2	29	26%	4	4%	4	4%
English Language Arts	6	108	35	9	2	44	41%	8	7%	9	8%
English Language Arts	7	108	27	9	2	36	33%	3	3%	3	3%
English Language Arts	8	108	29	9	3	38	35%	5	5%	5	5%
Mathematics	3	117	26	5	1	31	26%	7	6%	8	7%
Mathematics	4	117	23	5	3	28	24%	1	1%	1	1%
Mathematics	5	117	35	9	0	44	38%	6	5%	6	5%
Mathematics	6	117	51	9	1	60	51%	14	12%	14	12%
Mathematics	7	117	40	9	1	49	42%	5	4%	5	4%
Mathematics	8	117	50	8	0	58	50%	17	15%	17	15%
Science	4	132	18	1	0	19	14%	5	4%	5	4%
Science	8	156	50	3	2	53	34%	13	8%	13	8%
Totals	N/A	1638	446	95	20	541	33%	94	6%	97	6%

† SR includes multiple-choice items and EBSR items.

*Flagged Items in 2014 Field Test Examined at 2015 Data Review Committee

**Flagged Items in 2014 Field Test Rejected by 2015 Data Review Committee

***Items Classified as “Rejected” from 2014 Field Test (all sources: Data Review Committee, PDE, and DRC)

DIFFERENTIAL ITEM FUNCTIONING

Differential item functioning (DIF) occurs when examinees with the same ability level but different group memberships do not have the same probability of answering an item correctly. When the probability differs, it is important for content experts to review such items for any potential *item bias*. It is important to note that, as a statistical concept, DIF is different from item bias. DIF detects a difference in performance after controlling for student ability, whereas bias is a content issue that can arise in situations where something other than the intended construct of measurement affects the probability of a correct response for a particular group. For example, bias is likely present when an item presents negative group stereotypes that draw the attention of the examinee, uses non-construct relevant language that is more familiar to one subpopulation than to another, or is presented in a non-construct relevant format that disadvantages certain learning styles. While the source of item bias can be plain to trained judges, DIF may have no clear cause. In such cases, something other than bias, including construct relevant content, may be explaining the differential performance on the item. Flagging DIF then, provides the opportunity for reviewers to assess and correct potential bias, but DIF does not necessarily mean that bias is present.

LIMITATIONS OF STATISTICAL DETECTION

No statistical procedure should be used as a substitute for rigorous, hands-on reviews by content and bias specialists. The statistical results can help organize the review so the effort is concentrated on the most problematic cases. Further, no items should be automatically rejected simply because a statistical method flagged them or accepted because they were not flagged.

Statistical detection of DIF is also not an exact science. There have been a variety of methods proposed for detecting DIF, but no single statistic can be considered either necessary or sufficient. Different methods are more or less successful, but can also detect DIF at different rates. No analysis can guarantee that a test is free of bias, but thoughtful item development and post field test analysis can prevent most bias situations with the potential to unfairly impact student scores.

A fundamental shortcoming of all statistical methods used in DIF evaluation is that all are intrinsic to the test being evaluated. If a test is unbiased overall but contains one or two DIF items, any method can identify DIF. However, because all current methods use total test performance as the measure on which to control for group abilities, a test with all DIF items will not be able to separate DIF effects from differences in achievement on the test.

MANTEL-HAENSZEL PROCEDURE FOR DIFFERENTIAL ITEM FUNCTIONING

For multiple-choice (MC) items, the *Mantel-Haenszel* procedure (Mantel & Haenszel, 1959) for detecting differential item functioning is a commonly used technique in educational testing. It does not depend on the application or the fit of any specific measurement model. However, it does have significant philosophical overlap with the Rasch model since it uses a test's total score to organize the analysis.

The procedure as implemented by DRC contrasts a focal group with a reference group. While it makes no practical difference in the analysis which group is defined as the focal group, the group most apt to be disadvantaged by a biased measurement is typically defined as the focal group. In these analyses, the focal group was female for gender-based DIF and black for ethnicity-based DIF; reference groups were male and white, respectively. The Mantel-Haenszel (MH) statistic for each item is computed from a contingency table. It has two groups (focal and reference) and two outcomes (right or wrong). The ability groups are defined by the test's score distribution for the total examinee populations.

The basic MH statistic is a single degree of freedom chi-square that compares the observed number in each cell to the expected number. The expected counts are computed to ensure that the analysis is not confounded with differences in the achievement level of the two groups.

For OE items, a comparable statistic is computed based on the standardized mean difference (SMD) (Dorans, Schmitt, & Bleistein, 1992), which is computed as the differences in mean scores for the focal and reference groups if both groups had the same score distribution.

To assist the review committees in interpreting the analyses, the items are assigned a severity code based on the magnitude of the MH statistic. Items classified as A+ or A- have little or no statistical indication of DIF. Items classified as B+ or B- have some indication of DIF but may be judged to be acceptable for future use. Items classified as C+ or C- have strong evidence of DIF and should be reviewed and possibly rejected from the eligible item pool. The plus sign indicates that the item favors the focal group and a minus sign indicates that the item favors the reference group.

RESULTS AND OBSERVATIONS

Counts of the number of items from each grade and subject area that were assigned to each severity code are shown below in Table 5–7A (MC items), 5–7B (OE items), 5–7C (EBSR items), and 5–7D (TDA items). DIF analyses were conducted on the 2015 PSSA field test items and may be compared to the 2014 results.

Overall, relatively few items had B or C DIF for the Male/Female or White/Black reference and focal groups. There were slightly fewer OE and EBSR items showing C DIF on the 2015 field test versus the 2014 field test, but noticeably fewer TDA items showing C DIF that favors females in 2015. There were slightly more MC items showing DIF against females in 2015 versus 2014, but it was roughly the same for the White/Black groups.

Table 5–7A1. DIF Summary for Male/Female—MC Items

Subject	Grade	A+ 2014	A- 2014	B+ 2014	B- 2014	C+ 2014	C- 2014	Tot 2014	A+ 2015	A+ 2015	B+ 2015	B- 2015	C+ 2015	C- 2015	Tot (2015)
Math	3	37	49	2	2	0	0	90	55	52	1	0	0	0	108
Math	4	43	47	0	0	0	0	90	64	41	2	1	0	0	108
Math	5	39	50	0	1	0	0	90	55	52	0	1	0	0	108
Math	6	77	118	2	2	0	1	200	53	54	1	0	0	0	108
Math	7	69	123	0	7	1	0	200	44	60	0	4	0	0	108
Math	8	68	125	1	5	0	1	200	45	63	0	0	0	0	108
ELA	3	24	47	0	1	0	0	72	27	46	0	0	0	1	74
ELA	4	39	33	0	0	0	0	72	27	44	1	2	0	0	74
ELA	5	40	32	0	0	0	0	72	37	34	1	1	0	1	74
ELA	6	71	85	0	4	0	0	160	30	39	0	3	0	2	74
ELA	7	74	81	1	4	0	0	160	32	39	1	1	0	1	74
ELA	8	58	89	0	11	0	2	160	24	43	0	3	0	4	74
Science	4	44	51	0	1	0	0	96	48	44	3	1	0	0	96
Science	8	63	48	2	7	0	0	120	67	47	6	0	0	0	120

Table 5–7A2. DIF Summary for Whites/Black—MC Items

Subject	Grade	A+ 2014	A- 2014	B+ 2014	B- 2014	C+ 2014	C- 2014	Tot 2014	A+ 2015	A+ 2015	B+ 2015	B- 2015	C+ 2015	C- 2015	Tot (2015)
Math	3	17	64	0	8	0	1	90	25	77	0	6	0	0	108
Math	4	18	67	0	5	0	0	90	22	76	0	8	0	2	108
Math	5	25	65	0	0	0	0	90	33	74	0	1	0	0	108
Math	6	34	159	0	6	0	1	200	27	81	0	0	0	0	108
Math	7	49	142	0	9	0	0	200	21	83	0	4	0	0	108
Math	8	69	123	0	7	0	1	200	27	80	0	1	0	0	108
ELA	3	13	58	0	1	0	0	72	6	68	0	0	0	0	75
ELA	4	6	50	0	12	0	4	72	14	53	0	7	0	0	74
ELA	5	14	57	0	1	0	0	72	21	51	0	1	0	1	74
ELA	6	32	119	0	5	0	4	160	21	52	0	1	0	0	74
ELA	7	24	125	0	11	0	0	160	20	50	0	4	0	0	74
ELA	8	31	114	0	14	0	1	160	13	54	0	6	0	1	74
Science	4	9	82	0	5	0	0	96	11	83	0	2	0	0	96
Science	8	33	85	0	2	0	0	120	30	89	0	1	0	0	120

Table 5–7B1. DIF Summary Male/Female—OE Items

Subject	Grade	A+ 2014	A- 2014	B+ 2014	B- 2014	C+ 2014	C- 2014	Tot 2014	A+ 2015	A+ 2015	B+ 2015	B- 2015	C+ 2015	C- 2015	Tot (2015)
Math	3	5	4	0	0	0	0	9	5	3	0	0	0	0	8
Math	4	5	3	0	0	0	0	8	6	3	0	0	0	0	9
Math	5	7	1	1	0	0	0	9	7	1	1	0	0	0	9
Math	6	13	4	1	1	0	0	19	4	4	1	0	0	0	9
Math	7	12	5	2	0	1	0	20	5	2	1	0	1	0	9
Math	8	8	12	0	0	0	0	20	6	3	0	0	0	0	9
ELA	3	4	0	2	0	3	0	9	7	1	1	0	0	0	9
ELA	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Science	4	4	8	0	0	0	0	12	9	2	0	1	0	0	12
Science	8	7	4	0	1	0	0	12	3	5	1	0	0	2	11

Table 5–7B2. DIF Summary White/Black—OE Items

Subject	Grade	A+ 2014	A- 2014	B+ 2014	B- 2014	C+ 2014	C- 2014	Tot 2014	A+ 2015	A+ 2015	B+ 2015	B- 2015	C+ 2015	C- 2015	Tot (2015)
Math	3	0	6	0	3	0	0	9	1	4	0	1	0	2	8
Math	4	0	8	0	0	0	0	8	1	5	0	3	0	0	9
Math	5	3	4	0	2	0	0	9	2	4	0	2	0	1	9
Math	6	2	12	0	4	0	1	19	0	6	0	2	0	1	9
Math	7	2	14	0	1	0	3	20	0	9	0	0	0	0	9
Math	8	1	12	0	6	0	1	20	0	7	0	2	0	0	9
ELA	3	2	7	0	0	0	0	9	0	6	0	2	0	1	9
ELA	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Science	4	0	5	1	3	0	3	12	1	6	0	5	0	0	12
Science	8	0	6	0	2	0	4	12	1	6	0	4	0	0	11

Table 5–7C1. DIF Summary Male/Female—EBSR Items

Subject	Grade	A+ 2014	A- 2014	B+ 2014	B- 2014	C+ 2014	C- 2014	Tot 2014	A+ 2015	A+ 2015	B+ 2015	B- 2015	C+ 2015	C- 2015	Tot (2015)
ELA	3	8	10	0	0	0	0	18	6	12	0	0	0	0	18
ELA	4	11	7	0	0	0	0	18	6	12	0	0	0	0	18
ELA	5	7	11	0	0	0	0	18	10	8	0	0	0	0	18
ELA	6	20	20	0	0	0	0	40	12	5	0	1	0	0	18
ELA	7	18	21	0	1	0	0	40	10	7	1	0	0	0	18
ELA	8	20	18	0	1	0	1	40	5	13	0	0	0	0	18

Table 5–7C2. DIF Summary White/Black—EBSR Items

Subject	Grade	A+ 2014	A- 2014	B+ 2014	B- 2014	C+ 2014	C- 2014	Tot 2014	A+ 2015	A+ 2015	B+ 2015	B- 2015	C+ 2015	C- 2015	Tot (2015)
ELA	3	3	15	0	0	0	0	18	1	16	0	0	0	1	18
ELA	4	1	8	0	9	0	0	18	0	16	0	2	0	0	18
ELA	5	1	16	0	0	0	1	18	2	16	0	0	0	0	18
ELA	6	1	33	0	6	0	0	40	2	14	0	2	0	0	18
ELA	7	3	29	0	8	0	0	40	2	15	0	1	0	0	18
ELA	8	8	25	0	7	0	0	40	4	9	0	4	0	1	18

Table 5–7D1. DIF Summary Male/Female—TDA Items

Subject	Grade	A+ 2014	A- 2014	B+ 2014	B- 2014	C+ 2014	C- 2014	Tot 2014	A+ 2015	A+ 2015	B+ 2015	B- 2015	C+ 2015	C- 2015	Tot (2015)
ELA	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	4	4	0	3	0	2	0	9	5	0	4	0	0	0	9
ELA	5	3	0	4	0	2	0	9	5	0	3	0	1	0	9
ELA	6	2	0	5	0	13	0	20	1	0	4	0	4	0	9
ELA	7	4	0	4	0	12	0	20	0	0	5	0	4	0	9
ELA	8	6	0	9	0	5	0	20	1	0	7	0	1	0	9

Table 5–7D2. DIF Summary White/Black—TDA Items

Subject	Grade	A+ 2014	A- 2014	B+ 2014	B- 2014	C+ 2014	C- 2014	Tot 2014	A+ 2015	A+ 2015	B+ 2015	B- 2015	C+ 2015	C- 2015	Tot (2015)
ELA	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELA	4	0	5	0	4	0	0	9	0	4	0	5	0	0	9
ELA	5	0	7	0	1	0	1	9	0	7	0	2	0	0	9
ELA	6	1	13	0	5	0	1	20	0	8	0	1	0	0	9
ELA	7	0	16	0	3	0	1	20	0	8	0	1	0	0	9
ELA	8	2	13	0	5	0	0	20	0	6	0	2	0	1	9

CHAPTER SIX: OPERATIONAL FORMS CONSTRUCTION FOR 2016

FINAL SELECTION OF ITEMS AND 2016 PSSA FORMS CONSTRUCTION

When the final selection of items for the operational 2016 test was ready to begin, the candidate items that emerged, including those from the spring 2015 field test, had undergone multiple reviews, including:

- Reviews by DRC content-area test development specialists and curriculum specialists to ensure that all items were properly aligned with content standards
- Formal bias, fairness, and sensitivity review by the Bias, Fairness, and Sensitivity Committee consisting of a multi-ethnic group of men and women having expertise with students with special needs and English Language Learners
- Formal review by the content committees consisting of Pennsylvania educators, including teachers as well as district personnel
- PDE review
- Item data review by members of the PDE subject-area teacher committees

The item and bias reviews are detailed in Chapter Three. The results of the data review are summarized in Chapter Five.

The end product of the above process was an item status designation for each field tested item. All items having an item status code of Acceptable/Active were candidates to be selected for the 2016 PSSA. To have an item status code of Acceptable/Active meant that the item met the following criteria:

- Appropriately aligned with its designated Assessment Anchor Content Standard (Assessment Anchor) and sub-classifications
- Acceptable in terms of bias/fairness/sensitivity issues, including differential item functioning (for gender and ethnicity)
- Acceptable in terms of psychometric standards, including a special review of flagged items

Next, all relevant information regarding the acceptable items, including associated graphics, was entered into the item banking system known as IDEAS (Item Development and Education Assessment System). From IDEAS and other database sources, Microsoft Excel files were created for each content area at each grade. These files contained all relevant content codes and statistical characteristics. IDEAS also created an item card displaying each acceptable item, any associated graphic, and all relevant content codes and item statistics for use by the content-area test development specialists and psychometric services staff.

DRC test development specialists reviewed the test design blueprint, including the number of items per strand for each content-area test. Special considerations, such as calculator use and manipulatives, were noted.

Psychometricians provided content-area test development specialists with an overview of the psychometric guidelines for forms construction, including guidelines for selecting linking items to link to previous test forms (science only).

Senior DRC content-area test development specialists reviewed all items in the operational pool to make an initial selection for common (core) and equating block (science only) positions according to test blueprint requirements and psychometric guidelines. Changes to items were not encouraged since alterations could affect how an item might perform on subsequent testing.

For the common items, this meant that the combination of SR and CR items would yield the appropriate range of points while tapping an appropriate variety of the Assessment Anchors and related Eligible Content within each Reporting Category. Items selected in the first round were examined with regard to how well they went together as a set. Of particular concern were the following:

- One item providing cues as to the correct answer to another item

- Context redundancy (e.g., mathematics items with a sports context)
- Presence of clang (distractors not unique from one another)
- Diversity of names and artwork for gender and ethnicity

The first round of items was then evaluated for statistical features such as an acceptable point-biserial correlation and whether correct answers were distributed equally—that is, whether approximately 25 percent of correct answers appeared in each of the four possible positions (A, B, C, or D). Selected items that were deemed psychometrically less advantageous in contrast to the overall psychometric characteristics of the core resulted in a search by the senior reviewer for suitable replacements. At this point, the second round of items was analyzed. If necessary, this iterative process between content-based selections and statistical properties continued in an effort to reach the best possible balance.

In the case of the core-to-core linking items, content considerations remained relevant, together with statistical features, such as an acceptable point-biserial correlation and whether the items, as a collection, had an average logit value and a test characteristic curve approximating that of the previous year.

The process for selecting equating block items was slightly different. The chief consideration was that items in equating block positions of the various forms mirrored the psychometric considerations of the core. In some cases, the selection of equating block items also required multiple rounds of selection and evaluation until the best possible balance of content and statistical properties was obtained. The content-area test development specialist's task was to distribute these items in equating block positions across the forms so that the MC items assigned to a particular form would go well with one another and reflect the same content and statistical considerations as previously outlined. Additionally, the forms needed to display similar difficulty levels.

Once the recommendations were finalized for the core items, core-to-core linking items, and equating block items, they were submitted to PDE for review. Department staff provided feedback, which could be in the form of approval or recommendations for replacing certain items. Any item replacement was accomplished by the collective effort of the test development specialists, psychometricians, and PDE staff until final PDE approval was given. Once final PDE approval of the forms was given, PDE also participated in the construction and review of scrambled forms.

SPECIAL FORMS USED IN THE 2016 PSSA

BRILLE AND LARGE PRINT

Students with visual impairments were able to respond to test materials that were available in either Braille or large print. At each grade level assessed, one form was selected for the creation of a Braille and a large print edition. School district personnel ordered Braille or large print assessment materials directly from DRC. They could also contact PaTTAN for technical assistance regarding students with visual impairments.

SPANISH TRANSLATION OF THE MATHEMATICS AND SCIENCE ASSESSMENTS

Starting with the 2005 assessment, school personnel had the option of allowing Spanish-speaking students who had been enrolled in schools in the United States for less than three years to respond to a Spanish version of the PSSA for mathematics. In 2009, a Spanish version was also added for the science component of the PSSA. The original translation of the items and the *Directions for Administration Manual* was completed by Second Language Testing, Incorporated (SLTI). SLTI used translators with varying cultural and regional backgrounds to create the Spanish versions of the mathematics and science assessments. The translations were then reviewed and verified by DRC's internal Spanish group. As part of the internal review, a Spanish style guide is maintained to document Spanish word choice from administration to administration and across grades within an administration. After discussions with PDE and SLTI, the mathematics assessment for Grades 4–8 and the science assessment for Grades 4 and 8 were designed with a side-by-side format, that is, the English text and Spanish-translated text were printed on facing pages. The Spanish-translated text was on the left-hand side of the page and the original English text on the right-hand (facing) side.

The mathematics answer booklets for Grades 4–8 and the science answer booklets for Grades 4 and 8 were also presented in Spanish and English. In the case of mathematics, each open-ended item covered a total of four pages in the answer booklet. In the case of science, each open-ended item covered either two or four pages in the answer booklet, depending on the length of the original English-language item. In the case of four-page open-ended items,

the first set of facing pages of an item was presented in Spanish. The second set of facing pages of an item was presented in the original English. Those students using this accommodated version of the mathematics assessment could write their answers on either the English language pages or on the translated Spanish language pages. Their answers could be written in English, Spanish, or a combination of both Spanish and English as all pages were evaluated and scored, and the highest possible scores from those combinations recorded for the students.

The mathematics scannable booklets for Grade 3 were presented in Spanish and English using a modified over/under format, with the Spanish presented directly above or to the left of the English. To assist the presentation of the two languages on the same page, the English portion was presented in italics and in a smaller font. Those students using this accommodated version of the mathematics assessment could also write their answers in English, Spanish, or a combination of both Spanish and English, with the highest possible scores from those combinations recorded for the students.

Spanish-translated versions of the mathematics assessment were used by a total of 3,315 students at Grades 3–8 in 2016. Spanish-translated versions of the science assessment were used by a total of 1,114 students at Grades 4 and 8 in 2016.

Instructions for the appropriate use of these special forms are detailed in accommodation manuals titled *2016 Accommodations Guidelines* and *Accommodations Guidelines for English Language Learners*.

QUALITY CONTROL FOR BRAILLE AND TRANSLATIONS

SPANISH

DRC utilizes an outside vendor (Victory Productions) for initial translations of PSSA mathematics and science items. Once Victory Productions has completed the initial translation of the entire set of materials, all translated material and the original English version are then sent to Language Services Consultants (LSC) for a third-party verification of the translation. LSC's review helps to ensure the equivalence of the original and translated assessments. When completed, the verified materials, along with any recommendations or questions, are passed back to DRC for processing.

Once Language Services Consultants (LSC) has adjudicated the initial translation completed by Victory Productions, the translated text is returned to DRC for final processing and typesetting. DRC has a Spanish translation team comprised of native Spanish-speaking translators and native English-speakers with formal education in Spanish. DRC's Spanish Team is supported by all content areas and their respective content leads in order to maintain the integrity of each translated item or passage. DRC conducts a minimum of five separate reads during the final preparation of the translated material. These reads include editorial reviews of items and forms and are used to polish language and eliminate any typographical errors.

An initial reading of items and passages is conducted individually by each member of the team. The team then reads, discusses, and edits the items as a group before sending the material to be entered into the item bank that houses Pennsylvania's test items (IDEAS). As part of the discussion and editing process, DRC's Spanish Team may also conduct an informational investigation, validating concepts within the translation related to specialized topics. Once the data entry is completed, DRC's Spanish Team confirms that the correct edits have been made and the items are read once again. After all newly-translated items have been edited and approved in this round of review, a PDF of the entire test form is produced. The Spanish Team then conducts a group review of the complete test form, coinciding with an independent review outside the team, making any edits that are necessary. Within each review, checks are performed to ensure accuracy of semantics, lexicon, syntax, and grammar.

Internal reviewers are instructed to address a number of issues when reviewing a translation, including the following:

- Are the stimulus and the item translated correctly?
- Are there inappropriate omissions in the translation?
- Are there inappropriate additions in the translation?
- Is there any wording that may not be comprehensible to speakers of a particular dialect? If so, the reviewer will enter an alternate wording in parentheses.

- Are standard item writing guidelines followed in the translated version?
- Are any options less or more attractive than in the English version? If so, the reviewer will suggest an alternate wording.
- Is the content of any item culturally insensitive or offensive? Is a substitute item required? Why?
- Is the wording of any item culturally insensitive or offensive?
- Is the language of the translation at the same register as the original?
- Is the language of the translation at an appropriate register for the grade level of the examinee?

BRILLE AND LARGE PRINT

Students with visual impairments were able to respond to test materials that were available in either Braille or large print. At each grade level assessed, one form was selected for the creation of a Braille and a large print edition.

The large print edition is a replication of the standard print form; 8.5X11 standard form is enlarged to an 11X17 page format to achieve a font size of approximately 18-point. A side-by-side verification is completed between the standard print and large print forms to ensure that the integrity of all formatting and graphics is maintained on the large print forms.

For Braille production, the final selected form is delivered to American Printing House for the Blind (APH) via APH's secure website. APH ensures that all tests are translated correctly and accurately by using a translator and a validator. After all Braille booklets are printed, APH conducts a quality assurance step to ensure all items are bound in order and directions are included. All Braille booklets are shipped from APH to DRC via UPS.

DRC applies a security barcode to each large print and Braille booklet for purposes of shipping, distributing, and collecting the materials. This security barcode is used with DRC's Operations Materials Management System (Ops MMS).

School personnel were directed to transcribe all student answers (SR and CR) into scannable answer documents exactly as the student responded. No alterations or corrections of student work were permitted, and the transcribed answer document had to have the same form designation as the Braille and large print version.

SUMMARY OF THE TRANSLATION VERIFICATION STUDY BY SLTI OF THE 2009 PSSA SCIENCE ASSESSMENTS

From November 2009 through January 2010 SLTI conducted a translation verification study of the 2009 PSSA Science Assessments titled "Translation Verification Study of the 2009 Pennsylvania System of School Assessment (PSSA) of Science for Grades 4, 8, and 11." In this study, the appropriateness of the transadaptation of the PSSA Science Assessments into Spanish was investigated. Three independent reviewers, specialists in bilingual science education and science translation, determined the appropriateness of each translated or adapted item. The purpose of the report was to conduct qualitative research on the comparability of the Spanish and English versions of the PSSA Science Assessments.

The report of this study by Second Language Testing, Incorporated described the assessments, the purpose of the translation verification study, the reviewers, the translation verification process, and the translation verification results. A total of 185 items covering tests at Grades 4 (63 items), 8 (63 items), and 11 (59 items) were reviewed. The study showed that none of the 185 reviewed items were judged by the reviewers to be inappropriately translated or adapted into Spanish. The study did provide suggestions for nine items that were judged appropriate but whose translation could still be improved in the event the items were used again.

Overall, the report concluded that the transadaptation of the 2009 PSSA Science Assessments was clearly appropriate. Since both the English and Spanish versions are comparable in the sense that both versions assess the same content, use the same format, have equal numbers of items, follow the same test administration and scoring procedures, and are used and interpreted in the same way, the study concluded that the English and Spanish versions of the science assessments measured the same content in two different languages. Thus, the study indicated that both language versions showed the same degree of alignment and the same depth-of-knowledge described in the Assessment Anchors alignment study. As a result, the report concluded that there was

no need to conduct a separate alignment study of the Spanish version of the PSSA Science Assessments.

Beyond the findings presented in the study, the report recommended that appropriate quantitative analyses be carried out on construct equivalence. Unless such analyses clearly demonstrate a lack of equivalence, it is appropriate to assume that there is no need to conduct a separate linking study or a separate standard setting study for the Spanish versions of the tests. Both versions can be scored on the same scale, and scores on each version have the same meaning in terms of student mastery of the Science Assessment Anchors as defined by the Eligible Content.

The full report can be obtained by request from the Pennsylvania Department of Education.

SUMMARY OF COMPARABILITY REPORT FROM SIRECI PSYCHOMETRIC SERVICES

In addition to the study conducted by Second Language Testing, Incorporated, a second comparability study of the 2009 PSSA Spanish translations for science was completed in February 2010 by Sireci Psychometric Services. The report of the study is titled “Evaluating the Comparability of English and English-Spanish Science Tests from the Pennsylvania System of School Assessment.”

In this study, the data from the English language and English-Spanish dual-language Pennsylvania science tests for Grades 4, 8, and 11 were analyzed. These analyses were designed to evaluate the consistency of the structure of the data and the consistency of item functioning across the English and Spanish versions of these assessments using various psychometrics methods.

The full report can be obtained by request from the Pennsylvania Department of Education.

CHAPTER SEVEN: TEST ADMINISTRATION PROCEDURES

TEST SESSIONS, TEST SECTIONS, TEST TIMING, AND TEST LAYOUT

Some assessments utilized separate test booklets and answer booklets. An answer booklet was used to respond to the selected-response items (i.e., multiple-choice items and evidence-based selected-response items) and constructed-response items (i.e., open-ended items, short-answer items, text-dependent analysis items, and writing prompts) and to collect demographic information. The selected-response items and all stimulus-text were placed within the test booklet. Other assessments used a single consumable booklet. When a single scannable answer booklet was utilized, the contents of the answer booklet and the test booklet were combined into one integrated booklet.

Table 7–1. Booklet Type by Administration

Assessment	Grade	Booklet Type
ELA	3	Single Consumable Booklet
ELA	4	Test Booklet and Answer Document
ELA	5	Test Booklet and Answer Document
ELA	6	Test Booklet and Answer Document
ELA	7	Test Booklet and Answer Document
ELA	8	Test Booklet and Answer Document
Mathematics	3	Single Consumable Booklet
Mathematics	4	Test Booklet and Answer Document
Mathematics	5	Test Booklet and Answer Document
Mathematics	6	Test Booklet and Answer Document
Mathematics	7	Test Booklet and Answer Document
Mathematics	8	Test Booklet and Answer Document
Science	4	Test Booklet and Answer Document
Science	8	Test Booklet and Answer Document

Generally, a separate test booklet and answer booklet were used to separate the selected-response items and constructed-response items. For the Grade 3 mathematics and ELA assessments, a single booklet was used for each assessment to accommodate the younger age of the students.

The number of sections for the 2016 operational assessment varied based on the content area of the assessment. The ELA assessments consisted of four sections. The mathematics assessments consisted of three sections. The science assessments consisted of two sections. See also Appendix G.

Table 7–2. PSSA Test Section Information

Content Area	No. of Sections per Form
ELA	4
Mathematics	3
Science	2

Table 7–3. PSSA Testing Load and Duration by Subject by Grade

Assessment	Grade	Total No. of SR Items per Form per Administration	Total No. of CR Items per Form per Administration	Total Estimated Administration Time per Form (in Minutes)
ELA	3	60	4	240 to 300
ELA	4	65	3	295 to 355
ELA	5	65	3	295 to 355
ELA	6	65	3	295 to 355
ELA	7	65	3	295 to 355
ELA	8	65	3	295 to 355
Mathematics	3	72	4	200 to 245
Mathematics	4	72	4	200 to 245
Mathematics	5	72	4	200 to 245
Mathematics	6	72	4	200 to 245
Mathematics	7	72	4	200 to 245
Mathematics	8	72	4	200 to 245
Science	4	68	6	120 to 150
Science	8	70	6	130 to 160

Table 7–4. PSSA Testing Load and Duration by Grade by Subject

Grade	Content	Total No. of Items per Form per Administration	Total Estimated Administration Time per Form (in Minutes)	Total No. of Items per Student	Total Estimated Administration Time per Student (in Minutes)
3	ELA	64	240 to 300	140	440 to 545
3	Mathematics	76	200 to 245	140	440 to 545
4	ELA	68	295 to 355	218	615 to 750
4	Mathematics	76	200 to 245	218	615 to 750
4	Science	74	120 to 150	218	615 to 750
5	ELA	68	295 to 355	144	495 to 600
5	Mathematics	76	200 to 245	144	495 to 600
6	ELA	68	295 to 355	144	495 to 600
6	Mathematics	68	200 to 245	144	495 to 600
7	ELA	68	295 to 355	144	495 to 600
7	Mathematics	76	200 to 245	144	495 to 600
8	ELA	68	295 to 355	220	625 to 760
8	Mathematics	76	200 to 245	220	625 to 760
8	Science	76	130 to 160	220	625 to 760

In general, the estimated testing times allowed 1–3 minutes per multiple-choice item, depending on the content area. The evidence-based selected-response items were estimated to take approximately 3–5 minutes per item, depending on the number of responses required by the item. The open-ended or short-answer items were estimated to take approximately 5–10 minutes per item, also depending on the content area. Writing prompts and text-dependent analysis questions were estimated to take approximately 55–65 minutes per item.

Test administrators were instructed that each section in a form should be scheduled as one assessment session. However, they were allowed to combine multiple sections into a single session, as long as the sections were administered in the sequence in which they are printed in the test booklets (or shown on the screen). In all cases, individual assessment sections had to be completed within one school day.

Since not all students finished the assessment sections at the same time, test administrators were advised to use the flexibility of the time limits to the students' advantage. For example, test administrators managed the testing time so that students did not feel rushed while they were taking any assessment section, and no student was penalized because he or she worked slowly. It was equally stressed to test administrators that a student should not be given an opportunity to waste time. Students were told to close their booklets when they had finished the section of the assessment in which they had been working. Students who finished early were allowed to sit quietly or read for pleasure until all students had finished. Students with special requirements and/or abilities (i.e., physical, visual, auditory, or learning disabilities as defined by their IEP or service contracts) and students who just worked slowly may have required extended time. Special assessment situations were arranged for these students. When all students in a testing session indicated that they had finished an assessment section, test administrators ended the section and began the next section or allowed the students to return to regular activities.

Scheduled extended time was provided by a test administrator, and students were allowed to request extended time if they indicated that they had not completed the task. Such requests were granted if the test administrator found the request to be educationally valid. Test administrators were advised that not permitting ample time for students to complete the assessment might impact the students' and school's performance.

As a general guideline, however, when all students indicated that they had finished a section, that section was closed. Students requiring time beyond the majority of the student population were allowed to continue immediately following the regularly scheduled session in another setting. When such accommodations were made, school personnel ensured that students were monitored at all times to prevent sharing of information. Students were not permitted to continue a section of the assessment after a significant lapse of time from the original session.

Additional information concerning testing time and test layouts can be found in Chapter Three.

TESTING WINDOW

The testing windows for the 2016 operational assessments were as follows:

- English Language Arts – April 11 through April 15, 2016
- Mathematics – April 18 through April 22, 2016
- Science – April 25 through April 29, 2016
- Make-ups for ELA, Mathematics, and Science– May 4 through May 8, 2016

Additional information concerning testing time and test layouts can be found in Chapter Three.

SHIPPING, PACKAGING, AND DELIVERY OF MATERIALS

DRC sent two shipments for the 2016 PSSA operational assessment:

- Shipment one contained the *Handbook for Assessment Coordinators* and the *Directions for Administration Manuals* for each grade tested at a school participating in the English Language Arts, Mathematics, and Science assessments. Shipment one was delivered by March 14, 2016.
- Shipment two contained the administrative materials (e.g., Return Shipping labels, District/School labels, Do Not Score labels, and Student Precode labels) and secure materials (e.g., consumable test/answer booklets) for each grade tested at a school participating in the English Language Arts, Mathematics, and Science assessments. Shipment two was delivered by March 28, 2016.

DRC ensured that all assessment materials were assembled correctly prior to shipping. DRC operations staff used the automated Operations Materials Management System (Ops MMS) to assign secure materials to a school at the time of ship out. This system used barcode technology to provide an automated quality check between items

requested for a site and items shipped to a site. A shipment box manifest was produced for and placed in each box shipped. DRC operations staff double-checked all box contents with the box manifest prior to sealing the box for shipping to ensure accurate delivery of materials. DRC operations staff performed lot acceptance sampling on both shipments. Districts and schools were selected at random and examined for correct and complete packaging and labeling. This sampling represented a minimum of 10 percent of all shipping sites.

DRC's materials management system, along with the systems of shippers, allowed DRC to track materials from DRC's warehouse facility to receipt at the district, school, or testing site. All DRC shipping facilities, materials processing facilities, and storage facilities are secure. Access is restricted by security code. Non-DRC personnel are escorted by a DRC employee at all times. Only DRC inventory control personnel have access to stored secure materials. DRC employees are trained in and made aware of the high level of security that is required.

DRC packed 4,271,288 assessment booklets and 188,599 *Directions for Administration Manuals* for 2,673 testing sites. DRC used United Parcel Service (UPS) and Advanced Shipping Technologies to deliver the secure materials to the testing sites.

ONLINE TESTING

Online administration is managed through the DRC eDIRECT client portal that provides tiered, secure access to all required administrative functions. Within eDIRECT, users manage student information and create test sessions.

Student information from the Pennsylvania Information Management System (PIMS) is imported into eDIRECT via file transfer or LEAs upload student directly into eDIRECT. From here, LEAs are able to view all of the demographic information associated with the students from PIMS before placing them in test sessions for test tickets.

Once the student data loaded into Test Setup, users organize students into test sessions. Test sessions can be created by class, grade, or school. Through Test Setup, users can also update student accommodation information, print test tickets, and monitor student testing status.

The student login ticket contains unique login credentials used by the student to access the testing software. For a selected test session, users can download and print a PDF document containing instructions, a roster of student tickets being printed, and the actual test tickets. Student test tickets are considered secure materials and LEAs are required to keep printed tickets in a predetermined, locked, secure storage area.

The web-based test engine, DRC INSIGHT Online Learning System, is downloaded onto computers that students will access during the assessment. Test items and forms can only be accessed using a valid test ticket. During testing, responses are sent to a DRC server each time the student navigates away from an item or clicks the *Next* button to submit an answer. The system is configured to allow students to review answers before submitting their test.

MATERIALS RETURNED

DRC used UPS for all returns. The return windows for the PSSA materials were as follows:

- English Language Arts primary return window – April 13 through April 27, 2016
- Mathematics primary return window – April 20 through April 29, 2016
- Science primary return window – April 27 through May 6, 2016
- Make-ups for ELA, Mathematics, and Science primary return window – May 2 through 6, 2016

TEST SECURITY MEASURES

Test security is essential to obtaining reliable and valid scores for accountability purposes. Test Security Certifications were required to be signed by each building Principal, School Assessment Coordinator, District Assessment Coordinator, Test Administrator, and Proctor prior to the assessment being administered. All signed Certifications were returned to the Chief School Administrator who must retain the Certifications for three years. The purpose of the Certifications was to serve as a tool to document that the individuals responsible for administering the assessments both understood and acknowledged the importance of test security and accountability. The Certifications attested that all security measures were followed concerning the handling of secure materials. Additional details can be found in the *2017 PSSA Handbook for Assessment Coordinators*. A screen shot of the Test Administrator Certificate is provided in Figure 7-1.

Figure 7-1. Test Administrator and Proctor PSSA Test Security Certification



2017 PSSA Test Security Certification

(Test Administrator and Proctor)

District: _____

School: _____

AUN: _____

Maintaining the security and integrity of all assessment materials, preventing any dishonest or fraudulent behavior in the administration and handling of the assessment, and promoting a fair and equitable testing environment are essential in order to obtain reliable and valid student scores. In that regard, I certify the following:

Prior to the administration of the assessment, I completed the Pennsylvania State Test Administration Training, and I understand that the assessment materials are secure, confidential, and proprietary documents owned by the Pennsylvania Department of Education.

I have not reviewed, discussed, disseminated, described, or otherwise revealed the contents of the assessment to anyone. I have not removed any assessment materials from the school building unless I was specifically authorized to administer the assessment to a student on homebound instruction. I have not kept, copied, reproduced, released, or used any assessment, assessment question, specific assessment content, or examinee response to any item or any section of the secure assessment in any manner that is inconsistent with the instructions provided by or through the Pennsylvania Department of Education. I have not provided any examinee with an answer to an assessment question or in any way influenced an examinee's response to any assessment question. I have not in any manner altered or caused the alteration of any examinee response, assessment booklet, or papers used by examinees.

I understand that any breach in assessment security could result in the invalidation of assessment results, professional discipline, and/or criminal prosecution.

I understand that false statements herein are made subject to the penalties of 18 Pa.C.S. § 4904.

Administrator/Proctor Name

Administrator/Proctor Signature

Date of Signature

SAMPLE MANUALS

Copies of the *Handbook for Assessment Coordinators* and the *Directions for Administration Manuals* can be found on the PDE website at www.education.pa.gov.

TESTING WINDOW ASSESSMENT ACCOMMODATIONS

The *Accommodations Guidelines* was developed by PDE for use with the 2016 PSSA. This manual can be found on the PDE website at www.education.pa.gov. Additional information regarding assessment accommodations can be found in Chapter Four of this report.

CHAPTER EIGHT: PROCESSING AND SCORING

RECEIPT OF MATERIALS

Receipt of PSSA test materials began on April 20, 2016, and concluded with all make-up tests on May 10, 2016. DRC's Operations Materials Management System (Ops MMS) was utilized to receive assessment materials securely, accurately, and efficiently. This system features innovative automation and advanced barcode scanners. Captured data were organized into reports, which provided timely information with respect to suspected missing material.

The first step in the Ops MMS was the Box Receipt System. When a shipment arrived at DRC, the boxes were removed from the carrier's truck and passed under a barcode reader, which read the barcode printed on the return label and identified the district and school. The number of boxes was immediately compared to what was picked up at the district. The data collected in this process were stored in the Ops MMS database. After the barcode data were captured, the boxes were placed on a pallet and assigned a corresponding pallet number.

Once the box receipt process was completed, the materials separation phase began. Warehouse personnel opened the boxes and sorted materials by grade, subject, and status (used or unused booklets) into scanning boxes. Every booklets' security barcode and precode barcode were hand-scanned to link each document to the original box. As the booklets were sorted, the Ops MMS system guided the floor operator to which box to place the document. The Ops MMS system kept count and record of the materials placed in each box. This count remained correlated to the box as an essential quality-control step throughout the secure booklet processing and provided a target number for all steps of the check-in process. Once a box was closed, an MMS Processing Label was placed on that box.

Once labeled, the sorted and counted boxes proceeded to the Quality Assurance process, where a secure booklet check-in operator used a hand scanner to scan the MMS Processing Label. This procedure identified the material type and quantity parameters for what the Ops MMS should expect within a box. The box contents were then loaded into the streamfeeder.

The documents were fed past oscillating scanners that captured both the security code and precode from the booklets. A human operator monitored an Ops MMS screen that displayed scan errors, an ordered accounting of what was successfully scanned, and the document count for each box. The system ensured that each material within the box matched the information obtained from the original hand-scanning process.

When all materials were scanned and the correct document count was confirmed, the box was sealed and placed on a pallet. If the correct document count was not confirmed, or if the operator encountered difficulties with material scanning, the box and its contents were delivered to an exception handling station for resolution.

This check-in process occurred immediately upon receipt of materials; therefore, DRC provided feedback to districts and schools regarding any missing materials based on actual receipt versus expected receipt. Sites that had 100 percent of their materials missing after the date they were due to DRC were contacted, and any issues were resolved.

Throughout the process of secure booklet check-in, DRC project management ran a daily missing materials report. Every site that was missing any number of booklets was contacted by DRC. Results of these correspondences were recorded for inclusion in the final Missing Materials Report if the missing booklets were not returned by the testing site. DRC produced the Missing Materials Report for PDE upon completion of secure booklet check-in. The report listed all schools in each participating district along with security barcodes for any booklets not returned to DRC.

After scannable materials (used answer booklets) were processed through booklet check-in, the materials became available to the DRC Document Processing log-in staff for document log-in. The booklets were logged-in using the following process:

- A DRC scannable barcode batch header was scanned, and a batch number was assigned to each box of booklets.

- The DRC box label barcode was scanned into the system to link the box and booklets to the newly created batch and to create a Batch Control Sheet.
- The DRC box label barcode number, along with the number of booklets in the box, was printed on the Batch Control Sheet for document tracking purposes. All booklets that were linked to the box barcode were assigned to the batch number and tracked through all processing steps. As booklets were processed, DRC staff dated and initialed the Batch Control Sheet to indicate that proper processing and controls were observed.

Before the booklets were scanned, all batches went through a quality inspection to ensure batch integrity and correct document placement.

After a quality check-in at the DRC Document Processing log-in area, the spines were cut off the scannable documents, and the pages were sent to DRC's Imaging and Scoring System.

SCANNING OF MATERIALS

Customized scanning programs for all scannable documents were prepared to read the booklets and to format the scanned information electronically. Before materials arrived, all image scanning programs went through a quality review process that included scanning of mock data from production booklets to ensure proper data collection.

DRC's image scanners were calibrated using a standard deck of scannable pages with 16 known levels of gray. On a predefined page location, the average pixel darkness was compared to the standard calibration to determine the level of gray. Marks with an average darkness level of 4 or above on a scale of 16 (0 through F) were determined to be valid responses, per industry standards. If multiple marks were read for a single item and the difference of the grayscale reads was greater than four levels, the lighter mark was discarded. If the multiple marks had fewer than four levels of grayscale difference, the response was flagged systematically and forwarded to an editor for resolution.

DRC's image scanners read selected-response, demographic, and identification information. The image scanners also used barcode readers to read pre-printed barcodes from a label on the booklets.

The scannable documents were automatically fed into the image scanners where predefined processing criteria determined which fields were to be captured electronically. Open-ended response images were separated out for image-based scoring.

During scanning, a unique serial number was printed on each sheet of paper. This serial number was used for document integrity and to maintain sequencing within a batch of booklets.

A monitor randomly displayed images, and the human operator adjusted or cleaned the scanner when the scanned image did not meet DRC's strict quality standards for image clarity.

All images passed through a software clean-up program that despeckled, deskewed, and desmeared the images. A random sample of images was reviewed for image quality approval. If any document failed to meet image quality standards, the document was returned for rescanning.

Page-scan verification was performed to ensure that all predefined portions of the booklets were represented in their entirety in the image files. If a page was missing, the entire booklet was flagged for resolution.

After each batch was scanned, booklets were processed through a computer-based editing program to detect potential errors as a result of smudges, multiple marks, and omissions in predetermined fields. Marks that did not meet the predefined editing standards were routed to editors for resolution.

Experienced DRC Document Processing editing staff reviewed all potential errors detected during scanning and made necessary corrections to the data files. The imaging system displayed each suspected error. The editing staff then inspected the image and made any needed corrections using the unique serial number printed on the document during scanning.

Upon completion of editing, quality control reports were run to ensure that all detected potential errors were reviewed again and a final disposition was determined.

Before batches of booklets were extracted for scoring, a final edit was performed to ensure that all requirements for final processing were met. If a batch contained errors, it was flagged for further review before being extracted for scoring and reporting.

During this processing step, the actual number of documents scanned was compared to the number of booklets assigned to the box during book receipt. Count discrepancies between book receipt and booklets scanned were resolved at this time.

Once all requirements for final processing were met, the batch was released for scoring and student level processing.

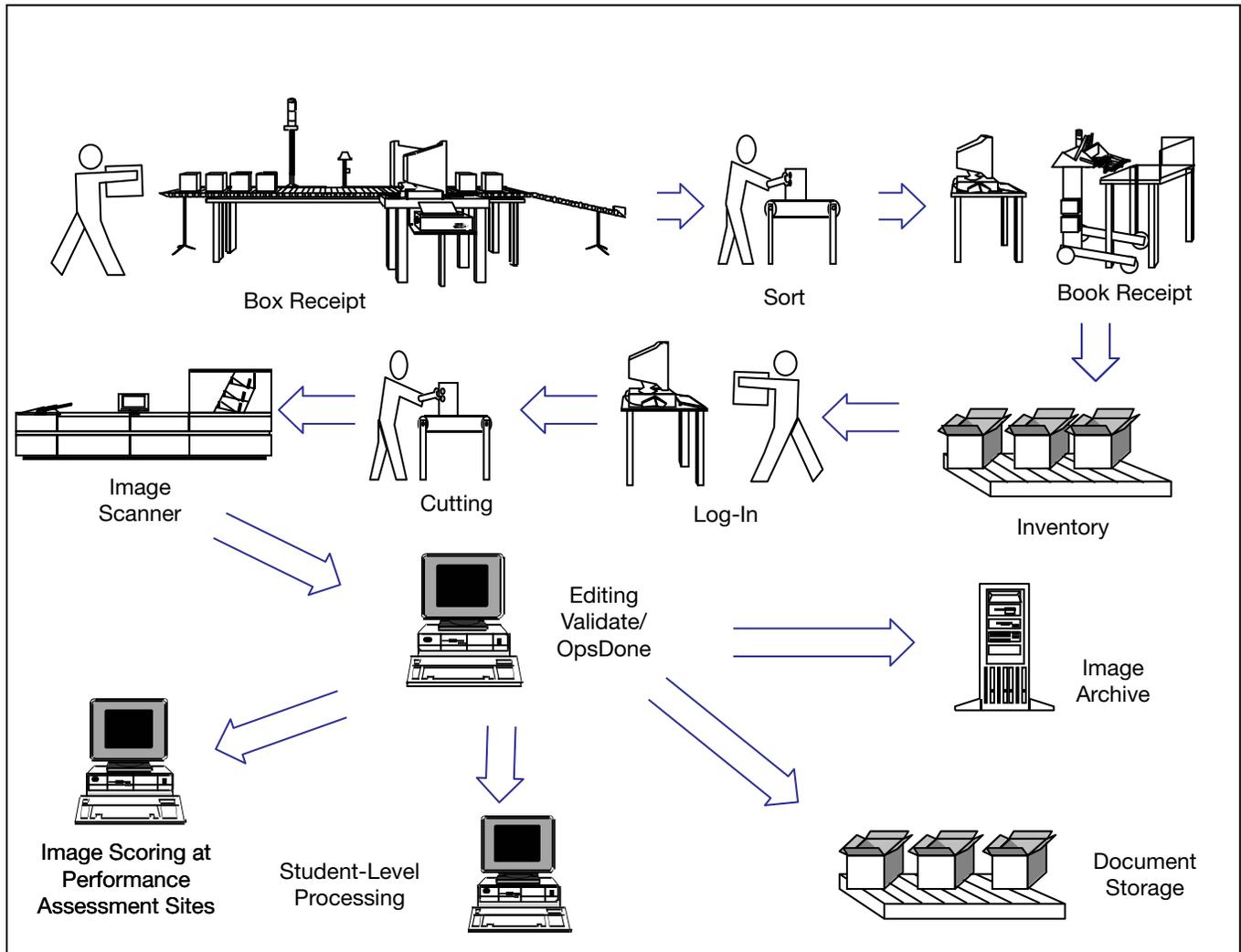
Table 8–1 shows the number of answer booklets received through booklet check-in, the number of booklets that contained student responses that were scanned and scored, the number of test booklets received, and the total number of booklets received for the English Language Arts assessment (ELA), the Mathematics assessment, and the Science assessment.

Table 8–1. Counts of 2016 PSSA Materials Received: Grades 3–8

Grade/Subject	Answer Booklets Received	Used Answer Booklets Received	Test Booklets Received	Total Booklets Received	Total Booklets Shipped
Grade 3 ELA	169,367	130,210	NA	169,367	169,446
Grade 4 ELA	167,301	128,275	167,297	334,598	334,660
Grade 5 ELA	165,141	126,795	165,131	330,272	330,410
Grade 6 ELA	163,034	128,104	163,043	326,077	326,540
Grade 7 ELA	161,889	127,960	161,893	323,782	324,348
Grade 8 ELA	161,123	126,579	161,117	322,240	322,288
Grade 3 Math	170,439	129,838	NA	170,439	170,498
Grade 4 Math	167,400	127,868	167,391	334,791	334,838
Grade 5 Math	165,327	126,315	165,401	330,728	330,898
Grade 6 Math	162,765	127,696	162,764	325,529	325,586
Grade 7 Math	161,768	127,182	161,765	323,533	324,142
Grade 8 Math	161,284	126,134	161,282	322,566	322,632
Grade 4 Science	167,100	126,621	167,049	334,149	334,470
Grade 8 Science	160,101	124,956	160,100	320,201	320,532

Figure 8–1 illustrates the production workflow for DRC’s Ops MMS and Image Scanning and Scoring System from receipt of materials through all processing of materials and the presentation of scanned images for scoring.

Figure 8–1. Workflow System



MATERIALS STORAGE

Upon completion of processing, student response documents were boxed for security purposes and final storage:

- Project-specific box labels were created containing unique customer and project information, material type, batch number, pallet/box number, and the number of boxes for a given batch.
- Boxes were stacked on pallets that were labeled with the project information and a list of the pallet’s contents before delivery to the Materials Distribution Center for final secure storage.
- Materials will be destroyed one year after contract year ends, with PDE written approval.

ONLINE TESTING

The DRC INSIGHT test engine runs on a custom web browser that is designed to ensure a fully secure environment during testing. The secure browser “locks down” the student’s testing device, preventing the student from accessing the desktop, the Internet, and other external programs. For non-secure testing such as practice and training sessions, students can use the Online Tools Training (OTT) environment, which runs on a standard web browser.

The custom browser software is downloaded from eDIRECT and installed onto student testing devices. The secure browser can be installed on computers individually, or it can be downloaded to a central location, copied, and distributed to multiple computers simultaneously using common network distribution tools. Everything needed for testing is found within the secure browser, eliminating the need for districts to coordinate updates to third-party software.

Prior to operational use, DRC’s quality assurance staff will perform full system-level tests in an independent test environment that simulates the production configuration. Tests are run on all supported computer platforms and browsers and include comprehensive review of system functionality, usability, reliability, security, and overall performance. Test content is also validated during this process.

Multiple methods are used to ensure secure data transfer, including encryption technologies and Secure Sockets Layer (SSL) protocol through Hypertext Transfer Protocol Secure (HTTPS). Test content is encrypted at the host server, and remains encrypted throughout all network transmissions; content is decrypted only once the student login is validated. Decrypted test content on the student workstation is stored only in memory during each test session. Once the session is ended (the test is completed or the student logs out), computer memory is purged to ensure security of test content is maintained.

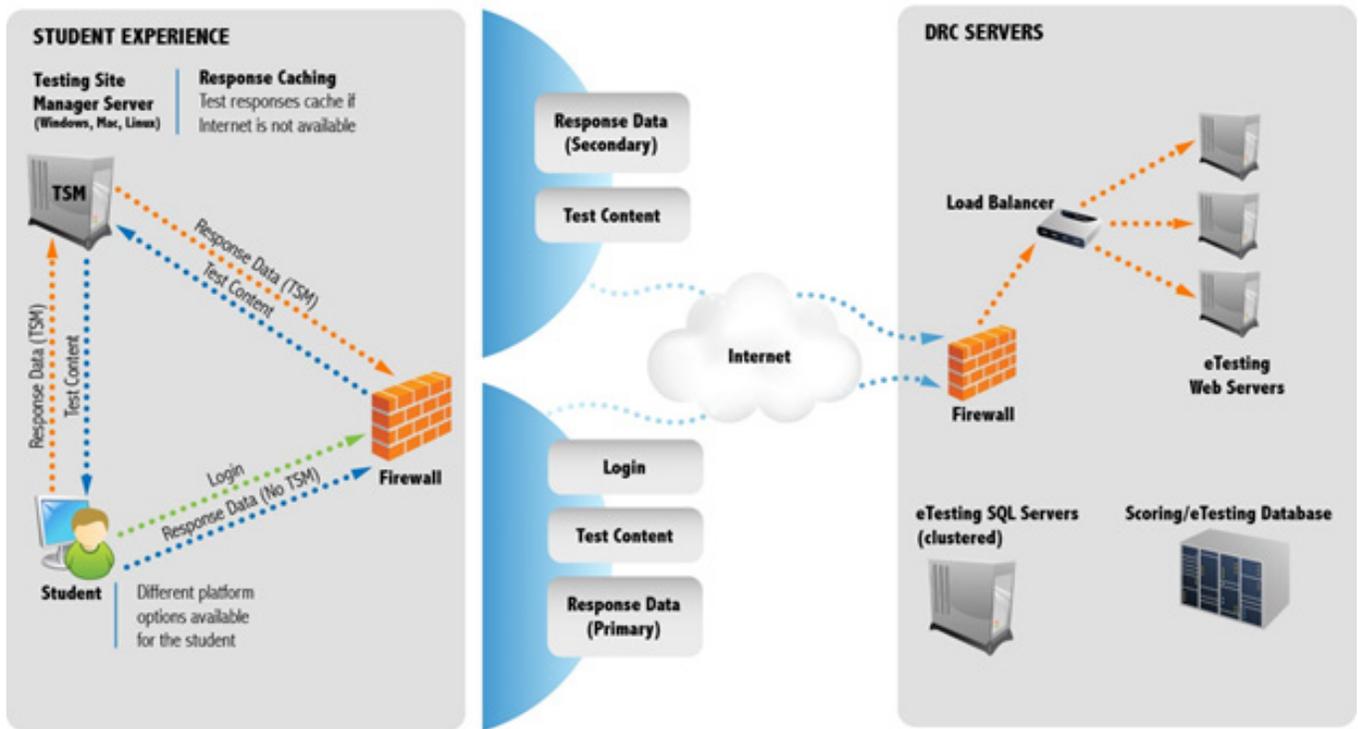
Responses are saved automatically every 45 seconds during testing, or when the student navigates away from an item or answers a selected-response item (whichever comes first). If a particular question takes the student longer than 45 seconds to answer, then the partial, incomplete responses are submitted at 45-second intervals until the student completes the item. This auto-save helps safeguard against students losing their work on longer items, such as constructed-response items. When the student returns to the test after a break or interruption, the student is returned to the point that they left off without having to navigate through all previously answered questions.

Table 8–2. Counts of 2016 PSSA Online Assessments: Grades 3–8

Grade/Subject	Total Online Assessments Completed
Grade 3 ELA	998
Grade 4 ELA	1,138
Grade 5 ELA	1,646
Grade 6 ELA	2,918
Grade 7 ELA	3,337
Grade 8 ELA	3,845
Grade 3 Math	1,032
Grade 4 Math	1,162
Grade 5 Math	1,656
Grade 6 Math	2,881
Grade 7 Math	3,649
Grade 8 Math	3,745
Grade 4 Science	2,337
Grade 8 Science	4,752

Figure 8–2 illustrates the secure transfer of online test responses between the student and DRC.

Figure 8–2. Architecture of the Student Testing Experience



SCORING MULTIPLE-CHOICE ITEMS

The scoring process included the scoring of multiple-choice items against the answer key and the aggregation of raw scores from the open-ended responses. A student’s raw score is the actual number of points achieved by the student for tested elements of an assessment. From the raw scores, the scale scores were calculated.

The student file was scored against the final and approved multiple-choice answer key. Items were scored as right, wrong, omitted, or double-gridded (more than one answer was bubbled for an item). Sections of the test were evaluated as a whole and an attempt status was determined for each student for each subject. The score program defined all data elements at the student level for reporting.

RANGEFINDING

After student answer documents were received and processed, DRC’s Performance Assessment Services (PAS) staff assembled groups of responses that exemplified the different score points for each subject. The score point ranges were represented by the following scoring guidelines:

- 0–3 item-specific scoring guidelines for ELA: reading (short answer)
- 1–4 holistic scoring guideline for ELA: text-dependent analysis
- 0–4 item-specific scoring guidelines for math
- 0–2 item-specific scoring guidelines for science

Note: For English language arts and mathematics at all grade levels (3–8), Pennsylvania Core Standards (PCS) items were range-finded and field tested. ELA and Mathematics range-finded/field tested 9 forms per subject, per grade. Science range-finded/field tested 12 forms per subject, per grade level tested (4 and 8). All items were embedded in the 2016 operational PSSA. All grades of PCS writing prompts (WPs) were range-finded and field tested as part of separate standalone field tests not addressed in this technical report.

Responses were pulled from the embedded field test portion of the PSSA for each subject. Once examples covering the range of score points were selected for each item, sets were assembled for rangefinding. Copies were made for each rangefinding participant. Rangefinding committees consisted of Pennsylvania educators, PDE staff members, DRC Test Development staff, and DRC Performance Assessment Services staff. The rangefinding meetings were as follows:

- ELA: Text-Dependent Analysis (TDA) Field Test Rangefinding (grades 4–8), May 23–27, The Penn Stater Hotel & Conference Center, State College, PA
- Reading Field Test Rangefinding (grade 3), May 23–25, The Penn Stater Hotel & Conference Center, State College, PA
- Math Field Test Rangefinding (grades 3–8), June 1–3, Hilton Harrisburg, Harrisburg, PA
- Science Field Test Rangefinding (grades 4 and 8), June 1–2, Hilton Harrisburg, Harrisburg, PA

Each rangefinding meeting began in a joint session with a review of the history of the assessment as well as discussing the purpose of the rangefinding meeting and the role rangefinding plays within the item development process. The session then broke into subject/grade-specific committees. Sets of student responses were presented to the committees, one item at a time. Each committee initially reviewed and scored student responses as a group to ensure that everyone was interpreting the scoring guidelines consistently. Committee members then went on to score responses independently. For each student response, committee members' scores were discussed until a consensus was reached. Only those responses for which there was strong agreement among committee members were chosen for inclusion in training materials for DRC raters.

Discussions of student responses included the mandatory use of scoring guideline language. This ensured that committee members remained focused on the specific requirements of each score level. DRC PAS staff took notes addressing how and why the committees arrived at score point decisions, and this information was used by the scoring directors in rater training.

DRC and PDE discussed scoring guideline edits suggested by the rangefinding committees. Changes approved by PDE were then incorporated into the scoring guidelines by DRC Test Development staff. The edited scoring guidelines were used in the preparation of materials and the training of raters.

RATER RECRUITMENT/QUALIFICATIONS

DRC retains a number of raters from year to year; the overall return rate in 2016 was 64.5%. This pool of experienced raters was drawn from to staff the scoring of the 2016 PSSA. To complete the rater staffing for this project, DRC placed advertisements in local newspapers and utilized a variety of web sites. Due to changes in local economies resulting in hiring shortfalls, staffing partners were used in some locations to augment hiring. Open houses were held and applications for rater positions were screened by DRC's recruiting staff. Candidates were personally interviewed by DRC staff. In addition, each candidate was required to provide an on-demand writing sample, an on-demand math sample, references, and proof of a four-year college degree. In this screening process, preference was given to candidates with previous experience scoring large-scale assessments and degrees emphasizing expertise in mathematics, English language arts, or science. Thus, the rater pool consisted of educators and other professionals with content-specific backgrounds. These individuals were valued for their content-specific knowledge, but they were required to set aside their own biases about student performance and accept the scoring standards outlined in the PSSA.

LEADERSHIP RECRUITMENT/QUALIFICATIONS

Scoring directors and team leaders were selected from a pool of employees who displayed expertise as raters and leaders on previous DRC projects. These individuals had strong backgrounds in mathematics, English language arts, or science and demonstrated organizational, leadership, communication, and management skills. A majority of scoring directors and team leaders had at least five years of leadership experience working on large-scale assessments, including the PSSA. All scoring directors, team leaders, and raters were required to sign confidentiality agreements before handling secure materials.

Each room of raters was assigned a scoring director. The scoring director led all handscoring activities for the duration of the project. Scoring directors assisted in rangefinding, worked with supervisors to create training materials, conducted team leader training, and were responsible for training the raters. The scoring director made sure that reports were available and interpreted those reports for the raters. The scoring director also supervised the team leaders. Scoring directors were monitored by the project director and project managers.

Team leaders assisted the scoring director with rater training by leading their teams in small group discussions and answering individual questions that raters may not have felt comfortable asking in a large group. Once raters were qualified, team leaders were responsible for maintaining the accuracy and workload of each team member. Ongoing monitoring identified those individuals having difficulty scoring accurately. These raters received one-on-one retraining from the team leader. Any rater who could not be successfully retrained had his/her scores purged and was released from the project.

TRAINING

As part of preparation for the 2016 ELA, mathematics, and science assessments, DRC's PAS staff assembled the PDE-approved scoring guidelines and scored student responses approved by rangefinding committees into sets used for training raters. The item-specific scoring guidelines for mathematics, science and ELA: reading (short answer), as well as the focused holistic scoring guidelines for TDAs and WPs served as the raters' constant reference. Responses that were relevant in terms of the scoring concepts they illustrated were annotated and included in an anchor set. The full range of each score point was clearly represented and annotated in the anchor set, which was used for reference by raters throughout the project.

Training sets and qualifying sets contained student responses consensus-scored by rangefinding committee members. Raters were instructed on how to apply the scoring guidelines and were required to demonstrate a clear comprehension of each anchor set by performing well on the associated training materials. Responses were selected for training to show raters the range of each score point (e.g., high, mid, and low 2s). Examples of 0s were also included for all mathematics, reading, and science items. This process helped raters recognize the various ways that a student could respond in order to earn each score point outlined and defined in the scoring guidelines.

The scoring director conducted a team leader training session before training the raters. This session followed the same procedures as rater training, but standards were more stringent due to the extra responsibilities required of team leaders. During team leader training, all PSSA materials were reviewed and discussed. Team leaders were required to annotate all of their training materials with committee justifications from the rangefinding meetings. To facilitate scoring consistency, it was imperative that all team leaders imparted the same rationale for each response. Once the team leaders were qualified, leadership responsibilities were reviewed and team assignments were given. A ratio of one team leader per 8–11 raters ensured sufficient monitoring rates for team members.

The 2016 assessment included the opportunity for students to respond in Spanish to mathematics and science items. The scoring director responsible for overseeing this is a Spanish language speaker who has a strong mathematics and science background and has worked closely with the PSSA in this capacity for seven years. All Spanish raters were bilingual and hired specifically to score the Spanish portion of the assessment. They were required to meet the same training and scoring standards set for the raters of the English version of the assessment.

Rater training began with the scoring director providing an intensive review of the scoring guidelines and anchor papers. Next, raters practiced by independently scoring the responses in the training sets. After each training set, the scoring director or team leaders led a thorough discussion of the responses, either in a large-group or small-group setting.

Once the scoring guidelines, anchor sets, and training sets were thoroughly discussed, each rater was required to demonstrate understanding of the scoring criteria by qualifying (i.e., scoring with acceptable agreement to the true scores) on at least one of the qualifying sets. Raters who failed to achieve at least 70 percent exact agreement on the first qualifying set were given additional, individual training. Raters who did not perform at the required level of agreement by the end of the qualifying process were not allowed to score any student responses. These individuals were removed from the pool of potential raters in DRC's imaging system and released from the project.

Table 8–3. Qualification Rates for 2016 PSSA Open-Ended Response Items

Subject	% Qualifying On First Attempt	% Qualifying On Second Attempt	% That Did Not Qualify
ELA	85	11	4
Math	91	8	1
Science	95	4	1

HANDSCORING PROCESS

Student responses were scored independently. All responses were scored once, and ten percent of the responses were scored a second time. The data collected from the ten-percent double-read portion was used to calculate the exact and adjacent agreement rates in the Scoring Summary Reports. The responses that were used for the ten percent read behind were randomly chosen by the imaging system at the item level. Additional read behinds by the team leaders and scoring directors were done to further ensure reliability.

Raters scored the imaged student responses on PC monitors at DRC Scoring Centers in Sharonville, Ohio; Plymouth and Woodbury, Minnesota; Madison, Wisconsin; King of Prussia, Pennsylvania; Indianapolis, Indiana; Monterey, California; and Jacksonville, Florida. Due to hiring shortfalls, additional temporary centers in other locations were also used. In all locations, raters were seated at tables with individual imaging stations. Image distribution was controlled, ensuring that student images were sent only to designated groups of raters qualified to score those items. Imaged student responses were electronically separated for routing to individual raters by item. Raters were only provided with student responses that they were qualified to score. Scores were keyed into DRC’s imaging system.

To handle possible alerts (i.e., student responses indicating potential issues related to students’ safety and well-being that sometimes require attention at the state or local level), DRC’s imaging system allows raters to forward responses needing attention to the scoring director. These alerts are reviewed by project management, who then notifies the students’ schools and PDE of the occurrences. However, PDE does not receive students’ responses or any other identifying information about the students. At no time in the alerts process do raters, or other DRC staff, acquire any knowledge concerning a student’s personal identity.

HANDSCORING VALIDITY PROCESS

One of the training tools PAS utilized to ensure rater accuracy was the validity process. The goal of the validity process is to ensure that scoring standards are maintained. Specifically, the objective is to make sure that raters score student responses in a manner consistent with statewide standards both within a single administration of the PSSA and across consecutive administrations. During the scoring of the 2016 PSSA, scoring consistency was maintained, in part, through the validity process.

The validity process began with the selection of scored responses. Forty validity papers were selected for each core open-ended (OE) item. These 40 papers were drawn from a pool of exemplars (responses that are representative of a particular score point and have been verified by the scoring director. The scores on validity papers are considered true scores.

The validity papers were then implemented to test rater accuracy. The responses were selected within the imaging system and dispersed intermittently to the raters. By the end of the project, raters had scored all 40 validity papers for any items they were qualified to score. Raters were unaware that they were being dealt pre-scored validity responses and assumed that they were scoring live student responses. This helped bolster the internal validity of the process. It is important to note that all raters who received validity papers had already successfully completed the training/qualifying process.

Next, the scores that the raters assigned to the validity papers were compared to the true scores in order to determine the validity of the raters’ scores. For each item, the percentage of exact agreement as well as the percentage of high and low scores was computed. This data was accessed through the Validity Item Detail Report. The same sort of data was also computed for each specific rater. This data was accessed through the Validity Reader Detail Report. Both of these may be run as daily or cumulative reports.

The Validity Reader Detail Report was used to identify particular raters for retraining. If a rater on a certain day generated a lower rate of agreement on a group of validity papers, it was immediately apparent in the Validity Reader Detail Report. A lower rate of agreement was defined as anything below 70 percent exact agreement with the true scores. Any time a rater's validity agreement rate fell below 70 percent, the scoring director was cued to examine that rater's scoring. First, the scoring director attempted to ascertain what kind of validity papers the rater was scoring incorrectly. This was done to determine whether there was any sort of a trend (e.g., trending low on the 1–2 line). Once the source of the low agreement rate was determined, the rater was retrained. If it was determined that the rater had been scoring live papers inaccurately, then his/her scores were purged for that day, and the responses were re-circulated and scored by other raters.

The cumulative Validity Item Detail Report was utilized to identify potential room-wide trends in need of correction. For instance, if a particular validity response with a true score of 3 was given a score of 2 by a significant number of raters within the room, that trend would be revealed in the Validity Item Detail Report. To correct a trend of this sort, the scoring director would look for student responses similar to the validity paper being scored incorrectly. Once located, these responses would be used in room-wide re-training, usually in the form of an annotated handout or a short set of papers without printed scores given to raters as a recalibration test.

Validity was employed on all operational mathematics, ELA: reading, and science OE items, as well as on all operational WPs and TDAs. Each 40-paper validity set was formulated to mirror the score point distribution that the item generated during its previous administration. Each validity set included at least five examples of each score point. Examples of different types of responses were included to ensure that raters were tested on the full spectrum of response types.

The exact rater agreement rate generated during the validity process was often higher than the inter-rater agreement rate for the same item. The reason for this discrepancy has to do with how validity sets are formulated. The 40 validity papers for each item, are intended to cover the full breadth of each score point. For example, each validity set contains examples of high, mid, and low 2s. This scope ensures that the validity process is truly valid in terms of addressing the complete spectrum of response types. However, certain types of responses are generally not included in validity sets. These include line papers (i.e., examples of score points that are so close to the adjacent score point that raters are instructed to consult with a supervisor before assigning a score) and responses that, because of poor word choice/writing, are difficult to understand. The reason for these exclusions is that confusing/line/illegible papers often do not impart a teachable lesson. Since these types of papers are usually unique, any potential lesson the response might teach would apply only to that particular paper. Conversely, the papers in validity sets are chosen because they represent common response-types and teach lessons that can be applied to other similar papers. Due to this distinction, validity sets often generate a slightly higher agreement rate than is typically generated during operational scoring.

QUALITY CONTROL

Rater accuracy was monitored throughout the scoring session by means of daily and ondemand reports. These reports ensured that an acceptable level of scoring accuracy was maintained throughout the project. Interrater reliability was tracked and monitored with multiple quality control reports that were reviewed by quality assurance analysts. These reports and other quality control documents were generated at the scoring centers, where they were reviewed by the scoring directors, team leaders, and project managers. The following reports and documents were used during the scoring of the open-ended items:

The Scoring Summary Report (includes two related reports)

1. The Reader Monitor Report monitored how often raters were in exact agreement with one another and ensured that an acceptable agreement rate was maintained. This report provided daily and cumulative exact and adjacent inter-rater agreement on the ten percent that was double read.
2. The Score Point Distribution Report monitored the percentage of responses given each of the score points. For example, the mathematics daily and cumulative reports showed what percentage of 0s, 1s, 2s, 3s, and 4s a rater had given to all the responses scored at the time the report was produced. It also indicated the number of responses read by each rater so that production rates could be monitored.

The Item Status Report monitored the progress of handscoring. This report tracked each response and indicated the status (e.g., not read, complete, awaiting supervisor review, etc.). This report ensured that all responses were scored by the end of the project.

The Reader Score Report identified all responses scored by an individual rater. This report was useful if any responses needed rescoring because of possible rater drift.

The Validity Reports (addressed in detail on previous pages) tracked how raters performed by comparing pre-scored responses to raters' scores for the same responses. If a rater's scoring fell below the 70 percent determined agreement rate, remediation occurred. Raters who did not retrain to the required level of agreement were released from the project.

The Read-Behind Log was used by the team leader/scoring director to monitor individual rater reliability. Team leaders read randomly-selected, scored items from each team member. If the team leader disagreed with a rater's score, remediation occurred. This proved to be a very effective type of feedback because it was done with live items scored by a particular rater.

Recalibration Sets were used throughout the scoring sessions to ensure accuracy by comparing each rater's scores with the true scores on a pre-selected set of responses. Recalibration sets helped to refocus raters on Pennsylvania scoring standards. This check made sure there was no change in the scoring pattern as the project progressed. Raters failing to achieve 70 percent agreement with the recalibration true scores were given additional training to achieve the highest degree of accuracy possible. Raters who were unable to recalibrate were released from the project. The process for creating and administering recalibration sets was similar to the one used for training sets.

Table 8–4. Inter-rater Agreement for 2016 PSSA Mathematics Grades 3–8 Open-Ended Response Items and Validity

Mathematics	Common Item	% Exact Agreement	% Adjacent Agreement	% Exact + Adjacent Agreement	% Exact Validity Agreement
Grade 3	1	93	7	100	95
Grade 3	2	80	20	100	87
Grade 3	3	83	17	100	84
Grade 4	1	94	6	100	95
Grade 4	2	95	5	100	98
Grade 4	3	87	13	100	90
Grade 5	1	88	12	100	87
Grade 5	2	93	7	100	90
Grade 5	3	84	16	100	85
Grade 6	1	88	12	100	90
Grade 6	2	88	12	100	92
Grade 6	3	87	13	100	94
Grade 7	1	90	10	100	95
Grade 7	2	88	12	100	89
Grade 7	3	86	14	100	91
Grade 8	1	89	11	100	93
Grade 8	2	86	14	100	87
Grade 8	3	89	11	100	90

Note. 0–4 possible score points

Table 8–5. Percentages Awarded for Each Possible Score Point 2016 PSSA Mathematics Grades 3–8

Mathematics	Common Item	%0	%1	%2	%3	%4	%B/NS*
Grade 3	1	23	42	16	13	4	2
Grade 3	2	7	41	20	21	8	3
Grade 3	3	11	29	29	22	6	3
Grade 4	1	60	17	8	8	4	3
Grade 4	2	7	12	19	30	25	8
Grade 4	3	24	25	14	20	13	3
Grade 5	1	35	28	11	15	6	4
Grade 5	2	24	29	26	8	3	9
Grade 5	3	14	22	45	5	11	2
Grade 6	1	33	34	25	4	2	3
Grade 6	2	32	13	17	18	9	11
Grade 6	3	42	19	17	11	9	3
Grade 7	1	38	35	13	8	3	4
Grade 7	2	5	19	27	28	12	9
Grade 7	3	27	39	17	9	3	4
Grade 8	1	26	52	11	5	2	5
Grade 8	2	15	42	24	10	0	8
Grade 8	3	11	37	24	20	4	4

*B=blank and NS=non-scoreable

Table 8–6. Inter-rater Agreement for 2016 PSSA Reading Grade 3 Open-Ended Response Items and Validity

Reading	Common Item	% Exact Agreement	% Adjacent Agreement	% Exact + Adjacent Agreement	% Exact Validity Agreement
Grade 3	1	77	23	100	70
Grade 3	2	78	22	100	77

Note. 0–3 possible score points

Table 8–7. Percentages Awarded for Each Possible Score Point 2016 PSSA Reading Grade 3

Reading	Common Item	%0	%1	%2	%3	%B/NS*
Grade 3	1	11	41	37	5	5
Grade 3	2	18	38	36	3	5

*B=blank and NS=non-scoreable

Table 8–8. Inter-rater Agreement for 2016 PSSA ELA Grades 4–8 Text-Dependent Analysis Items and Validity

TDA	Common Item	% Exact Agreement	% Adjacent Agreement	% Exact + Adjacent Agreement	% Exact Validity Agreement
Grade 4	1	89	11	100	76
Grade 5	1	84	16	100	85
Grade 6	1	81	19	100	86
Grade 7	1	86	14	100	75
Grade 8	1	81	19	100	83

Note. 1–4 possible score points

Table 8–9. Percentages Awarded for Each Possible Score Point 2016 PSSA TDA items Grades 4–8

TDA	Common Item	%1	%2	%3	%4	%B/NS*
Grade 4	1	46	31	5	0	17
Grade 5	1	44	38	7	1	9
Grade 6	1	29	45	18	1	6
Grade 7	1	35	39	14	1	10
Grade 8	1	30	36	21	3	10

*B=blank and NS=non-scoreable

Table 8–10. Inter-rater Agreement for 2016 PSSA Writing Grades 3-8 Open-Ended Response Items and Validity

Writing	Common Item	% Exact Agreement	% Adjacent Agreement	% Exact + Adjacent Agreement	% Exact Validity Agreement
Grade 3	1	81	19	100	75
Grade 4	1	76	24	100	82
Grade 5	1	77	23	100	83
Grade 6	1	79	21	100	77
Grade 7	1	83	17	100	87
Grade 8	1	77	23	100	85

Note. 1–4 possible score points

Table 8–11. Percentages Awarded for Each Possible Score Point 2016 PSSA Writing Grades 3-8

Writing	Common Item	%1	%2	%3	%4	%B/NS*
Grade 3	1	31	43	16	3	6
Grade 4	1	20	54	19	3	3
Grade 5	1	7	45	36	8	3
Grade 6	1	14	45	34	3	4
Grade 7	1	9	44	40	4	2
Grade 8	1	8	37	45	6	3

*B=blank and NS=non-scoreable

Table 8–12. Inter-rater Agreement for 2016 PSSA Science Grades 4 and 8 Open-Ended Response Items and Validity

Science	Common Item	% Exact Agreement	% Adjacent Agreement	% Exact + Adjacent Agreement	% Exact Validity Agreement
Grade 4	1	93	7	100	94
Grade 4	2	91	9	100	97
Grade 4	3	93	7	100	98
Grade 4	4	90	10	100	92
Grade 4	5	92	8	100	97
Grade 8	1	87	13	100	96
Grade 8	2	86	13	99	93
Grade 8	3	93	7	100	94
Grade 8	4	82	18	100	85
Grade 8	5	76	24	100	83

Note. 0–2 possible score points

Table 8–13. Percentages Awarded for Each Possible Score Point 2016 PSSA Science Grades 4 and 8

Science	Common Item	%0	%1	%2	%B/NS*
Grade 4	1	17	28	51	2
Grade 4	2	8	20	69	3
Grade 4	3	34	29	34	4
Grade 4	4	15	17	65	2
Grade 4	5	18	41	36	5
Grade 8	1	12	35	49	4
Grade 8	2	42	34	17	7
Grade 8	3	15	69	10	6
Grade 8	4	27	52	17	5
Grade 8	5	22	42	29	7

*B=blank and NS=non-scoreable

CHAPTER NINE: DESCRIPTION OF DATA SOURCES AND SAMPLING ADEQUACY

This chapter describes the data sources (e.g., *n*-counts, characteristics of students) used for the various analysis procedures discussed in the remaining chapters of this technical report. Psychometric analyses are conducted at several points for the PSSA: 1) early analyses for quality control purposes; 2) analyses associated with the calibration, scaling, and linking processes; 3) analyses used for item banking; and 4) analyses for the technical report. Detailed information regarding the attributes of students is provided in Chapter Ten.

PRIMARY STUDENT FILTERING CRITERIA

For many data files, the primary means of filtering students for inclusion/exclusion from any data analysis are based on the state reporting criteria which are outlined below. Within the state reporting rules are separate attempt criteria for individual subject areas. The attempt criteria are discussed more fully below.

STATE REPORTING CRITERIA

The state reporting criteria are as follows:

- The student must be enrolled for the full academic year.
- The student must be attributed to a public district/school (state).
- The student must receive a score (i.e., met the subject attempt logic—see additional information below).
- The student is not a homeschool student.
- The student is not a foreign exchange student.
- The student is not a first year ELL student (mathematics/ELA only).

PSSA ATTEMPT CRITERIA

For all data sources, only students who meet the attempt criteria are included. For mathematics, ELA, and science, the attempt criteria required students to complete a minimum of five items (multiple-choice (MC) or open-ended (OE)) in each respective subject area section of the test booklets. All subjects' counts were based on operational and nonoperational items.

KEY VALIDATION DATA

These data are only mentioned for the sake of completeness, as no formal results from these data are provided in this technical document. An analysis on all operational MC items is conducted early in the scoring process to ensure that the items are performing as expected. This is an important quality check that is always done for the PSSA. This analysis is usually (but not always) done using all students from early-return schools. The sample does not need to be representative of the entire state for these quality checks. Available student data typically suffices as long as there is reasonable variability in the total test scores of students.

For 2016 this data included all public school students who 1) had their MC items scanned and scored by mid-May and 2) met preliminary attempt criteria (i.e., attempt was determined based on MC items only). Note that the full state reporting criteria were not in effect for this file (only attribution to a public school based on tested site and preliminary attempt criteria were used to filter students).

CALIBRATION DATA

Calibration data included students who met the preliminary state reporting criteria (including attempt criteria) June 14. The state reporting criteria were preliminary, meaning that attributions and final PIMS¹ information were not complete by this time. No sampling was undertaken in this data (i.e., it included all students who met the above criteria with operational test scores up to this point²). This data file was used to provide impact results to the Technical Advisory Committee (TAC) during the linking review process.

ITEM BANK DATA

The item bank data included students who met the state reporting criteria by July 18. No sampling was undertaken in this data (i.e., it included all students who met the above criteria with scored field test data up to this point). The data banked for field test items were based on this data file.

FINAL DATA

This file included all students who met state reporting criteria by December 6 for all subject areas. The final data reflects update by schools for correction of certain fields (e.g., student ethnicity). All other files contained preliminary data (item bank data). The majority of the results included in this technical report were derived using the final data file.

FINAL *N*-COUNTS FOR ALL DATA SOURCES

The *n*-counts for all data sources are provided in Table 9–1. The calibration count includes students who met the preliminary state reporting criteria, while the final count includes students who met the final state reporting criteria.³ A computer-based test (CBT) was offered for all subjects. Calibration data shows the number of students in both modes. Calibration of item parameters was conducted with paper students only; however, other analyses conducted during the calibration period (see Chapter Twelve) used both paper and CBT students. The *n*counts of item bank data show only the number of students who took a paper test, because values for item banking (e.g., CTT statistics) were obtained with paper students. However, the *n*counts of paper students and total are not very different because the proportions of CBT students were small (see Table 9–2).

¹ Pennsylvania Information Management System

² Historically, PSSA has retained all students who met the stated criteria in the calibration data set, even those who had testing accommodations.

³ For this reason, the final count may be smaller than the calibration count in any given year.

Table 9–1. Data Source N-Counts

Subject	Grade	Key Validation (Paper)	Key Validation (CBT)	Calibration (Paper/CBT)	Item Bank (Paper)	Final (Paper/CBT)
Mathematics	3	98899	232	126112	125594	125284
Mathematics	4	91898	282	124464	123747	123597
Mathematics	5	31899	524	123463	122402	122868
Mathematics	6	90115	874	125957	123756	125263
Mathematics	7	85617	859	125511	123256	124961
Mathematics	8	81917	825	123504	121075	123275
ELA	3	9553	274	126672	126140	125420
ELA	4	9864	370	125220	124476	123940
ELA	5	8478	593	123975	122900	122983
ELA	6	7646	857	126246	124095	125305
ELA	7	7829	946	125798	123256	124959
ELA	8	7751	835	123654	121335	123175
Science	4	49370	509	125570	123673	123818
Science	8	60375	884	123828	120548	122955

COMPUTER-BASED TEST (CBT)

Table 9–2 displays the count of students who took the 2016 PSSAs broken out by content, grade, and mode with the final data. In all grades, only approximately three percent or less of students were enrolled to take the PSSAs online in the spring. Lower grades had fewer students who took CBT and grade 8 had highest CBT proportion of students in all subjects. Almost three percent of grade 8 students took CBT with mathematics and ELA, and slightly over three percent of grade 8 students took science CBT.

Table 9–2. Final N-Counts and Proportion by Mode

Subject	Grade	N-Counts Paper	N-Counts CBT	Proportion (%) Paper	Proportion (%) CBT
Mathematics	3	124351	933	99.26	0.74
Mathematics	4	122516	1081	99.13	0.87
Mathematics	5	121311	1557	98.73	1.27
Mathematics	6	122454	2809	97.76	2.24
Mathematics	7	121795	3166	97.47	2.53
Mathematics	8	119629	3646	97.04	2.96
ELA	3	124450	970	99.23	0.77
ELA	4	122829	1111	99.10	0.90
ELA	5	121404	1579	98.72	1.28
ELA	6	122530	2775	97.79	2.21
ELA	7	121490	3469	97.22	2.78
ELA	8	119605	3570	97.10	2.90
Science	4	121556	2262	98.17	1.83
Science	8	118402	4553	96.30	3.70

SPIRALING OF FORMS

PSSA forms were scrambled and spiraled for all grades and subjects. Appendix H provides summary statistics for all test forms for each grade and subject-area test. The tables provide the form number (Form), the number of students (N), test length in items (L), total points (Pts.), the minimum score (Min), the maximum score (Max), the mean score (Mean), the median score (Med), and the standard deviation (SD). The mean raw scores across forms are similar, indicating the student populations taking each form are of approximately equal ability and item scrambling are appropriate. This equivalence of ability distributions across forms is the desired outcome of spiraling and allows for optimum analysis of the embedded field-test items.

SCRAMBLING OF FORMS

In response to test security issues raised in prior PSSA administrations, multiple scrambled patterns of operational forms were constructed for each mathematics, ELA, and science assessment. The core form was constructed following the past test construction and equating guidelines and will be referred to as the Master Core throughout the remainder of this document. Based on previous TAC recommendation, the Master Core is the pattern of the test that would have been administered to all students in the absence of scrambling. More importantly, the data obtained from administration of the Master Core were used for operational MC item calibration.

Once the Master Core was constructed and approved, DRC and PDE content specialists built seven scrambled patterns of the Master Core for each content and grade. OE items were not scrambled so each OE item appeared in the same position on every form. Some MC items also appear in the same position on multiple forms due to content constraints. In some content areas and grades the number of field-test forms was greater than the number of scrambled patterns. In these instances the Master Core and scrambled patterns were repeated with no specific pattern appearing more than two times. Due to the limited enrollment for the PSSA CBT, only three forms were offered for CBT. These forms included the accommodation form, a Master Core form, and one additional scrambled form; therefore, these forms have slightly higher participation than other forms when paper and CBT counts are combined.

When the Master Core was built, the linking position rules were observed for all core-linking and equating block items. The Master Core was used at least as often, or more often, than any scrambled version of the core form. Since form 1 was used for all accommodated forms (e.g., Braille, Large Print, Audio, and Spanish) it was never designated as a Master Core. The specific forms presenting the Master Core vary across grades within each content area. Given that all forms were spiraled at the student level, the distribution of forms is reasonably uniform. The exception is Form 1, which had higher participation due to the fact that it is the only form used for accommodations.

Based on TAC recommendations to minimize possible item position effects, each section of the Master Core was divided into blocks of non-overlapping MC items. Recall that the OE items were not part of the scrambling. The blocks generally contained six to seven MC items (or one passage), but the block sizes varied depending on the content and test session. Within each block, MC items were scrambled following general psychometric and content guidelines to create up to five versions of the block in addition to the Master Core sequencing. The blocks were assembled to create seven scrambled versions of the Master Core. Table 9–3 shows the mathematics Grade 8 scrambled form structure. The core was divided into nine blocks (labeled “1”–“9”) and each block was scrambled in five different permutations (labeled I, II, III, IV, and M). So, for example, Form 1 was constructed with scrambled block version “I” for all nine blocks. Seven scrambled variations (labeled A, B, C, D, E, F, and G in the “Pattern” column) of the Master Core were used in addition to the Master Core across the twenty field-test forms. The Master Core was used on Forms 2, and 9.

Table 9–3. Mathematics Grade 8 Scrambling

Form	1	2	3	4	5	6	7	8	9	Pattern
1	II	III	IV	I	I	III	II	IV	II	A
2	M	M	M	M	M	M	M	M	M	Master
3	III	II	II	II	IV	I	I	II	I	B
4	I	I	III	I	III	I	III	III	IV	C
5	I	II	I	II	III	II	IV	I	II	D
6	II	III	I	IV	II	IV	I	III	III	E
7	III	IV	III	III	IV	IV	II	I	III	F
8	IV	IV	IV	IV	I	II	IV	II	IV	G
9	M	M	M	M	M	M	M	M	M	Master

Prior to scrambling the Master Core, DRC and PDE content specialists developed the following general psychometric and content guidelines:

- Items cannot move between blocks.
- DRC and PDE content specialists will work to ensure that the scrambling does not result in making content more difficult than the Master Core item sequence. For example, items of similar cognitive complexity will be swapped rather than random scrambling.
- A block scramble pattern is only valid if it does not contain an invalid key distribution within the block. Additional checks for an invalid key distribution across blocks must be made when combining block scramble patterns to create forms. For example, scrambling must not create more than three (3) of the same key positions in a row.
- A block scramble pattern is only valid if it does not contain an invalid standard (AA/EC) distribution within a block. Additional checks for standard distribution across blocks must be made when combining block scramble patterns to create forms. An exception was made for one mathematics scramble for each grade which ordered items within block by eligible content per PDE request.
- Scrambling should not place a difficult item as the first item in a section. The first item in a block that does NOT begin a section may be a difficult item since blocks are invisible to the student.
- For passage-based items, a block scramble pattern is only valid if it does not create dissonance between the items and passage(s).
- Scrambling should not place a difficult item as the first item in a passage set.
- Within a set of items connected to a paired set of passages, an item associated with both passages can be swapped only with another item associated with both passages. (These items must remain at the end of the set of items associated with the passage set.)

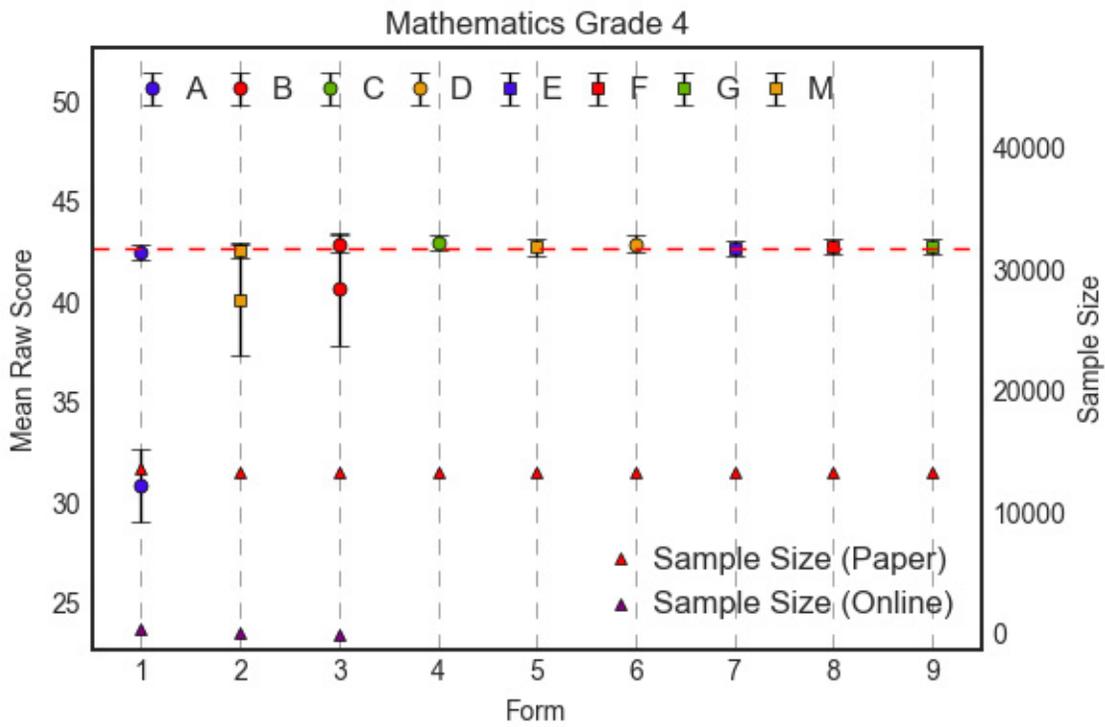
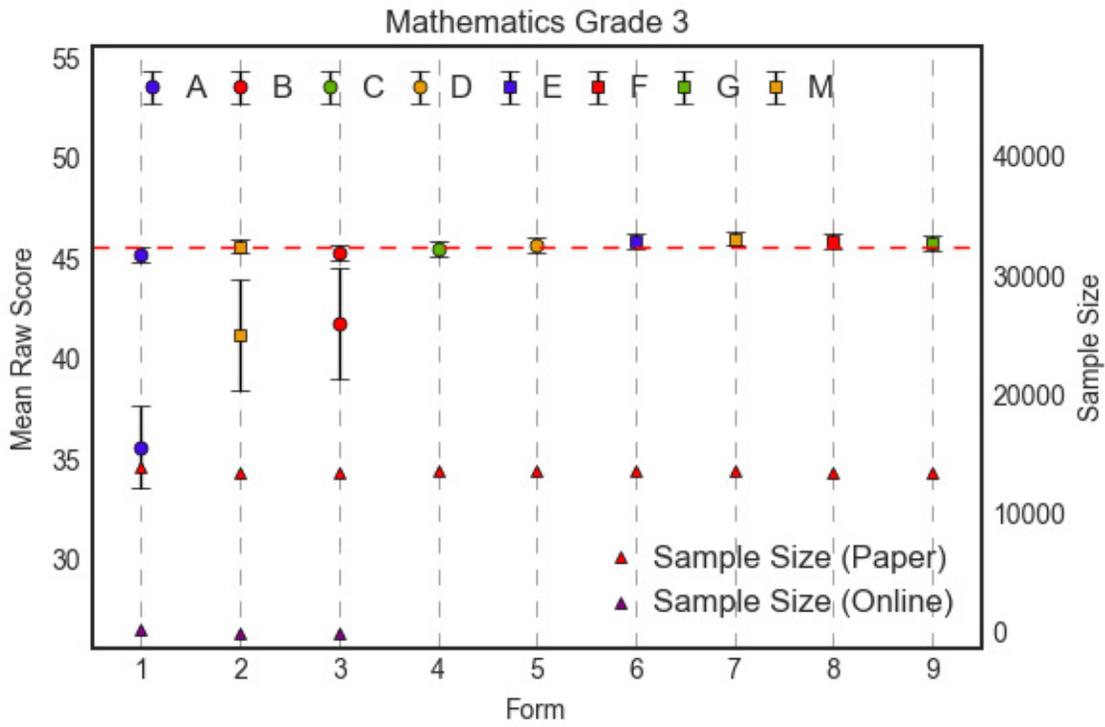
Table 9–4 shows a summary of the scrambling strategy employed for the 2016 PSSAs. Each content and grade used a total of eight different patterns of the core including the Master Core.

Table 9–4. Form Scrambling

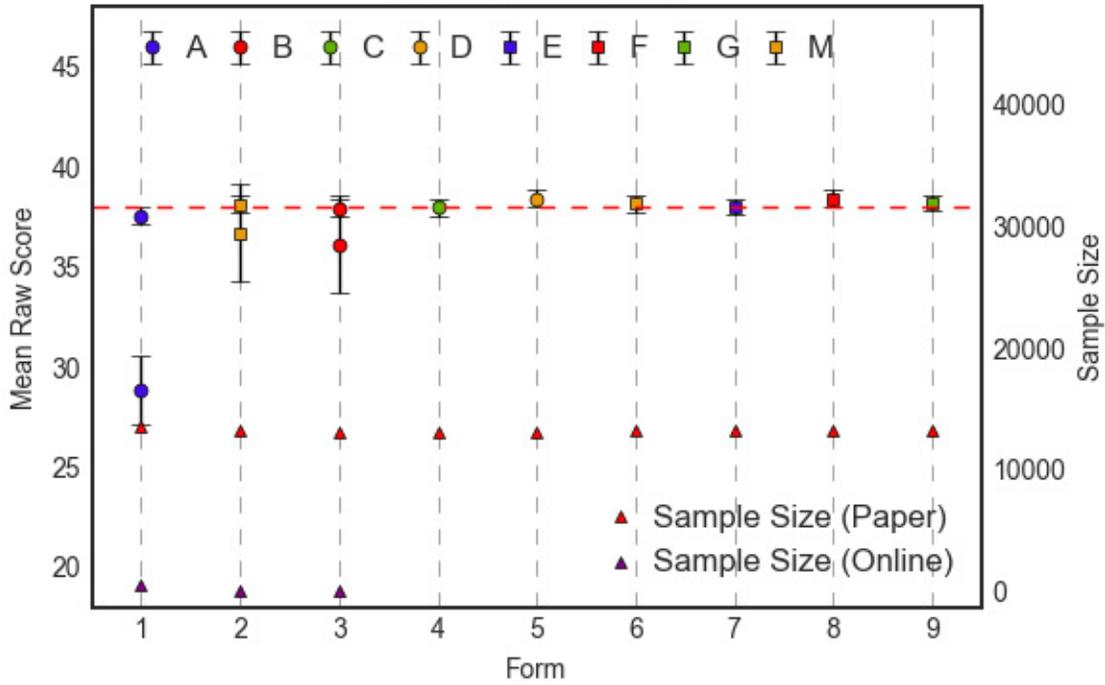
Content	Grade	Forms	Total Patterns	Master Cores
Mathematics	3	9	8	2
Mathematics	4	9	8	2
Mathematics	5	9	8	2
Mathematics	6	9	8	2
Mathematics	7	9	8	2
Mathematics	8	9	8	2
ELA	3	9	8	2
ELA	4	9	8	2
ELA	5	9	8	2
ELA	6	9	8	2
ELA	7	9	8	2
ELA	8	9	8	2
Science	4	12	8	2
Science	8	12	8	2

An important assumption for effectively collapsing forms into pattern groups is that the form spiraling yielded randomly equivalent groups. Figure 9–1 displays the raw score mean, a 3 standard error band, and the scramble pattern for each form by mode. Online is shown in light purple for both mean and sample size. The standard error bands we have plotted here are equivalent to approximately 99 percent confidence interval for the form means. When the error bands for a form overlapped the overall mean (the red line), the form means were not statistically different from the overall mean regardless of the type of scrambling. As can be seen, the spiraling essentially produced randomly equivalent groups. Please note that Form 1 is used for all accommodated administrations and as such appears different from the remaining forms in these plots.

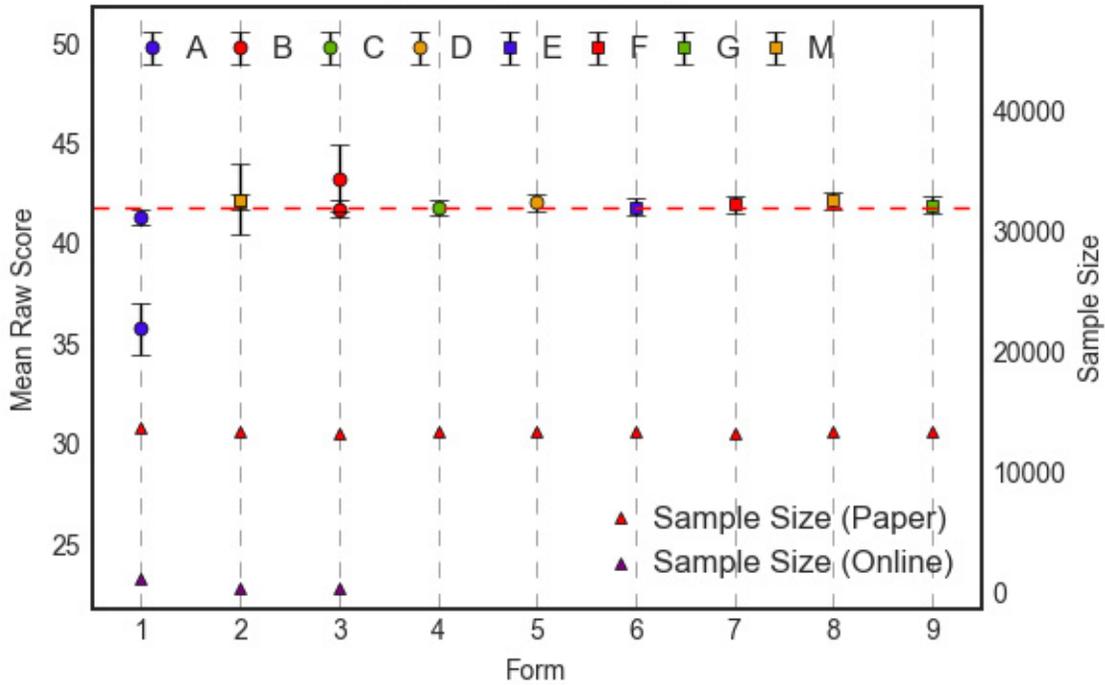
Figure 9–1. Form Mean Scores with +/- Three Standard Error (SE) Bands



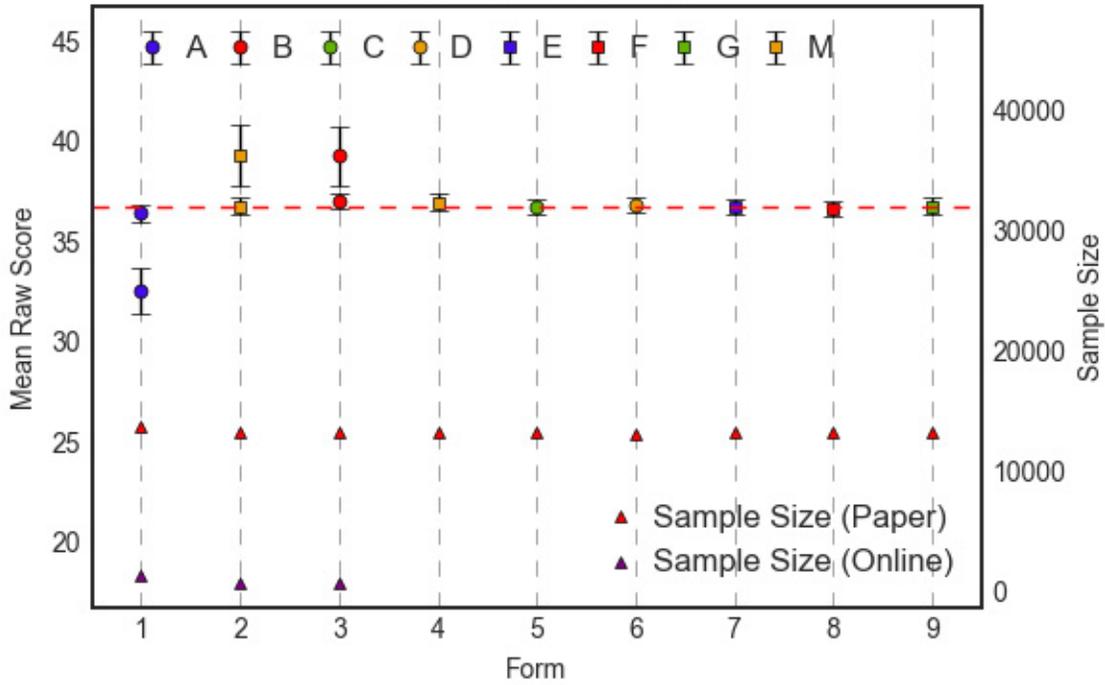
Mathematics Grade 5



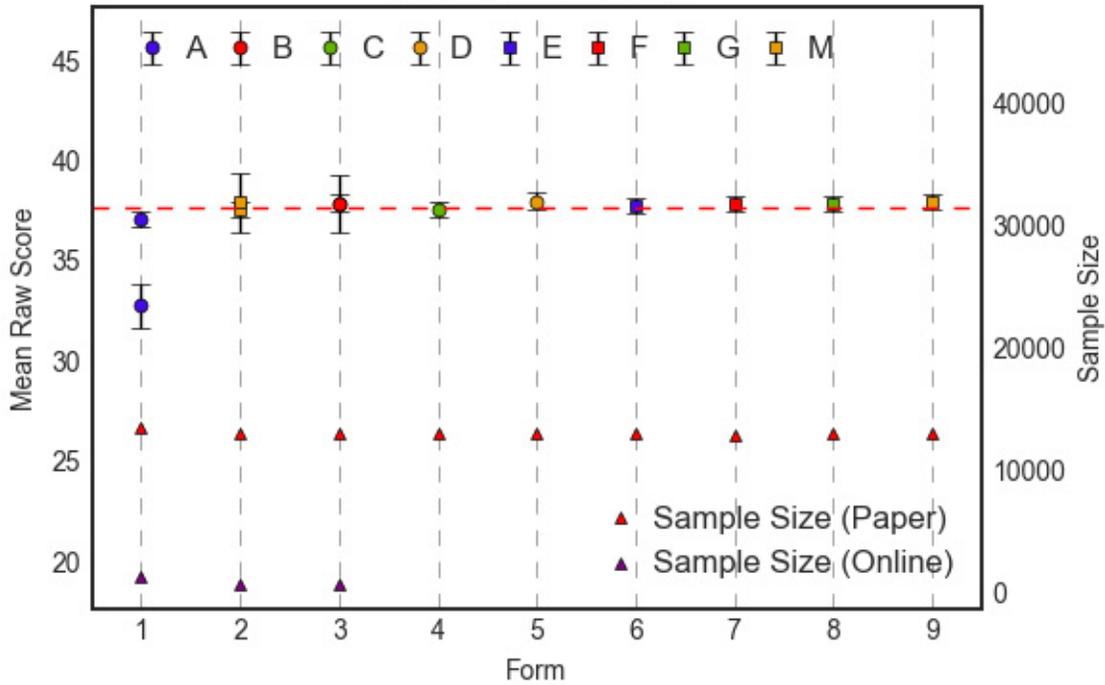
Mathematics Grade 6

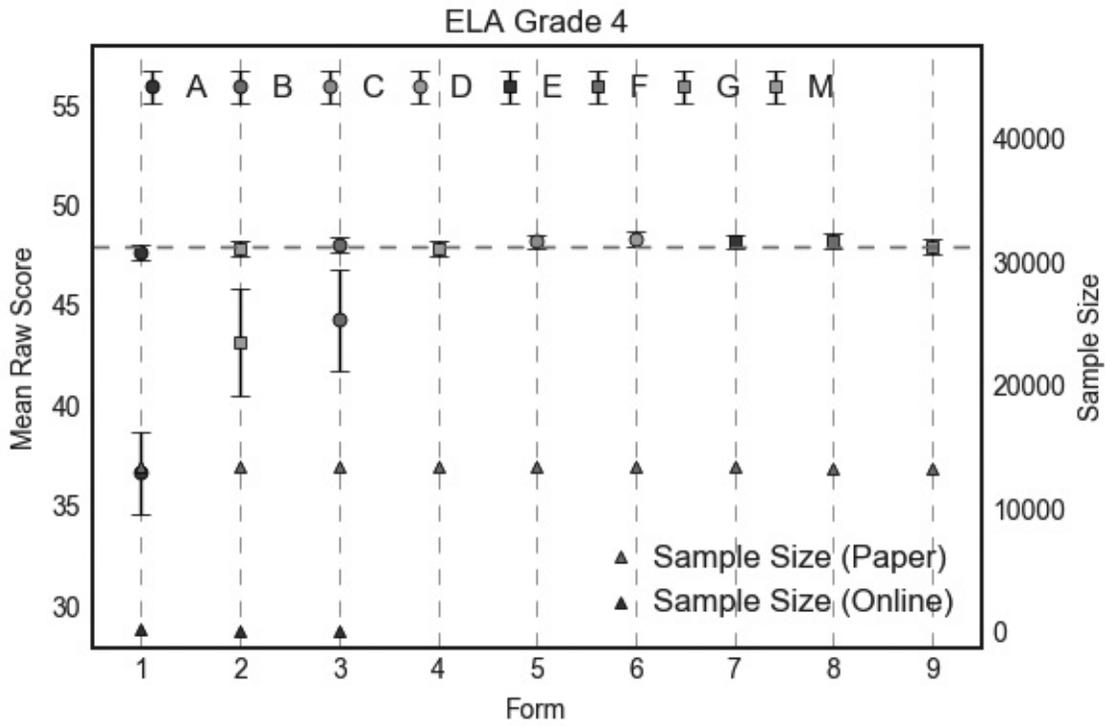
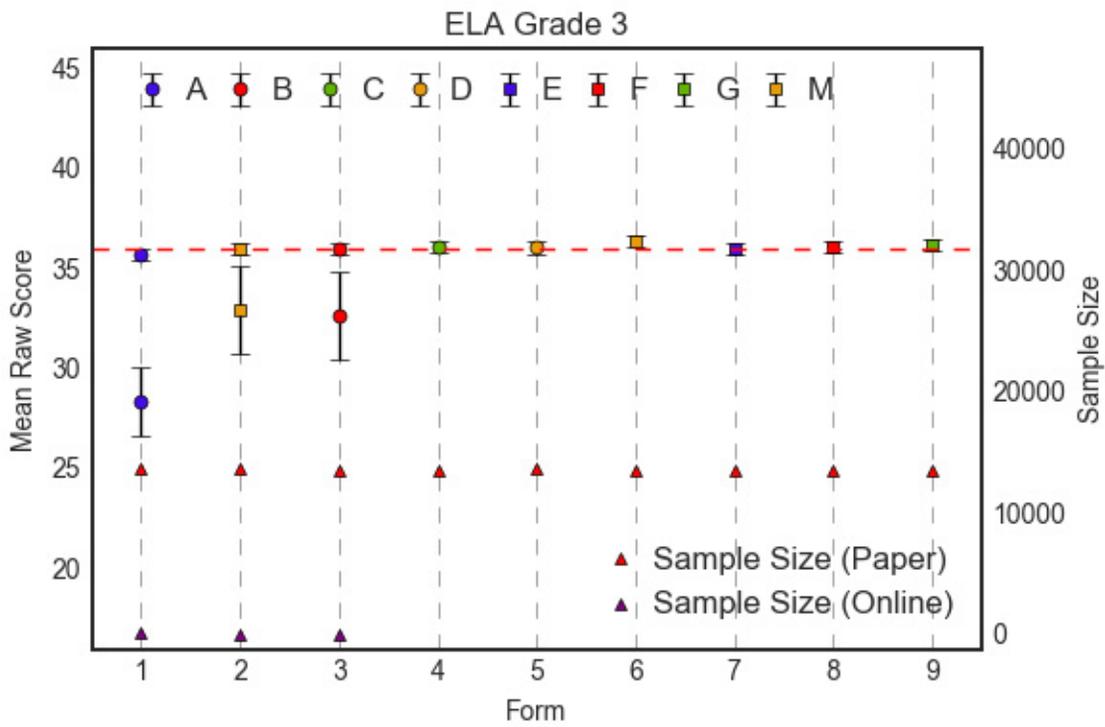


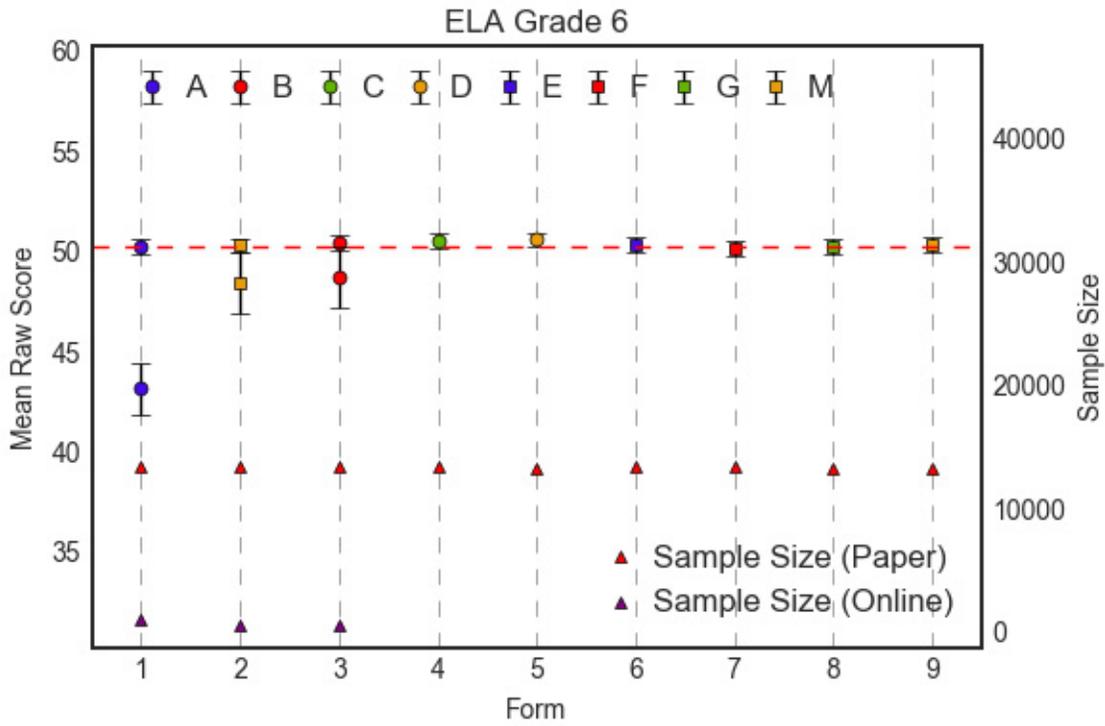
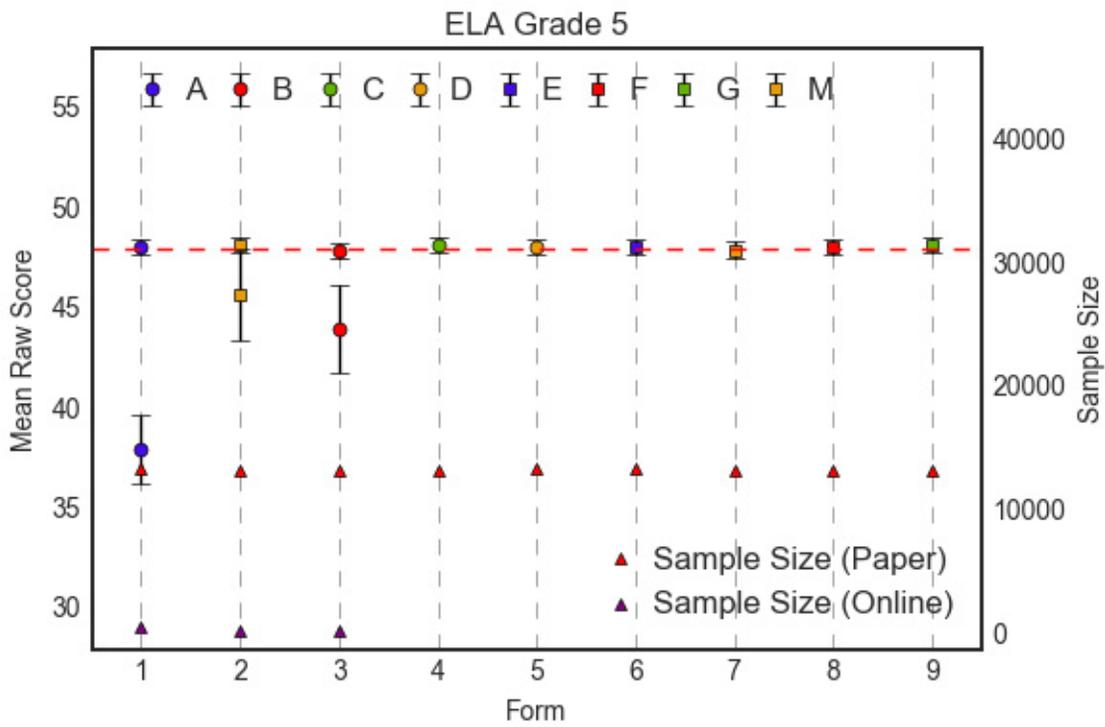
Mathematics Grade 7

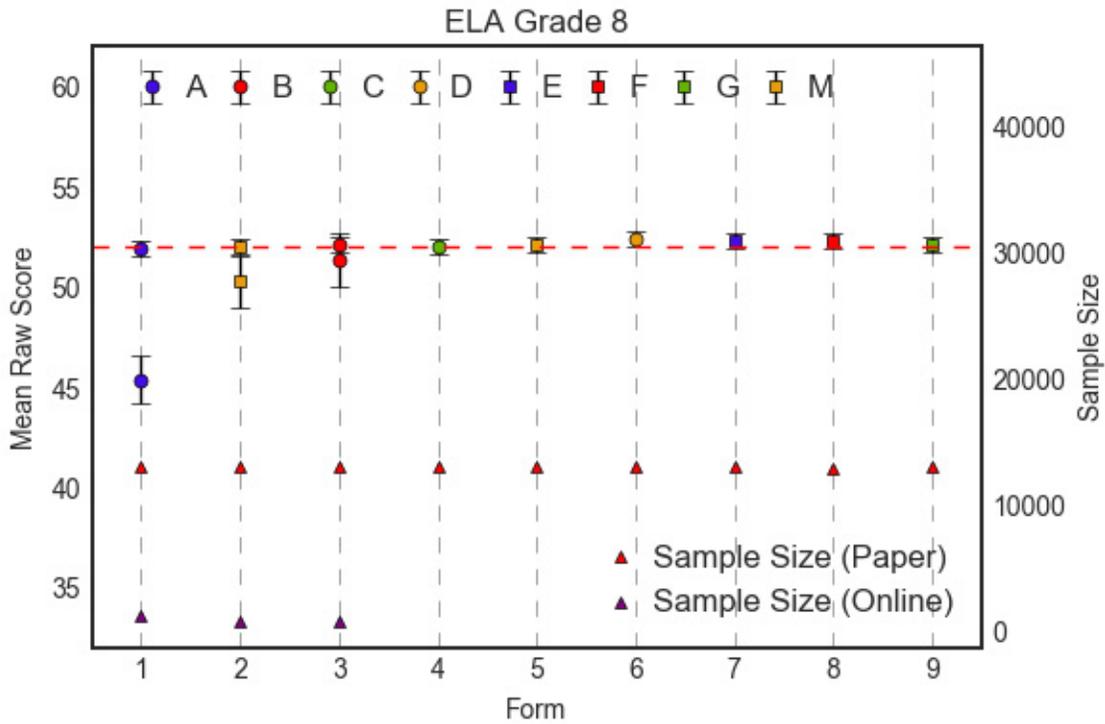
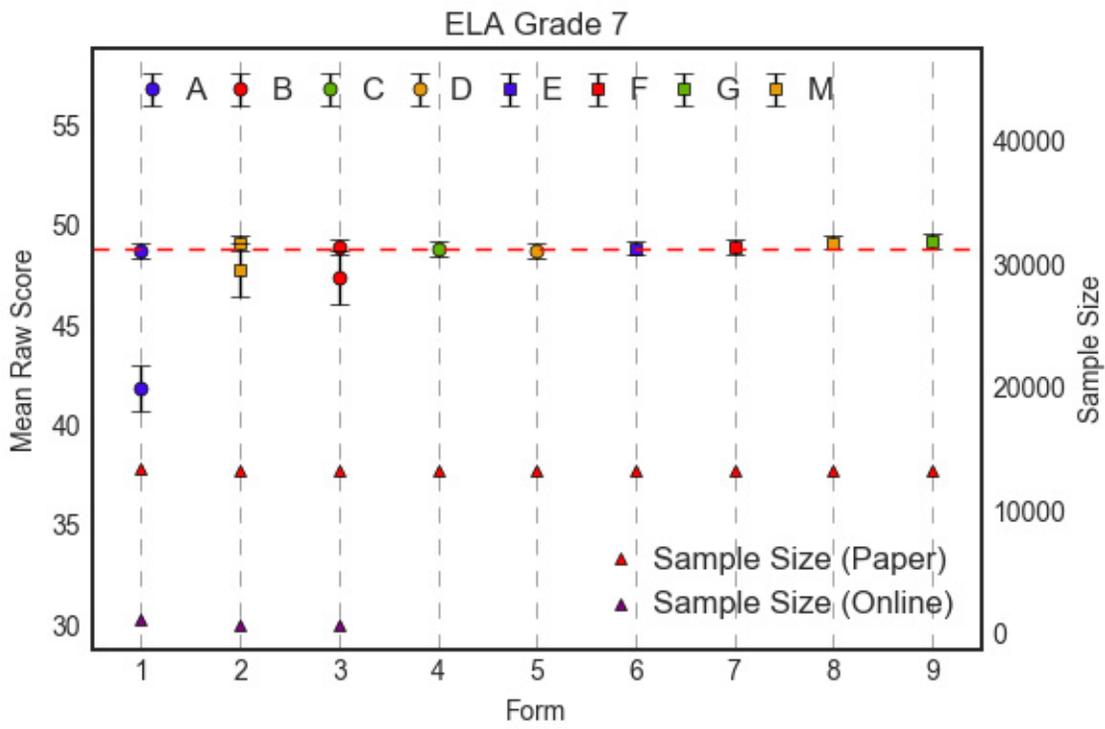


Mathematics Grade 8









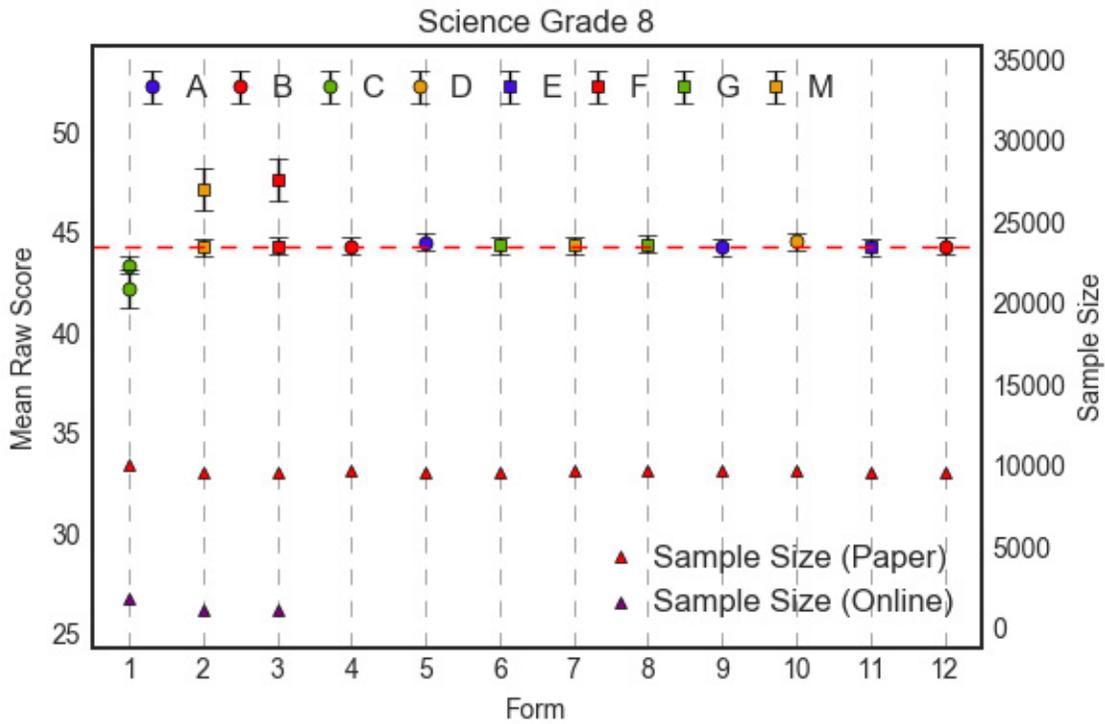
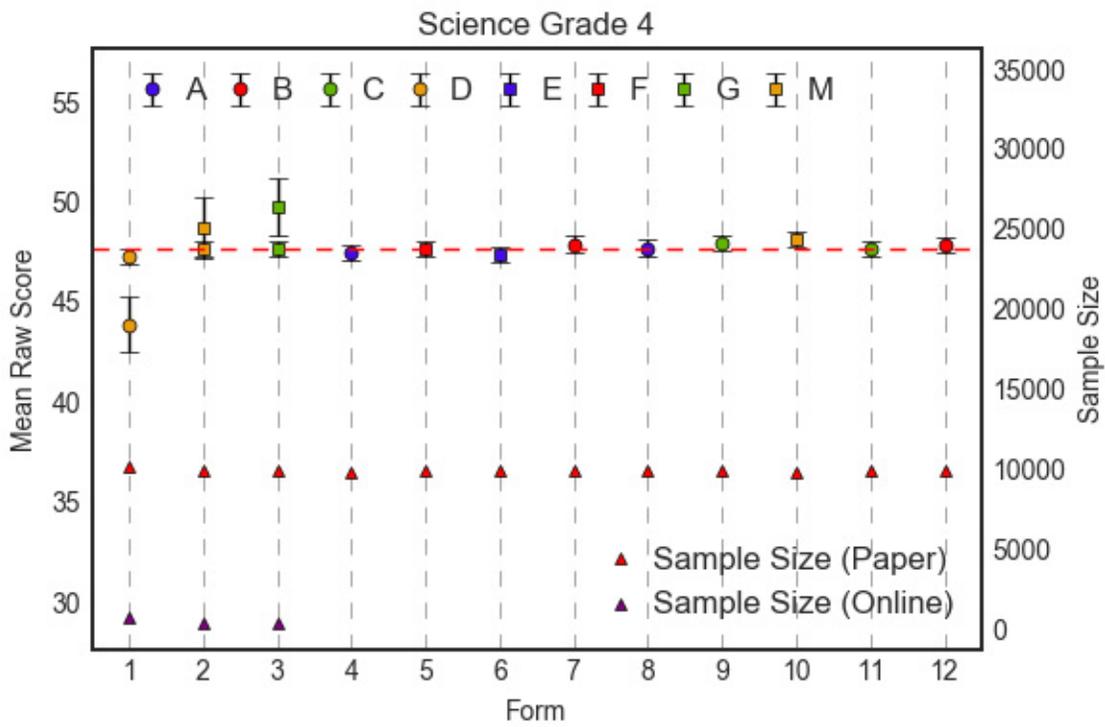


Table 9–5 shows the number of students who took each form pattern (recall that pattern M is the Master Core version), and Table 9–6 gives the form to scramble pattern conversion.

Table 9–5. Form Pattern Counts

Content	Grade	A	B	C	D	E	F	G	M
Mathematics	3	14637	14023	13810	13811	13849	13729	13754	27807
Mathematics	4	14463	13889	13627	13645	13640	13571	13620	27485
Mathematics	5	14591	13765	13408	13395	13446	13504	13492	27382
Mathematics	6	15327	14246	13576	13604	13570	13529	13572	27881
Mathematics	7	15581	14403	13431	13390	13422	13447	13411	27874
Mathematics	8	15314	14254	13240	13242	13204	13184	13258	27479
ELA	3	14294	14075	13803	13839	13754	13813	13816	27890
ELA	4	14150	13924	13646	13606	13647	13542	13541	27541
ELA	5	14301	13915	13479	13507	13508	13410	13360	27388
ELA	6	14951	14367	13632	13554	13598	13620	13593	27948
ELA	7	15077	14376	13536	13584	13514	13470	13531	27873
ELA	8	14884	14345	13288	13303	13260	13227	13307	27661
Science	4	20162	20251	20192	11427	10108	10126	10735	20817
Science	8	19640	19653	12251	9869	9797	11114	19686	20945

Note. Final data was used

Table 9–6. Form to Pattern Conversion Table

Content	Grade	1	2	3	4	5	6	7	8	9	10	11	12
Mathematics	3	A*	M*	B*	C	D	E	M	F	G			
Mathematics	4	A*	M*	B*	C	M	D	E	F	G			
Mathematics	5	A*	M*	B*	C	D	M	E	F	G			
Mathematics	6	A*	M*	B*	C	D	E	F	M	G			
Mathematics	7	A*	M*	B*	M	C	D	E	F	G			
Mathematics	8	A*	M*	B*	C	D	E	F	G	M			
ELA	3	A*	M*	B*	C	D	M	E	F	G			
ELA	4	A*	M*	B*	M	C	D	E	F	G			
ELA	5	A*	M*	B*	C	D	E	M	F	G			
ELA	6	A*	M*	B*	C	D	E	F	G	M			
ELA	7	A*	M*	B*	C	D	E	F	M	G			
ELA	8	A*	M*	B*	C	M	D	E	F	G			
Science	4	D*	M*	G*	A	F	E	B	A	C	M	C	B
Science	8	C*	M*	F*	B	A	G	M	G	A	D	E	B

Note. * indicates the form was offered online

SCRAMBLING ANALYSIS

FORM LEVEL

The test-level and item-level effects of scrambling are presented in the following section. Table 9–7 shows the mean raw score difference from the Master Core for each scramble pattern (scramble pattern mean minus Master Core mean). The highlighted mean differences are statistically significant at family-wise Type I error rate (alpha) 0.01 with two-sample t-test. For example, with grade 3 math, seven two sample t-tests are conducted (Master Core vs. A, B, C, D, E, F, and G) and each test had Type I error rate (alpha) of 0.001428571 to keep the family-wise Type I error rate 0.01. Form 1, the form designated for use with accommodations was included in these analyses and as expected, a statistically significant difference was found wherever a pattern corresponds to Form 1. This difference, however, is likely attributable to the general pattern of lower item and test level scores for examinees using accommodations, and not to scrambling effects. Form 1 for all mathematics and ELA grades followed pattern A. For science grade 4, form 1 followed pattern D, and for science grade 8 it followed pattern C.

Table 9–7 shows that, aside from results influenced by examinees receiving accommodations, 1 of 42, 1 of 42, and 2 of 14 scramble pattern raw score means showed a statistically significant difference from the Master Core in mathematics, ELA, and science, respectively.

Table 9–7. Mean Raw Score Differences From the Master Core

Content	Grade	A	B	C	D	E	F	G
Mathematics	3	-0.86	-0.53	-0.30	-0.14	0.12	0.12	-0.01
Mathematics	4	-0.64	0.21	0.32	0.27	0.06	0.10	0.13
Mathematics	5	-1.03	-0.24	-0.13	0.30	-0.13	0.29	0.07
Mathematics	6	-1.29	-0.31	-0.34	-0.07	-0.29	-0.18	-0.20
Mathematics	7	-0.95	0.24	-0.20	-0.12	-0.21	-0.28	-0.17
Mathematics	8	-1.11	0.10	-0.21	0.20	-0.02	0.06	0.09
ELA	3	-0.69	-0.26	-0.04	-0.11	-0.18	-0.05	0.01
ELA	4	-0.60	0.12	0.36	0.47	0.35	0.37	0.10
ELA	5	-0.43	-0.26	0.19	0.10	0.03	0.07	0.21
ELA	6	-0.67	0.10	0.25	0.31	0.08	-0.11	-0.07
ELA	7	-0.97	-0.23	-0.23	-0.36	-0.22	-0.17	0.13
ELA	8	-0.73	0.04	-0.02	0.39	0.26	0.32	0.07
Science	4	-0.36	-0.06	-0.12	-0.95	-0.52	-0.29	-0.12
Science	8	-0.09	-0.17	-1.32	0.04	-0.21	0.22	-0.11

Note. Final data is used and highlighted cells indicate the scramble patter is statistically significant different from masster core form at family-wise $\alpha = 0.01$ (corrected for 7 pairwise comparisons) for each subject and grade combination.

ITEM LEVEL

The item level scrambling was examined using differential item functioning (DIF) described in Chapter Five. The *Mantel-Haenszel* procedure (Mantel & Haenszel, 1959) for detecting differential item functioning is a commonly used technique for MC items in educational testing and contrasts a focal group with a reference group. With ELA, EBSR items were also scrambled. As with the MC items, DIF analysis was used for item level scrambling check for EBSR items. For EBSR items, a comparable statistic is computed based on the standardized mean difference (SMD) (Dorans, Schmitt, & Bleistein, 1992), which is computed as the differences in mean scores for the focal and reference groups if both groups had the same score distribution.

In this section, master core form is reference group and non-master core form was focal groups. The items are assigned a severity code based on the magnitude of the effect sizes. Items classified as A+ or A- have little or no statistical indication of DIF. Items classified as B+ or B- have some indication of DIF but may be judged to be acceptable for future use. Items classified as C+ or C- have strong evidence of DIF and should be reviewed. Table 9–8 shows the number of items with C DIF items. At item level, there was no item exhibiting item DIF due to scrambling.

Table 9–8. The Number of Items with C DIF for Scrambling Effect

Content	Item Type	Grade	A	B	C	D	E	F	G
Mathematics	MC	3	-	0	0	0	0	0	0
Mathematics	MC	4	-	0	0	0	0	0	0
Mathematics	MC	5	-	0	0	0	0	0	0
Mathematics	MC	6	-	0	0	0	0	0	0
Mathematics	MC	7	-	0	0	0	0	0	0
Mathematics	MC	8	-	0	0	0	0	0	0
ELA	MC	3	-	0	0	0	0	0	0
ELA	MC	4	-	0	0	0	0	0	0
ELA	MC	5	-	0	0	0	0	0	0
ELA	MC	6	-	0	0	0	0	0	0
ELA	MC	7	-	0	0	0	0	0	0
ELA	MC	8	-	0	0	0	0	0	0
Science	MC	4	0	0	0	-	0	0	0
Science	MC	8	0	0	-	0	0	0	0

CHAPTER TEN: SUMMARY DEMOGRAPHIC, PROGRAM, AND ACCOMMODATION DATA FOR THE 2016 PSSA

ASSESSED STUDENTS

The PSSA assessed students include those from public schools who are required to participate as well as those from a small number of non-public schools (fewer than 500 students per grade level) that elected to participate. Also included were home-schooled students (fewer than 100 per grade) and a small number of foreign exchange students (generally fewer than 30 per grade through Grade 8). An exception was granted for those IEP students with quite significant cognitive impairments who met each of the following criteria, making them eligible to participate in the Pennsylvania Alternate System of Assessment (PASA) for mathematics, reading, and science: 1) was enrolled in the assessed grade level for the subject area, 2) had a very severe cognitive disability, 3) required very intensive instruction, 4) required very extensive adaptation and support to perform or participate meaningfully, 5) required very substantial modification of the general education curriculum, and 6) participated in the general education curriculum that differed markedly in form and substance from that of other students. (See the *2016 Pennsylvania System of School Assessment: Handbook for Assessment Coordinators*, p.8.)

Results for this chapter are presented in tables for the three PSSA subject areas (mathematics, ELA, and science). Accompanying each numbered table is a letter (M, E, or S) to designate the subject area. Mathematics results are indicated by “M,” ELA results are indicated by “E,” and science results are indicated by “S.” Tables 10–1E through 10–1S provide a summary of the assessed students for each subject. The third line combines the number of paper and online tests that are processed. This number is typically less than the “Used Answer Booklets Received” column shown in Table 8-1. The reason for the difference is that completely blank answer booklets (no student name and no items responded to) are removed from the initial batch of materials scanned. See Chapter Eight for more details on processing. Some processed booklets have student identifying information but will not receive a score. These results are presented within the 10-1 tables. Explanations for non-assessed students is provided later in this chapter.

Table 10–1E. Students Assessed on the 2016 PSSA: ELA

Description	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8
Total number of PPT processed	128,896	127,089	125,610	126,872	126,551	125,129
Total number of CBT processed	998	1,138	1,646	2,919	3,337	3,845
Total number of tests processed	129,894	128,227	127,256	129,791	129,888	128,974
Total number of tests processed with a score	127,340	125,436	124,622	127,023	126,731	124,934
Total percent of tests processed with a score	98	97.8	97.9	97.9	97.6	96.9
Total number of tests processed without a score	2,554	2,791	2,634	2,768	3,157	4,040
Total percent of tests processed without a score	2	2.2	2.1	2.1	2.4	3.1
Students with an English Language Arts score used in state summaries	125,284	123,597	122,868	125,263	124,961	123,275

Note. PPT = Paper/Pencil Test
 CBT = Computer-Based Test

Table 10–1M. Students Assessed on the 2016 PSSA: Mathematics

Description	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8
Total number of PPT processed	128,993	127,207	125,644	127,008	126,411	125,340
Total number of CBT processed	1,032	1,162	1,656	2,882	3,649	3,745
Total number of tests processed	130,025	128,369	127,300	129,890	130,060	129,085
Total number of tests processed with a score	127,961	126,302	125,185	127,425	127,140	125,201
Total percent of tests processed with a score	98.4	98.4	98.3	98.1	97.8	97
Total number of tests processed without a score	2,064	2,067	2,115	2,465	2,920	3,884
Total percent of tests processed without a score	1.6	1.6	1.7	1.9	2.2	3
Students with a Mathematics score used in state summaries	125,420	123,940	122,983	125,305	124,959	123,175

Note. PPT = Paper/Pencil Test
 CBT = Computer-Based Test

Table 10–1S. Students Assessed on the 2016 PSSA: Science

Description	Gr. 4	Gr. 8
Total number of PPT processed	125,967	124,270
Total number of CBT processed	2,337	4,752
Total number of tests processed	128,304	129,022
Total number of tests processed with a score	126,183	125,006
Total percent of tests processed with a score	98.3	96.9
Total number of tests processed without a score	2,121	4,016
Total percent of tests processed without a score	1.7	3.1
Students with a Science score used in state summaries	123,818	122,955

Note. PPT = Paper/Pencil Test
 CBT = Computer-Based Test

NON-ASSESSED STUDENTS

As may be observed from Tables 10–1E through 10–1S, not all students were assessed. Although there are a variety of reasons for this, the major ones pertain to the following:

- Extended absence from school that continued beyond the assessment window
- Absence without make-up for at least one section of a subject-area test
- Failure to meet the attempt criteria on one or more subject-area test sections and no exclusion code was marked by school personnel. For mathematics, ELA, and science, the attempt criteria required a minimum of five items to be completed in each subject area section.
- ELL students in the first year in U.S. schools (ELA only)
- Medical emergency
- Other reasons (includes parental request, students who are court-agency placed, students with multiple reasons coded, and the category of other)

The numbers of students without test scores for these reasons are presented in Tables 10–2E through 10–2S.

Table 10–2E. Counts of Students without Scores on the 2016 PSSA: ELA

Reason for Non-Assessment	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8
Extended absence from school (Number)	53	52	67	110	163	259
Extended absence from school (Percent)	2.1	1.9	2.5	4	5.2	6.4
Absent without make-up (Number)	19	32	34	46	104	187
Absent without make-up (Percent)	0.7	1.1	1.3	1.7	3.3	4.6
Non-attempt (Number)	487	736	489	494	590	703
Non-attempt (Percent)	19.1	26.4	18.6	17.8	18.7	17.4
ELL in first year in U.S. schools (Number)	330	342	308	225	209	208
ELL in first year in U.S. schools (Percent)	12.9	12.3	11.7	8.1	6.6	5.1
Medical emergency (Number)	119	133	146	189	311	384
Medical emergency (Percent)	4.7	4.8	5.5	6.8	9.9	9.5
Parental request - Chapter 4 (Number)	1,147	1,156	1,228	1,202	1,200	1,431
Parental request - Chapter 4 (Percent)	44.9	41.4	46.6	43.4	38	35.4
Parental request - Other reasons (Number)	302	251	267	351	354	536
Parental request - Other reasons (Percent)	11.8	9	10.1	12.7	11.2	13.3
Other reasons (Number)	97	89	95	151	226	332
Other reasons (Percent)	3.8	3.2	3.6	5.5	7.2	8.2
Total not assessed	2,554	2,791	2,634	2,768	3,157	4,040

Table 10–2M. Counts of Students without Scores on the 2016 PSSA: Mathematics

Reason for Non-Assessment	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8
Extended absence from school (Number)	54	65	88	138	201	312
Extended absence from school (Percent)	2.6	3.1	4.2	5.6	6.9	8
Absent without make-up (Number)	45	39	29	41	100	216
Absent without make-up (Percent)	2.2	1.9	1.4	1.7	3.4	5.6
Non-attempt (Number)	314	307	254	349	472	472
Non-attempt (Percent)	15.2	14.9	12	14.2	16.2	12.2
Medical emergency (Number)	131	151	167	220	342	465
Medical emergency (Percent)	6.3	7.3	7.9	8.9	11.7	12
Parental request - Chapter 4 (Number)	1,144	1,157	1,220	1,209	1,216	1,507
Parental request - Chapter 4 (Percent)	55.4	56	57.7	49	41.6	38.8
Parental request - Other reasons (Number)	298	263	271	345	378	593
Parental request - Other reasons (Percent)	14.4	12.7	12.8	14	12.9	15.3
Other reasons (Number)	78	85	86	163	211	319
Other reasons (Percent)	3.8	4.1	4.1	6.6	7.2	8.2
Total not assessed	2,064	2,067	2,115	2,465	2,920	3,884

Table 10–2S. Counts of Students without Scores on the 2016 PSSA: Science

Reason for Non-Assessment	Gr. 4	Gr. 8
Extended absence from school (Number)	90	384
Extended absence from school (Percent)	4.2	9.6
Absent without make-up (Number)	45	230
Absent without make-up (Percent)	2.1	5.7
Non-attempt (Number)	272	391
Non-attempt (Percent)	12.8	9.7
Medical emergency (Number)	179	524
Medical emergency (Percent)	8.4	13
Parental request - Chapter 4 (Number)	1,160	1,525
Parental request - Chapter 4 (Percent)	54.7	38
Parental request - Other reasons (Number)	265	601
Parental request - Other reasons (Percent)	12.5	15
Other reasons (Number)	110	361
Other reasons (Percent)	5.2	9
Total not assessed	2,121	4,016

COMPOSITION OF SAMPLE USED IN SUBSEQUENT TABLES

Students included in the following demographic analyses were those who contributed to state summary statistics, using the final individual student data file provided to the Pennsylvania Department of Education in December 2016. Students not included in the present state summary data were those who were 1) enrolled in a Pennsylvania school after October 1, 2015, 2) coded as ELL and enrolled after May 8, 2015, 3) foreign exchange students, 4) home schooled, 5) enrolled in a non-public school, or 6) without a subject-area test score.

Demographic data for students taking the PSSA is presented separately for each subject area in Appendix I. Results for accommodations received were collected separately by subject area and are presented in separate tables as well.

COLLECTION OF STUDENT DEMOGRAPHIC INFORMATION

Data for analyses involving demographic characteristics were obtained primarily from information supplied by school district personnel through the Pennsylvania Information Management System (PIMS) and subsequently transmitted to DRC. Updates of attribution data were carried out through the DRC Attribution System. Some data such as accommodation information is marked directly on the student answer document at the time the PSSA is administered.

PARTICIPATION BY ADMINISTRATION MODE

Online (CBT) testing was available for the PSSA. As anticipated the vast majority of students were assessed utilizing paper/pencil tests (PPT). The bottom row of the tables presented in Appendix I present the number of students involved in the PPT and CBT administrations as well as Table 9–2 in Chapter Nine. Overall, the percent of students responding by CBT was approximately one to three percent for mathematics and ELA, and science. There was an increase in the percent of students taking a CBT across grade levels. For mathematics and ELA the percent of CBT usage went from less than one percent to almost three percent from Grades 3 through 8. For science, CBT participation rate was 1.25 percent and 3.30 percent for grades 4 and 8, respectively.

DEMOGRAPHIC CHARACTERISTICS

Frequency data for each demographic category is presented in Appendix I. Percentages are based on students with scores in a subject area, which are shown at the bottom of the appropriate table. Included are students receiving education in a non-traditional setting, such as a court-agency placement.

TEST ACCOMMODATIONS PROVIDED

School personnel supplied information regarding accommodations that a student may have received while taking the PSSA. Accommodations are classified in terms of presentation, response, setting, and timing to enable students to better manage disabilities that hinder their ability to learn and respond to assessments. An accommodations manual entitled, *2016 Accommodations Guidelines: Keystone Exams and PSSA* guides the development and analysis of the PSSA. This manual may be found on the PDE website at www.education.pa.gov. A glossary of accommodation terms as applied to the PSSA is provided in Table 10–3 at the end of this chapter.

The frequency with which accommodations were utilized for PPT and CBT formats is summarized separately for each subject area in Appendix J. Tabled values are based on all students whose score contributed to state summary statistics in a given subject area. Because of the very small number of students utilizing CBT, combined with the fact that a number of accommodations are primarily accessed by only one of the two administration modes, meaningful comparisons with PPT are rather limited. In the tables an NA denotes those instances in which a particular accommodation does not apply to one of the testing modes.

PRESENTATION ACCOMMODATIONS RECEIVED

Presentation Accommodations are those that provide alternate ways for students to access and process printed instructional material and assessments. These include auditory, tactile, visual, and combined auditory/visual modes of presentation. The number of presentation accommodations provided in the 2016 PSSA varied by subject and testing mode and are presented in Appendix J.

As depicted in Appendix J, the actual frequencies were quite low, with all but the read-aloud accommodation being used by less than one percent of assessed students statewide. Among accommodations specific to CBT the use of audio was the most frequent. For CBT administration there were also four unique accommodations for mathematics and science and three for ELA. They include audio, color chooser, and contrasting text chooser for all content areas, plus video sign language for mathematics and science.

RESPONSE ACCOMMODATIONS RECEIVED

Response Accommodations permit students to complete assignments, tests, and activities in different ways to solve or organize problems using some type of assistive device or organizer. The number of response accommodations provided on the 2016 PSSA varied by subject and testing mode and are presented in Appendix J, which provides the frequency with which these accommodations were utilized, most of which are quite low. Very few response accommodations were coded as being utilized by students responding by CBT.

SETTING ACCOMMODATIONS RECEIVED

Setting Accommodations permit a change in location in which a student receives instruction or participates in an assessment. There were four categories of setting accommodations for mathematics, ELA, and science on the 2016 PSSA. As depicted in Appendix J, the most common accommodation across subject areas was small group setting. This was true for PPT and CBT modes of administration, although as a percentage of examinees within testing mode, higher percentages used a small group setting for CBT.

TIMING ACCOMMODATIONS RECEIVED

Timing Accommodations involve a change in the allowable length of time to complete assignments or assessments, including the way in which time is organized. There were four categories of timing accommodations for mathematics, ELA, and science on the 2016 PSSA. As depicted in Appendix J, the most commonly used accommodation was extended time, followed by frequent breaks. One consistent finding for mathematics and ELA was that students responding by CBT had a slightly higher usage of frequent breaks across all six grade levels than observed for students taking a PPT. This was also true for the two grade levels assessed for science.

ACCOMMODATION RATE FOR NON-IEP AND IEP STUDENTS

A comparison between students without an IEP (non-IEP students) and those with an IEP (IEP students) with regard to having received an accommodation is provided in Appendix K. In this data, accommodated means that a student received one or more of the total number of accommodations available for a given subject area; however, this also varies with administration mode. The total number of available accommodations for students taking a PPT was as follows: mathematics and science, 31; and ELA, 27. The number of available accommodations for students taking a CBT was as follows: mathematics and science, 27; and ELA, 22. The category of non-accommodated indicates that a student did not receive any accommodation during testing.

The general pattern of findings reveals a consistent and substantially higher percentage of IEP students receiving an accommodation in contrast to non-IEP students. This same pattern holds true regardless of test administration mode and PSSA test.

THE INCIDENCE OF ACCOMMODATIONS AND IEP AND ELL STATUS

As noted in Appendix L, students with an IEP received an accommodation of some type far more often than non-IEP students, with the exception of the extended time accommodation. As the PSSA is designed as having no time limit, any student may opt for extended time. Certain accommodations with very low frequencies are specific to particular disabilities while others, such as extended time are far more common and may also apply to any student. Accommodations having the largest frequencies can potentially supply the most stable data when separated out for subgroup analysis. Listed below are the most commonly used accommodations, which were chosen for display.

- Some test items/questions read aloud (mathematics, science)
- All test items/questions read aloud (mathematics, science)
- Small group setting (mathematics, ELA, science)
- Extended time (mathematics, ELA, science)
- Frequent breaks (mathematics, ELA, science)
- Some language questions/writing prompts/text-dependent analysis questions read aloud (ELA)
- All language questions/writing prompts/text-dependent analysis questions read aloud (ELA)

Coding for IEP is dichotomous, as students are classified IEP and non-IEP. For purposes of this analysis, an English Language Learner (ELL) is a student classified ELL and enrolled in a U.S. school on or before May 8, 2015. All other assessed students, including those who have exited an ESL/bilingual program and are in the first or second year of monitoring, are regarded as non-ELL. Students coded as ELL and enrolled in a U.S. school after May 8, 2015, are excluded from state summary statistics as stated earlier in this chapter.

Customarily, a considerably larger percentage of IEP students receive a given accommodation than non-IEP students. Although less frequent, certain accommodations also have a high frequency rate for ELL students. To separate out the effect of being classified IEP or ELL, four possible combinations are presented in the Appendix L. These include general education students who are neither IEP nor ELL, students who are IEP but non-ELL, students who are ELL but non-IEP, and students who are both IEP and ELL. The bottom row for each grade provides the total number of assessed students in each of the four classifications.

GLOSSARY OF ACCOMMODATION TERMS

Table 10–3 provides a brief description of accommodation terms as used in the PSSA. Accommodation data was supplied by school personnel as noted in the left column of the table. The right column contains an explanation derived from the PDE publication, *2016 Accommodations Guidelines: Keystone Exams and PSSA*. This manual may be found on the PDE website at www.education.pa.gov.

Table 10–3. Glossary of Accommodation Terms as Applied in the 2016 PSSA

Type of Testing Accommodation	Explanation
Student used the following Presentation Accommodations	
Braille format	Students may use a Braille format of the test. Answers must then be transcribed into the answer booklet without alteration.
Large print format	Students with visual impairments may use a large print format. Answers must then be transcribed into the answer booklet without alteration.
Magnification device	Devices to magnify print may be used for students with visual impairments and/or print disabilities.
Color overlay	Students with visual impairments may place a color overlay on a printed page of the test document to make text more readable.
Computer assistive technology (e.g., electronic screen reader) (PDE approval required)	Students with severe visual disabilities that prevent them from accessing instructional material or performing the skill may use computer assistive technology; however, PDE must approve the program and functions prior to the test window.
Test items/questions/prompt/ text-dependent analysis signed	Deaf/hearing impaired students may receive test directions from a qualified interpreter. Signing is also permitted for PSSA ELA writing section multiple choice items, essay prompts, and text-dependent analysis questions and all items in PSSA mathematics and science and for Keystone Algebra and Biology.
Test items/questions/prompt/ text-dependent analysis interpreted for ELL	A qualified interpreter may translate directions or clarify instructions for the assessments. The interpreter may translate but not define specific words or test questions on the PSSA mathematics, science, ELA writing section multiple choice items, essay prompts, and text-dependent analysis questions and Keystone Algebra and Biology exams.
Some or all test items/questions/prompt/ text-dependent analysis read aloud	Students unable to decode text visually may have items/questions read aloud for PSSA ELA writing section multiple choice items, essay prompts, and text-dependent analysis questions and all items in PSSA mathematics and science and for Keystone Algebra and Biology; however, words may not be defined.
Amplification device	In addition to using hearing aids, an amplification device to enhance clarity may be required.
Other (PDE approval required)	Other presentation accommodations indicated in the <i>Accommodation Guidelines</i> may be provided; however, PDE approval is required prior to the test window.
Spanish version for PSSA (Math and Science) and Keystone (Algebra and Biology)	Students whose first language is Spanish and who have been enrolled in U.S. schools for fewer than three years may take this version.

Table 10–3 (continued). Glossary of Accommodation Terms as Applied in the 2016 PSSA

Type of Testing Accommodation	Explanation
Student used the following Online Presentation Accommodations	
Audio	The online test form reads permissible test directions and items for a student unable to decode text. The accommodation must be marked within the test engine system. The accommodation is available on PSSA mathematics, science, ELA writing section multiple choice items, essay prompts, and text-dependent analysis questions and Keystone Algebra and Biology exams.
Video sign language (per accommodations guidelines)	Eligible students who use a sign language accommodation during instructional periods may use a VSL on the PSSA mathematics and science assessments.
Color chooser or contrasting text chooser	The use of this accommodation enables a visually impaired student to change the background color or text color to make text more readable.
Student used the following Response Accommodations	
Braille/Note taker (per <i>Accommodations Guidelines</i>)	Students using this device as part of their regular instructional program may use it on the assessments; however, without thesaurus, spelling, or grammar checker.
Test administrator scribed open-ended responses at student's direction	A test administrator may record word-for-word exactly what a student dictated directly into the test booklet. This includes MC and OE responses Keystone Algebra, Biology, and Literature tests and PSSA mathematics and science.
Test administrator marked multiple-choice responses at student's direction	A test administrator may mark an answer booklet at the direction of a student (e.g., a student may point to an MC answer with the test administrator marking the response in the answer booklet).
Test administrator transcribed student responses (per Accommodations Guidelines)	A test administrator may transcribe (copy) a student's written, typed, or keyed response into a standard answer booklet.
Qualified Interpreter translated, transcribed, and/or scribed student's signed responses	A qualified interpreter may interpret a student's signed responses into written English for Keystone Algebra and Biology exams, and PSSA mathematics and science assessments. Interpreters are not permitted to make corrections or change the meaning of the response.
Qualified Interpreter translated, transcribed, and/or scribed ELL student responses	A qualified interpreter may interpret a student's non-English oral responses into written English for Keystone Algebra and Biology exams, and PSSA mathematics and science assessments. Interpreters are not permitted to make corrections or change the meaning of the response.

Table 10–3 (continued). Glossary of Accommodation Terms as Applied in the 2016 PSSA

Type of Testing Accommodation	Explanation
Augmentative communication device	Students with severe communication difficulties may use a special device to convey responses, which must be transcribed into the answer booklet by the test administrator.
Keyboard, word processor, or computer (per <i>Accommodations Guidelines</i>)	This is an allowable accommodation as a typing function only for students with the identified need. Supports such as dictionaries, thesauri, spell checkers, and grammar checkers must be turned off. Answers must then be transcribed into the answer booklet without alteration.
Audio recording of student responses (per <i>Accommodations Guidelines</i>)	An electronic recording device may be used to record responses, which must be transcribed into the answer booklet by the test administrator. (Students who are unable to use a pencil or have illegible handwriting may answer MC questions orally. Answers must be recorded in the answer booklet without alteration during the testing period.)
Translation dictionary for ELL student	A word-to-word dictionary that translates native language to English (or vice versa) without word definitions or pictures is allowed on any portion of the Keystone Algebra and Biology exams, and PSSA mathematics and science tests.
Computer assistive technology e.g., electronic screen reader) (PDE approval required)	Students with blindness or extremely low vision may use dictate text into a computer. Responses must be transcribed verbatim into student’s regular answer booklet.
Other (per <i>Accommodations Guidelines</i> or PDE approval)	Other accommodations may be appropriate and available if they do not compromise the integrity of the assessment. Documentation must be provided to PDE.
Student used the following Setting Accommodations	
Hospital/home testing	A student who is confined to a hospital or to home during the testing window may be tested in that environment.
One-on-one setting	One-on-one settings are necessitated in certain instances, such as to reduce distraction or in the use of certain devices. A separate room may be used to reduce distraction.
Small group setting	Some students may require a test setting with fewer students or a setting apart from all other students to minimize distraction.
Other (per <i>Accommodations Guidelines</i> or PDE approval)	Other accommodations may be appropriate and available if they do not compromise the integrity of the assessment. Documentation must be provided to PDE.

Table 10–3 (continued). Glossary of Accommodation Terms as Applied in the 2016 PSSA

Type of Testing Accommodation	Explanation
Student used the following Timing Accommodations	
Extended time	Extended time may be allotted for each section of the test as a planned accommodation to enable students to finish.
Frequent breaks	Frequent breaks (breaks within a test section) may be scheduled for the completion of each test section; however, a test section must be completed within one school day.
Changed test schedule	Students whose disabilities prevent them from following a regular, planned test schedule may follow an individual schedule that enables test completion.
Other (per <i>Accommodations Guidelines</i> or PDE approval)	Other accommodations may be appropriate and available if they do not compromise the integrity of the assessment. Documentation must be provided to PDE.

CHAPTER ELEVEN: CLASSICAL ITEM STATISTICS

This chapter provides an overview of the two most familiar item-level statistics obtained from any classical (traditional) item analysis: item difficulty and item discrimination. The following results pertain only to operational PSSA items (i.e., those items that contributed to a student's total test score). Rasch item statistics are discussed in Chapter Twelve, and test-level statistics are found in Chapter Seventeen.

ITEM-LEVEL STATISTICS

Appendix F provides classical item statistics for all PSSA items. Results are organized by subject and grade. These statistics represent the item characteristics most often used to determine whether an item functioned properly and/or how a group of students performed on a particular item. The item statistics in the appendices include p -values for multiple-choice (MC) items and item means for open-ended (OE)¹ items (indicators of item difficulty); point-biserial correlations for MC items and item-test correlations for OE items (indicators of item discrimination); and the proportion of students selecting each MC item option or earning each OE item score point.

ITEM DIFFICULTY

At the most general level, an item's difficulty is indicated by its mean score in some specified group (e.g., grade level).

$$\bar{x} = \frac{1}{n} \cdot \sum_{i=1}^n x_i$$

In the mean score formula above, the individual item scores (x_i) are summed and then divided by the total number of students (n). For multiple-choice items, student scores are represented by 0s and 1s (0 = wrong, 1 = right). With 0–1 scoring, the equation above also represents the number of students correctly answering the item divided by the total number of students. Therefore, this is also the proportion correct for the item, or the p -value. In theory, p -values can range from 0.00² to 1.00 on the proportion-correct scale. For example, if an item has a p -value of 0.89, it means 89 percent of the students answered the item correctly. Additionally, this value might also suggest that the item was relatively easy and/or the students who attempted the item were relatively high achievers. In other words, item difficulty and student ability are somewhat confounded.

For OE items, mean scores can range from the minimum possible score (usually zero) to the maximum possible score (e.g., four points in the case of some mathematics, ELA, and science items). Sometimes a pseudo p -value is provided for an OE item. This is done by dividing the mean item score by the maximum possible item score.

The minimum and maximum extremes of the difficulty scale are typically not seen in applied practice. However, understanding the extremes helps illustrate that relatively lower values correspond to more difficult items, and that relatively higher values correspond to easier items. (As a result of this, some assert that this index would be more accurately referred to as the item's easiness.)

Item difficulty is an important consideration for the PSSA tests because of the ranging achievement levels of students in Pennsylvania (Below Basic, Basic, Proficient, and Advanced). Items that are either very hard or very easy provide little information about student differences in achievement. However, an item answered correctly by a high percentage of students would suggest that the knowledge or skill the item taps has been mastered by most students. Conversely, an item answered incorrectly by a low percentage of students would suggest few students have mastered the knowledge or skill the item taps. On a standards-referenced test like the PSSAs, a test development goal is to include a wide range of item difficulties.

¹ OE items for ELA include Short Answer (SA), Evidence Based Selected Response (EBSR), Text Dependent Analysis (TDA), and Writing Prompt (WP) in this chapter.

² For MC items with four response options, pure random guessing would lead to an expected p -value of 0.25.

ITEM DISCRIMINATION

At the most general level, item discrimination³ indicates an item's ability to differentiate between high and low achievers. It is expected that students with high ability (i.e., those who perform well on the PSSA overall) would be more likely to answer any given PSSA item correctly, while students with low ability (i.e., those who perform poorly on the PSSA overall) would be more likely to answer the same item incorrectly. For the PSSA tests, Pearson's product-moment correlation coefficient between item scores and test scores is used to indicate discrimination. (As commonly practiced, DRC removes the item score from the total score such that the resulting correlations will not be spuriously high.) The correlation coefficient can range from -1.0 to +1.0. If the aforementioned expectation is met (high-scoring students tend to get the item right while low-scoring students do not), the correlation between the item score and the total test score will be both positive and noticeably large in its magnitude (i.e., well above zero), meaning the item is a good discriminator between high and low ability students. This should be the case for all PSSA operational test items.

In summary, the correlation will be positive in value when the mean test score of the students answering the item correctly is higher than the mean test score of the students answering the item incorrectly.⁴ In other words, this indicates that students who did well on the total test tended to do well on the item as well. However, an interaction can exist between item discrimination and item difficulty. Items answered correctly (or incorrectly) by a large proportion of examinees (i.e., the items have extreme *p*-values) can have reduced power to discriminate, and thus, can have lower correlations.

Discrimination is an important consideration for the PSSA because the use of more discriminating items on a test is associated with more reliable test scores. This in turn means that score estimates will be more precise (i.e., there will be smaller confidence intervals around the scores) and, perhaps more importantly, that more accurate performance level placements will be made. The issues of reliability, confidence intervals, and performance level classifications are further discussed in Chapter Eighteen.

DISCRIMINATION ON DIFFICULTY SCATTERPLOTS

Figure 11–1 contains a series of scatterplots showing item discrimination values (item-total correlation, *y*-axis) on the item difficulty (*p*-value, *x*-axis) for each grade and subject area test. Note that pseudo *p*-values (described above) are used for OE items in these plots. These plots provide maximum information about item discrimination and difficulty in a single visual image for each PSSA test. This is because the *x*- and *y*-axes also show histogram with following descriptive statistics:

- Minimum and maximum values
- Mean scores
- Median scores
- First and third quantile (Q1 and Q3).

The bivariate relationship between item discrimination (item-test *correlations*) and difficulty (item *mean* scores) is also presented through scatterplots in these figures. One does not usually expect any type of trend here. However, as noted earlier, it is often the case that items with extreme difficulties can have lower discrimination values, as this can be revealed in such plots.

³ As noted earlier, the discrimination index for PSSA dichotomous MC items is typically referred to as the point-biserial correlation coefficient. For OE items, the term item-test correlation is sometimes used.

⁴ It is legitimate to view the point-biserial correlation as a standardized mean difference. A positive value indicates students who chose that response had a higher mean score than the average student; a negative value indicates students who chose that response had a lower than average mean score.

OBSERVATIONS AND INTERPRETATIONS

To support the visuals, Table 11–1 provides break-out results for the MC and OE items. The mean p -values for the MC items ranged from about 0.54 to 0.68 for Mathematics and from 0.62 to 0.66 for ELA. Science MC items' p -values were 0.71 for grade 4 and 0.68 for grade 8. Science and ELA p -values were consistent with their prior year values while mathematics p -values were slightly higher than the prior year⁵. OE items' p -values ranged from 0.31 to 0.41 in mathematics, 0.50 to 0.65 in ELA, and were 0.66 and 0.49 for grades 4 and 8 respectively. Mathematics, ELA, and grade 4 science OE item p -values show the OE items were of roughly equal difficulty between 2015 and 2016, but science grade 8 had a mean OE item p -value that indicates the items were more challenging in 2016.

The mean item-test correlations ranged from roughly 0.38 to 0.45 and 0.46 to 0.71 for the MC and OE items, respectively. These were similar to historic trends. The OE correlations tended to be higher than the MC correlations, which is not surprising because the OE items include more score points. Based on the distribution of the discrimination (correlation) statistics, the overall item quality was quite good.

It is difficult to make global conclusions about overall test quality from these item statistics alone. With that caveat in mind, the results presented in this chapter indicate that the PSSA item difficulty and discrimination were in expected and acceptable ranges, and further evidence of the quality of the internal test structure is provided in the chapters that follow.

Figure 11-1 displays scatter plots for each content area and grade and displaying each item plotted by its p -value on the x -axis and its item-total correlation on the y -axis. Green squares indicate MC items and blue triangles indicate OE items. From the difficulty distributions illustrated in Figure 11-1, a wide range of item difficulties appeared on each exam, which was one test development goal.

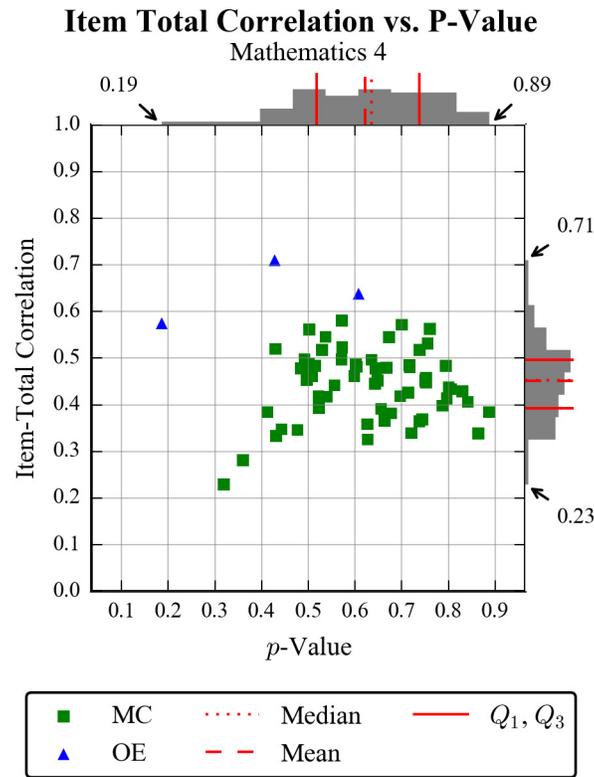
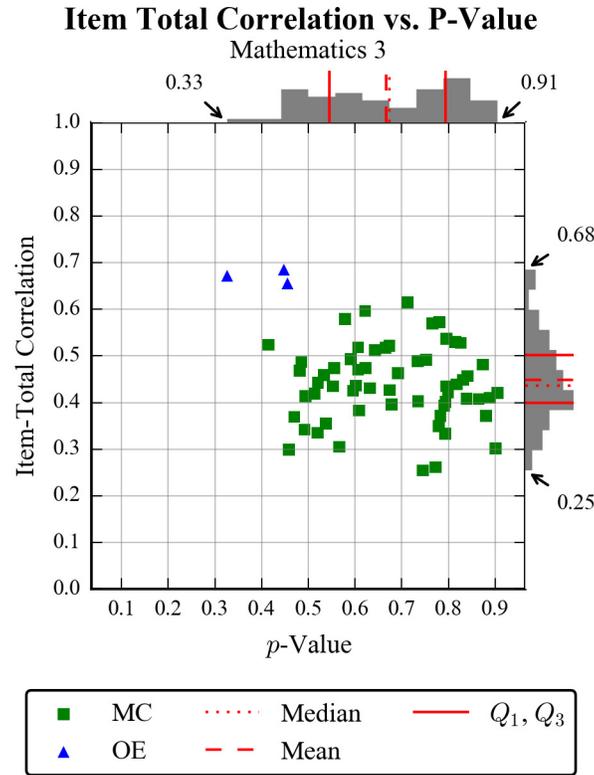
Table 11–1. Sum and Mean Statistics for MC and OE Items

Subject	Grade	MC Points	MC Sum	MC Mean P -val.	MC Mean I-T Corr.	OE Points	OE Sum	OE Mean P -Val.	OE Mean I-T Corr.
Mathematics	3	60	40.79	0.68	0.44	12	4.92	0.41	0.67
Mathematics	4	60	37.92	0.63	0.44	12	4.89	0.41	0.64
Mathematics	5	60	33.90	0.56	0.45	12	4.23	0.35	0.65
Mathematics	6	60	38.20	0.64	0.45	12	3.66	0.31	0.66
Mathematics	7	60	32.50	0.54	0.43	12	4.26	0.36	0.71
Mathematics	8	60	33.82	0.56	0.43	12	3.90	0.32	0.66
ELA	3	38	24.24	0.64	0.42	20	10.02	0.50	0.47
ELA	4	41	26.16	0.64	0.40	23	13.80	0.63	0.57
ELA	5	41	25.45	0.62	0.41	23	13.15	0.59	0.54
ELA	6	41	26.48	0.65	0.39	23	13.83	0.62	0.54
ELA	7	41	25.84	0.63	0.38	23	13.22	0.58	0.48
ELA	8	41	26.89	0.66	0.39	23	14.69	0.65	0.51
Science	4	58	41.07	0.71	0.42	10	6.59	0.66	0.54
Science	8	58	39.30	0.68	0.44	10	4.92	0.49	0.46

Note. I-T Corr. is the item-test score correlation. OE items for ELA include SA, EBSR, TDA, and WP items.

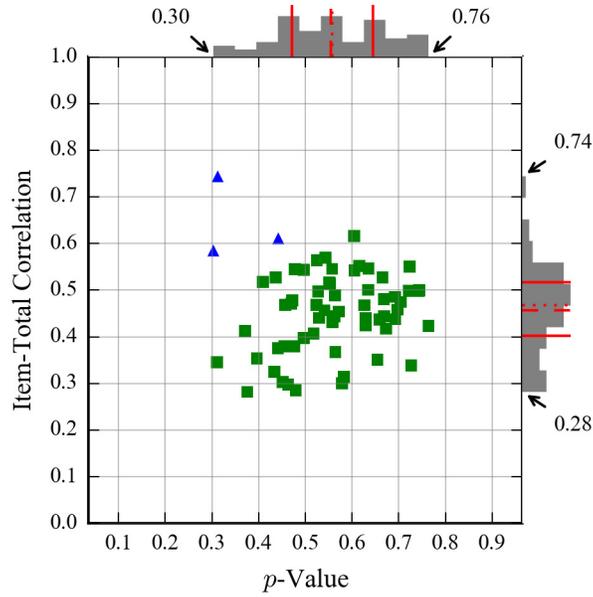
⁵ Historically, average item difficulties for all PSSAs have ranged from mid 0.60s to low 0.70s. In 2015, slightly lower means were observed for mathematics and ELA that were likely due to the change to the Pennsylvania Core Standards. In 2016, mathematics mean p -values rose slightly from 2015, where ELA means were consistent year to year.

Figure 11–1. Discrimination on Difficulty Scatterplots



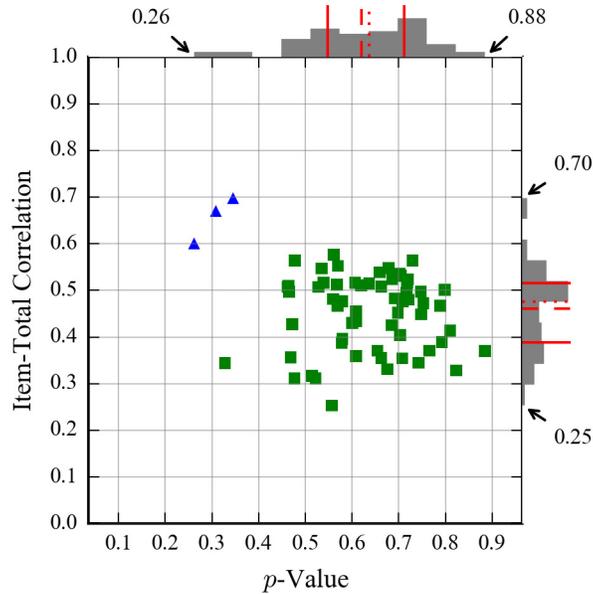
Item Total Correlation vs. P-Value

Mathematics 5



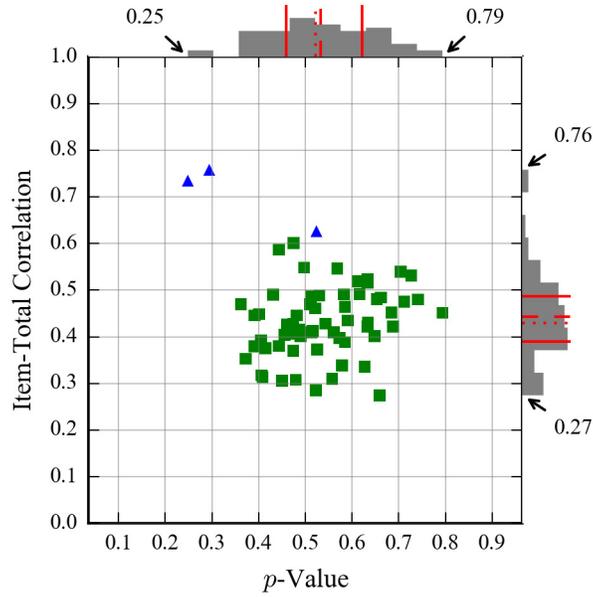
Item Total Correlation vs. P-Value

Mathematics 6



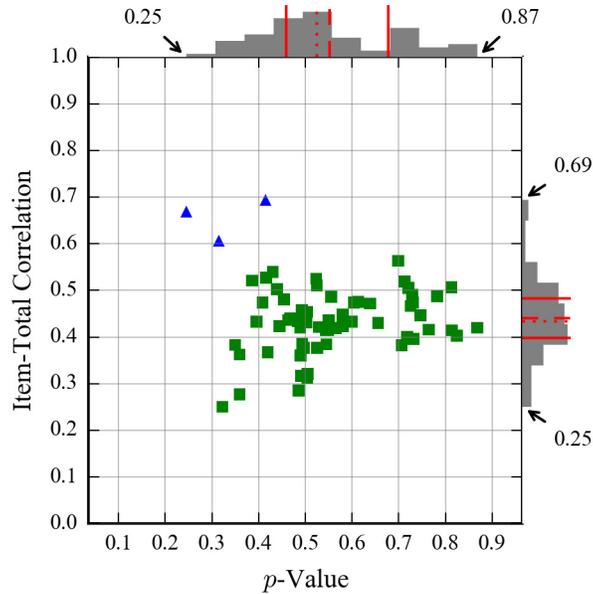
Item Total Correlation vs. P-Value

Mathematics 7

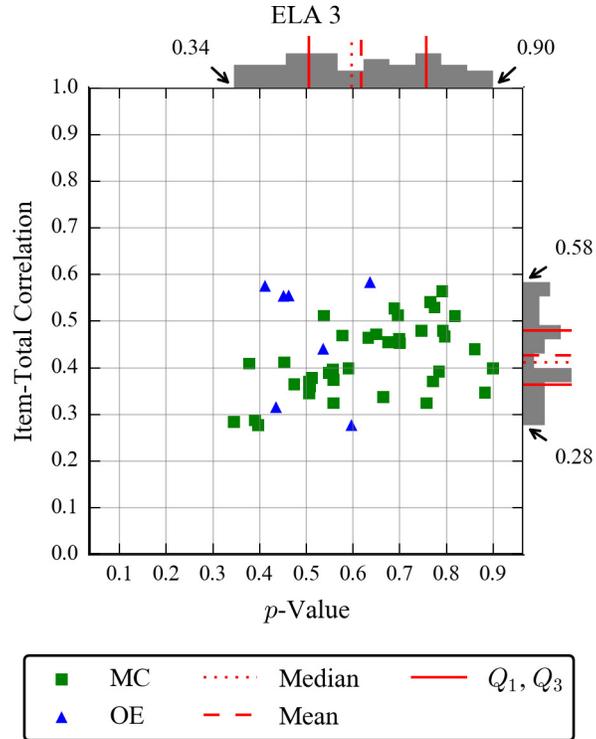


Item Total Correlation vs. P-Value

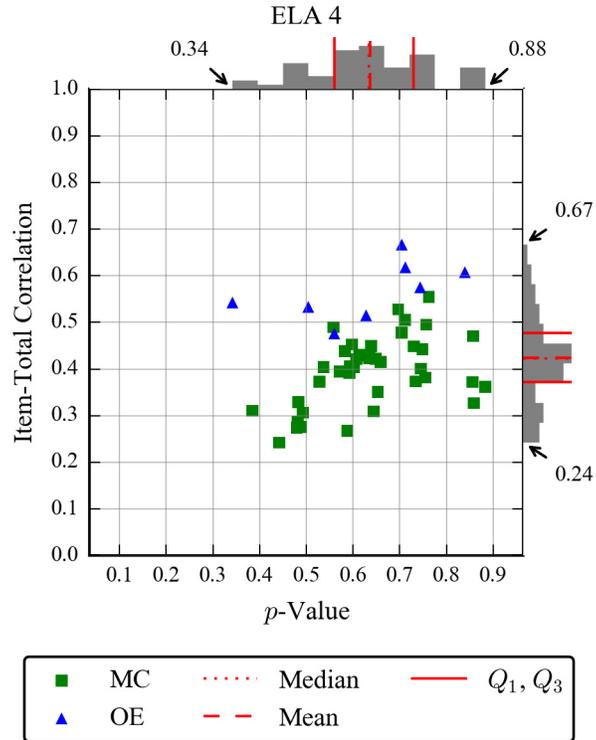
Mathematics 8



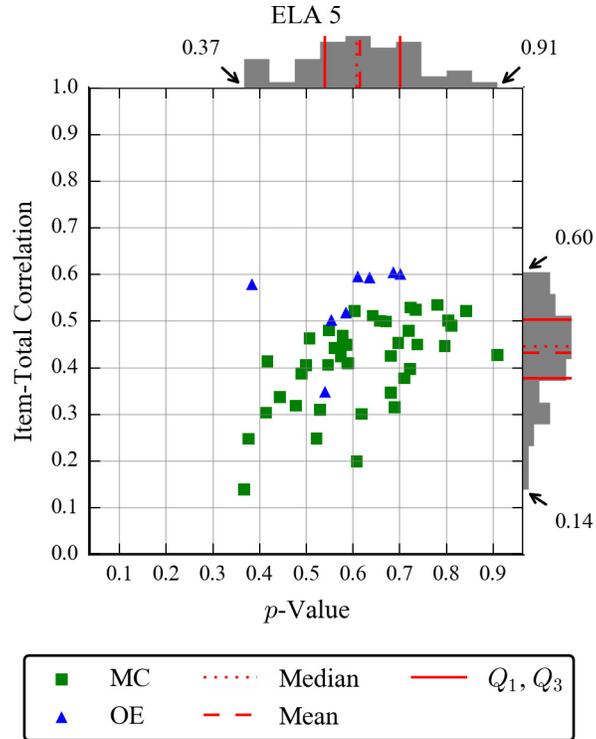
Item Total Correlation vs. P-Value



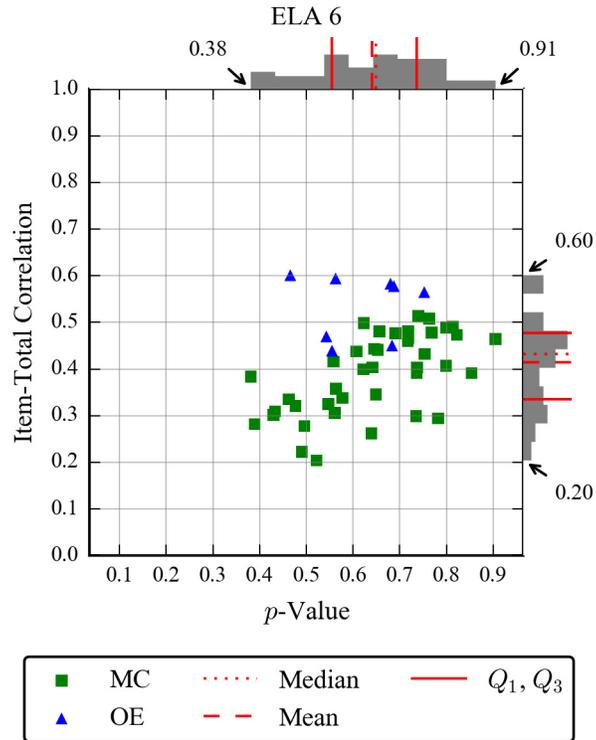
Item Total Correlation vs. P-Value



Item Total Correlation vs. P-Value

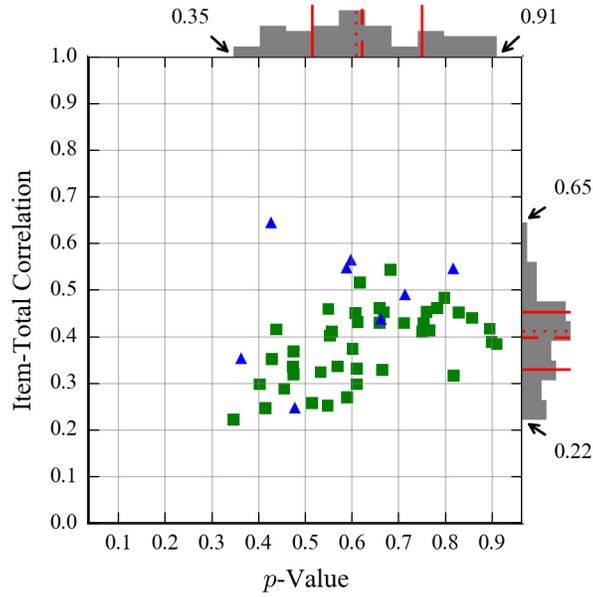


Item Total Correlation vs. P-Value



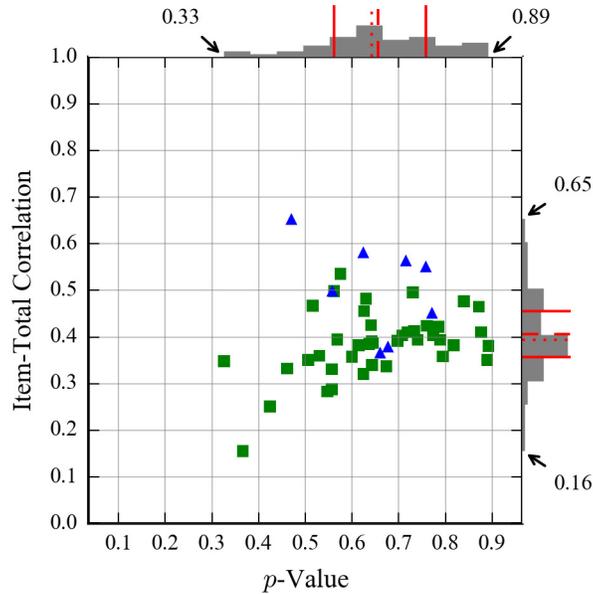
Item Total Correlation vs. P-Value

ELA 7

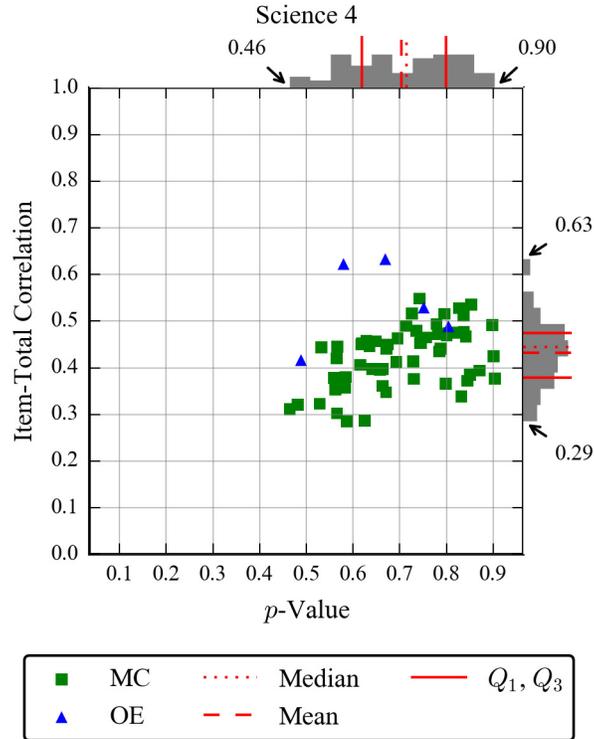


Item Total Correlation vs. P-Value

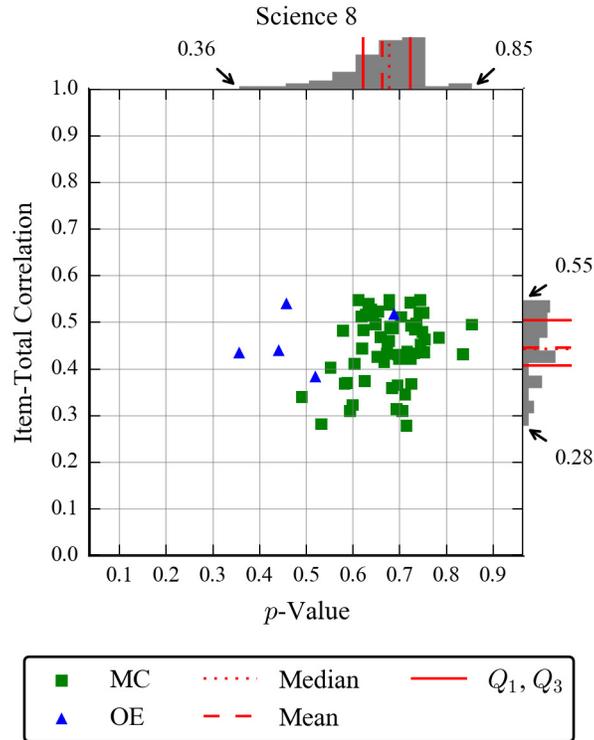
ELA 8



Item Total Correlation vs. P-Value



Item Total Correlation vs. P-Value



CHAPTER TWELVE: RASCH ITEM CALIBRATION

The particular item response theory (IRT) model used for the PSSA is based on the work of Georg Rasch. Rasch models have had a long-standing presence in applied testing programs and it has been the methodology continually used to calibrate PSSA items in recent history. IRT has several advantages over classical test theory, so it has become the standard procedure for analyzing item response data in large-scale assessments. However, IRT models make a number of strong assumptions related to dimensionality, local independence, model-data fit, and item parameter invariance. Resulting inferences derived from any application of IRT rests strongly on the degree to which the underlying assumptions are met.

This chapter outlines the procedures used for calibrating the operational PSSA items. Generally, item calibration is the process of assigning a difficulty-parameter estimate to each item on an assessment so that all items are placed onto a common scale. This chapter briefly introduces the Rasch model, reports the results from evaluations of the adequacy of the Rasch assumptions, and summarizes the Rasch item statistics for the PSSA mathematics, ELA, and science tests. Additional Rasch procedures are discussed with respect to scale linking in Chapter Fifteen.

DESCRIPTION OF THE RASCH MODEL

The Rasch partial credit model (RPCM; Wright and Masters, 1982) was used to calibrate PSSA items because both multiple-choice (MC) and open-ended (OE) items were part of the assessment. The RPCM extends the Rasch model (Rasch, 1960) for dichotomous (0, 1) items so that it accommodates the polytomous OE item data. Under the RPCM, for a given item i with m_i score categories, the probability of person n scoring x ($x = 0, 1, 2, \dots, m_i$) is given by:

$$P_{ni}(X = x) = \frac{\exp \sum_{j=0}^x (\theta_n - D_{ij})}{\sum_{k=0}^{m_i} \exp \sum_{j=0}^k (\theta_n - D_{ij})},$$

where θ^n represents a student's proficiency (ability) level, and D^{ij} is the step difficulty of the j^{th} step on item i . For dichotomous MC items, the RPCM reduces to the standard Rasch model and the single step difficulty is referred to as the item's difficulty. The Rasch model predicts the probability of person n getting item i correct as follows:

$$P_{ni}(X = 1) = \frac{\exp(\theta_n - D_{ij})}{1 + \exp(\theta_n - D_{ij})}.$$

The Rasch model places both student ability and item difficulty (estimated in terms of log-odds or logits) on the same continuum. When the model assumptions are met, the Rasch model provides estimates of a person's ability which are independent of the items employed in the assessment, and conversely, estimates item difficulty independently of the sample of examinees. (As noted in Chapter Eleven, interpretation of item p -values confounds item difficulty and student ability.)

SOFTWARE AND ESTIMATION ALGORITHM

Item calibration was implemented via WINSTEPS 3.81.00 computer program (Wright and Linacre, 2014), which employs unconditional (UCON), joint-maximum-likelihood estimation (JMLE).

SAMPLE CHARACTERISTICS

The characteristics of calibration samples are reported in Chapter Nine. These samples only include the students who attempted the tests. All omits (no response) and multiple responses (more than one response selected) were scored as incorrect answers (coded as 0s) for calibration.

CHECKING RASCH ASSUMPTIONS

Since the Rasch model was the basis of all calibration, scoring, and scaling analyses associated with the PSSA, the validity of the inferences from these results depends on the degree to which the assumptions of the model were met and how well the model fits the test data. Therefore, it is important to check these assumptions. This section evaluates the dimensionality of the data, local item independence, item fit, and item parameter invariance. It should be noted that only operational items were analyzed since they are the basis of student scores.

UNIDIMENSIONALITY

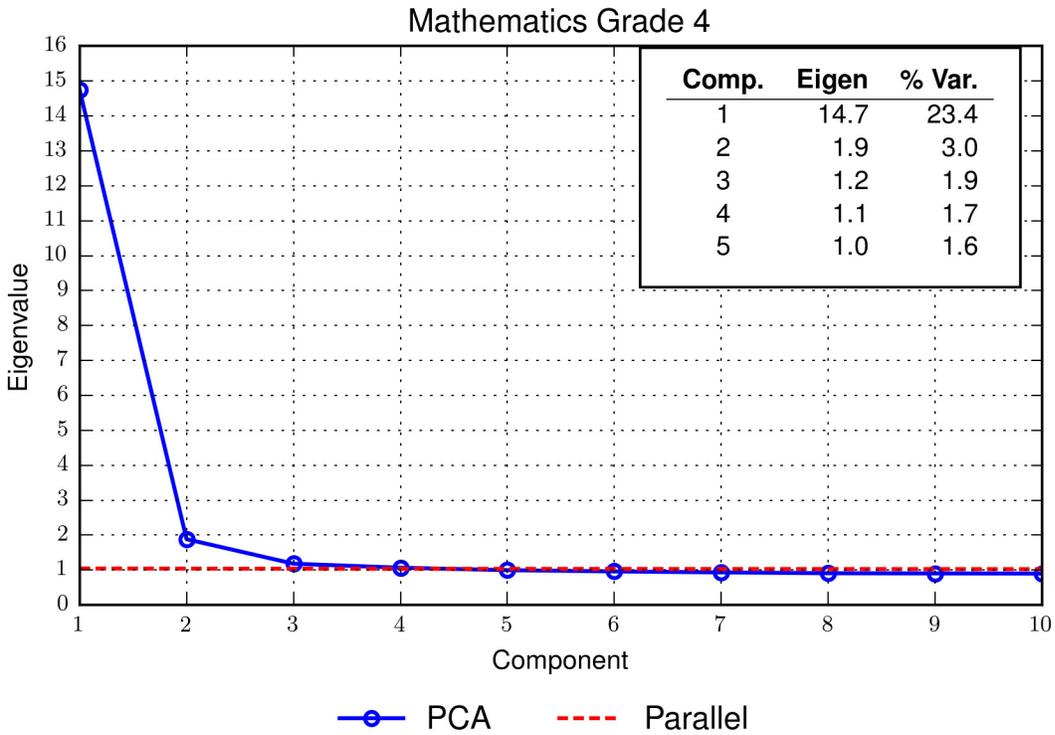
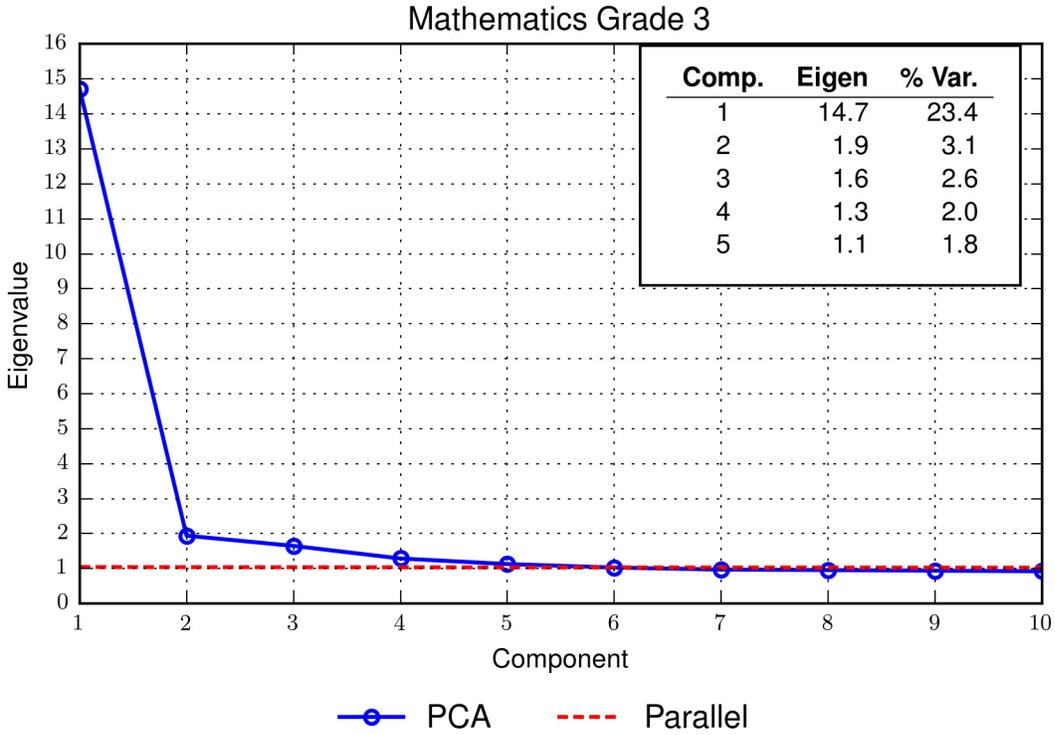
Rasch models assume that one dominant dimension determines the difference among students' performances. Principal Components Analysis (PCA) can be used to assess the unidimensionality assumption. The purpose of the analysis is to verify whether any other dominant component(s) exist among the items. If any other dimensions are found, the unidimensionality assumption would be violated.

Figure 12–1 shows the PCA results for the mathematics, ELA, and science tests. The results include the eigenvalues and the percentage of variance explained for the first five components as well as the scree plots. The scree plots show the eigenvalues plotted by component number and the results from a parallel analysis. The total number of components in PCA is same as the total number of items in a test; however, Figure 12–1 shows only the first 10 components given that beyond 10th component the additional information would be negligible.

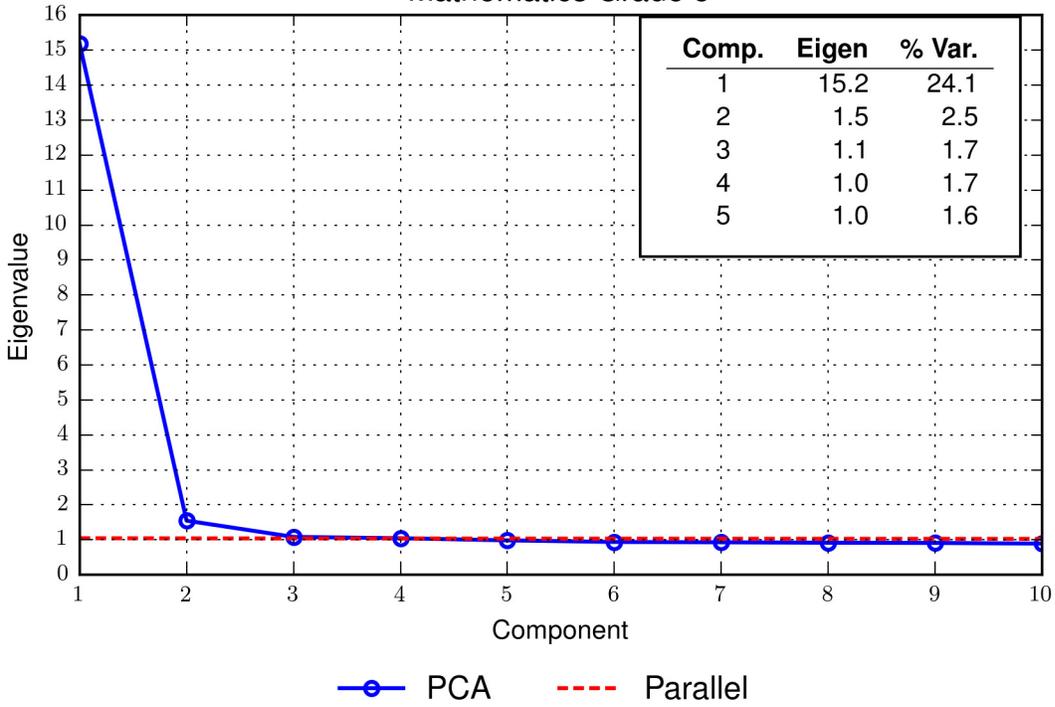
Parallel analysis (Horn, 1965) is a technique to decide how many factors exists in principal components. A parallel analysis (Horn, 1965) was also conducted to help distinguish components that are real from components that are random. For the parallel analysis, 100 random data sets were created of size equal to the original data. For each random data set, a PCA was performed and the resulting eigenvalues stored. Then for each component, the upper 95th percentile value of the distribution of the 100 eigenvalues from the random data sets was plotted. Given the size of the data generated for the parallel analysis, the reference line is essentially equivalent to plotting a reference line for an eigenvalue of 1.

As can be seen in Figure 12–1, for PSSA mathematics the primary dimension explained about 19 percent to 24 percent of the total variance across Grades 3 through 8. The eigenvalues of the second dimensions ranged from 1.3 to 1.7. This indicates that the second dimension accounted for only 1.3 to 1.7 of total variance. Overall, the PCA suggests that there is one clearly dominant dimension for all mathematics tests.

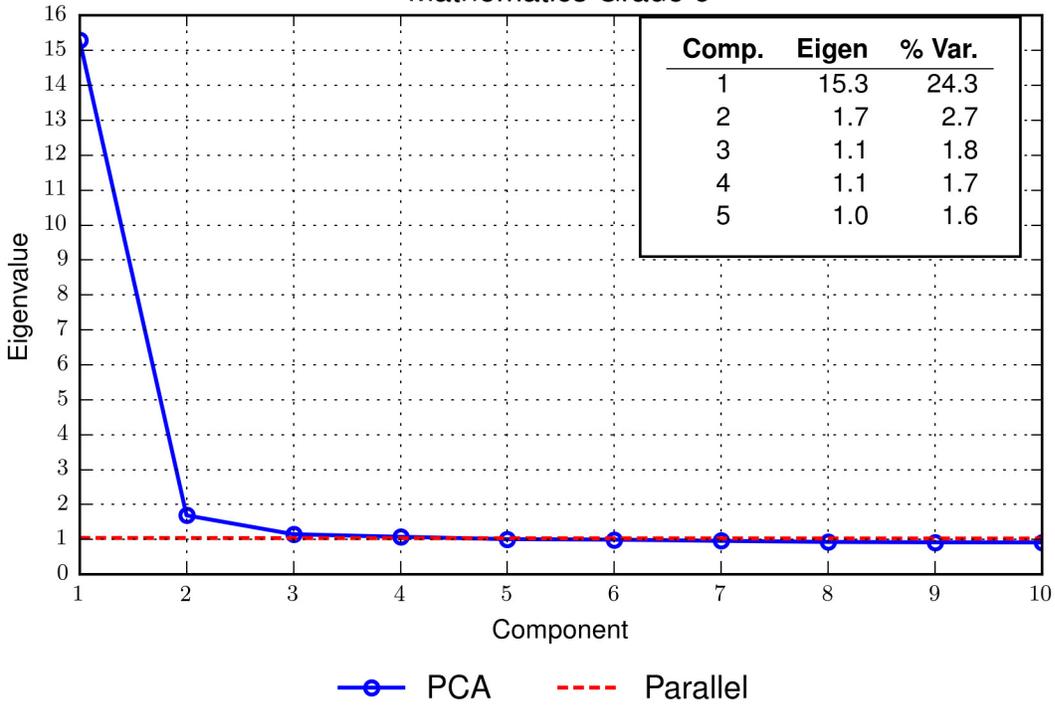
Figure 12–1. Scree Plots Local Independence



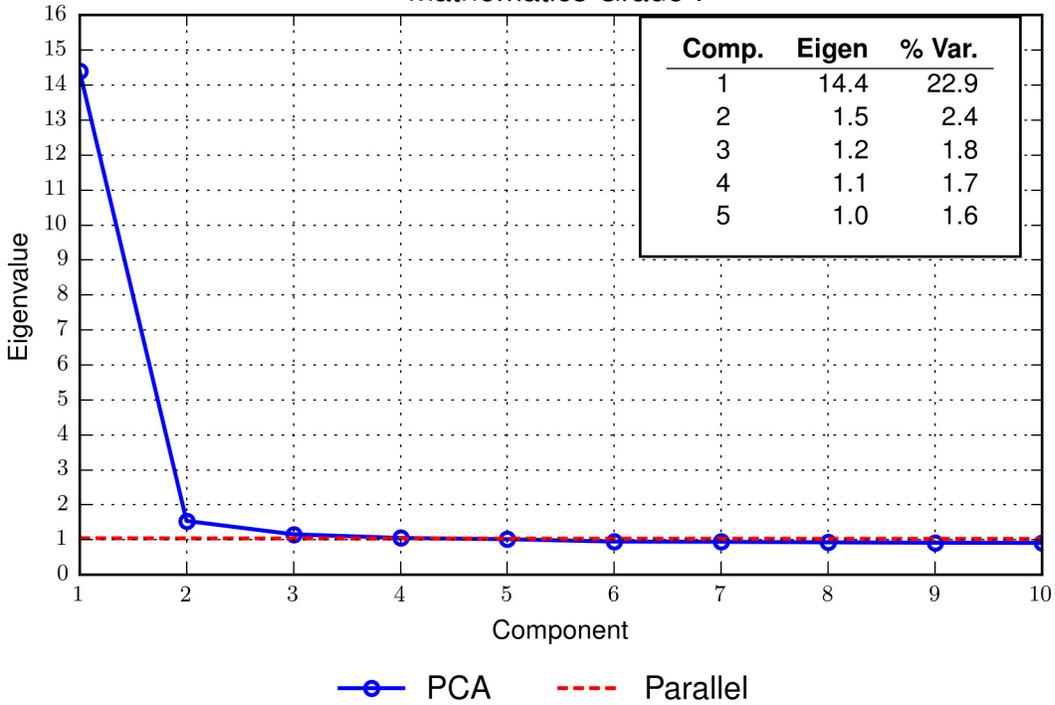
Mathematics Grade 5



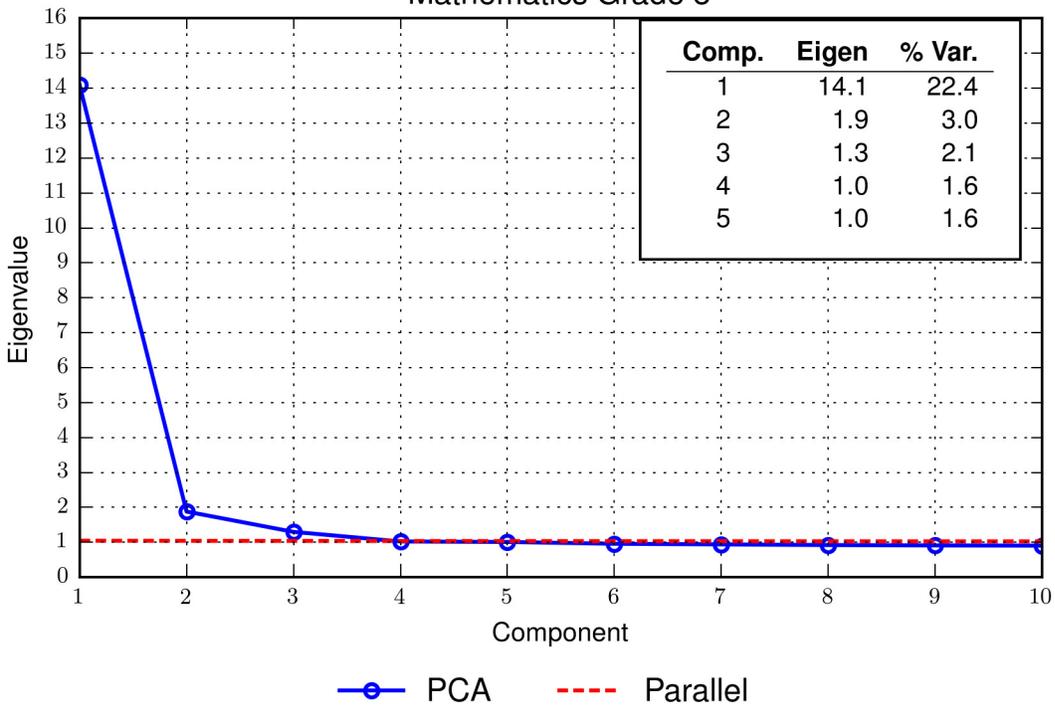
Mathematics Grade 6



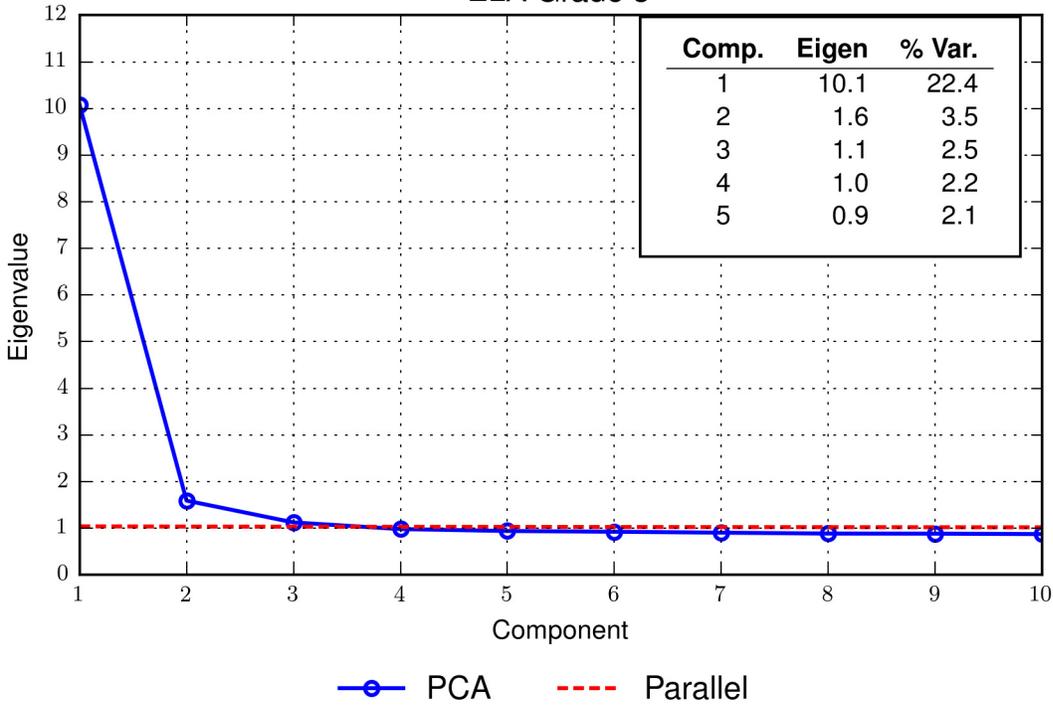
Mathematics Grade 7



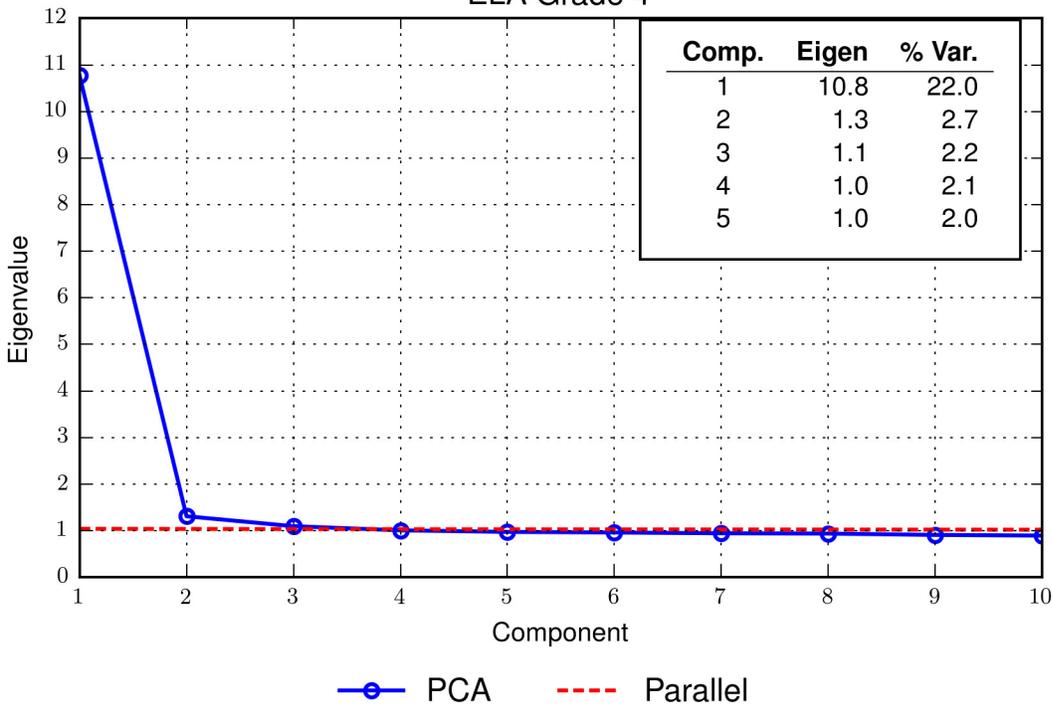
Mathematics Grade 8



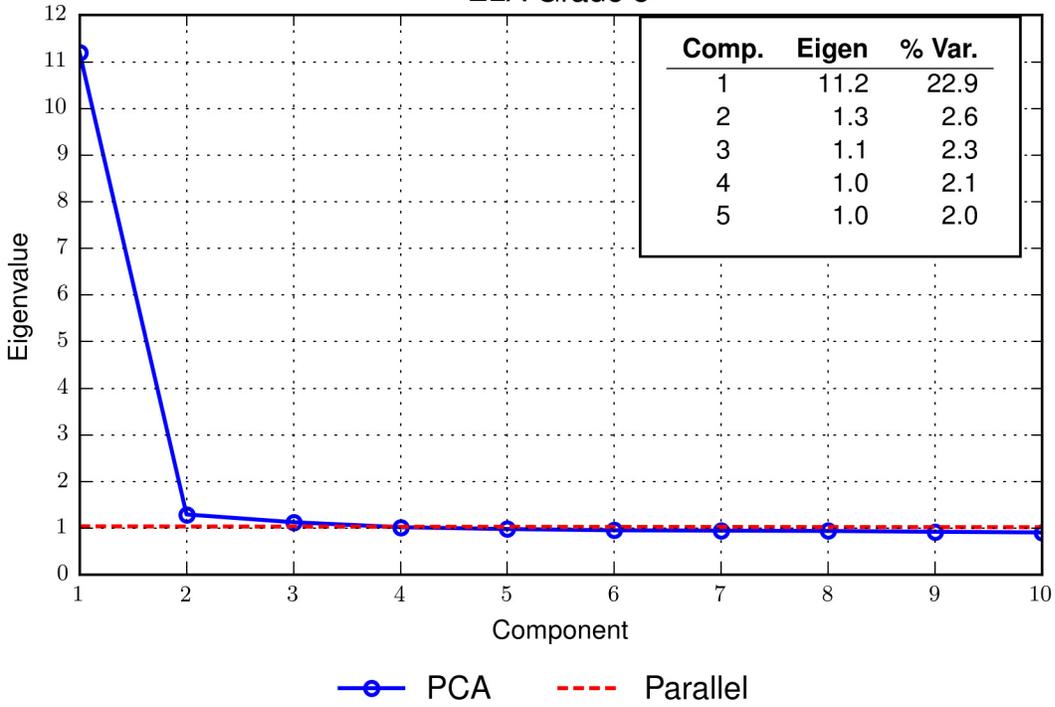
ELA Grade 3



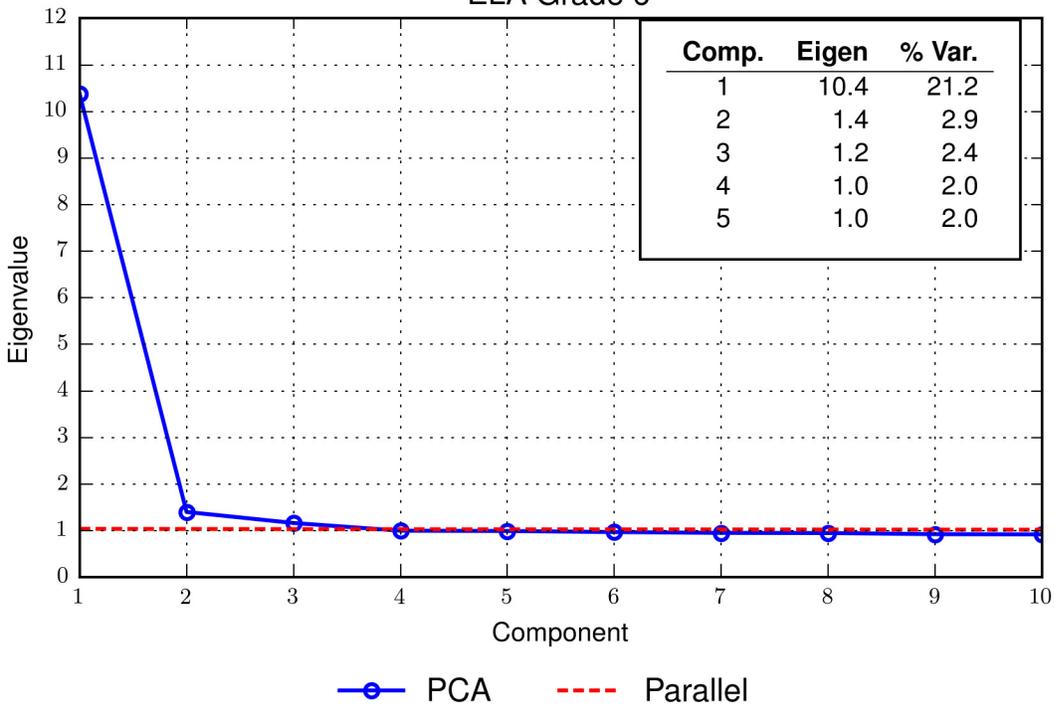
ELA Grade 4

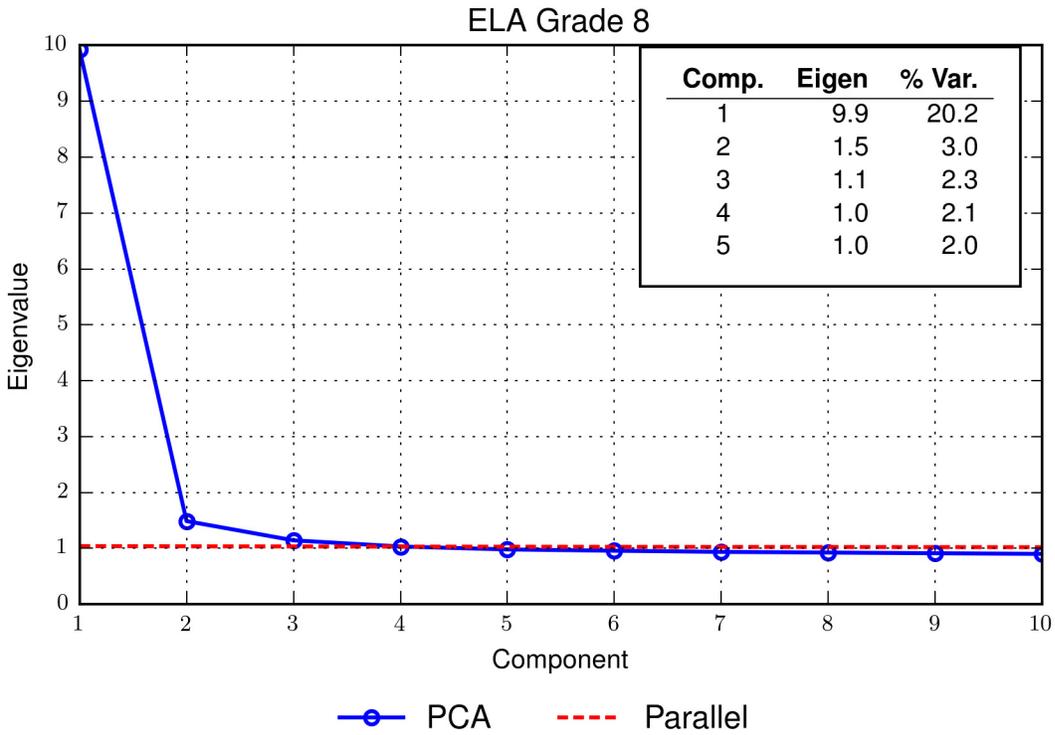
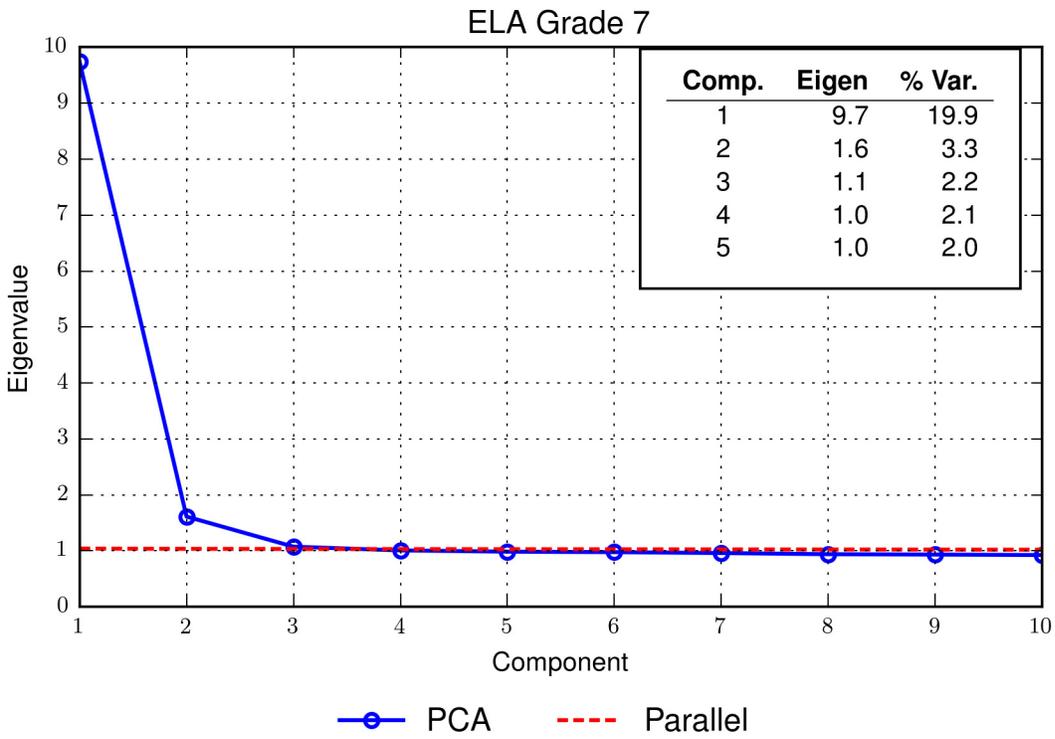


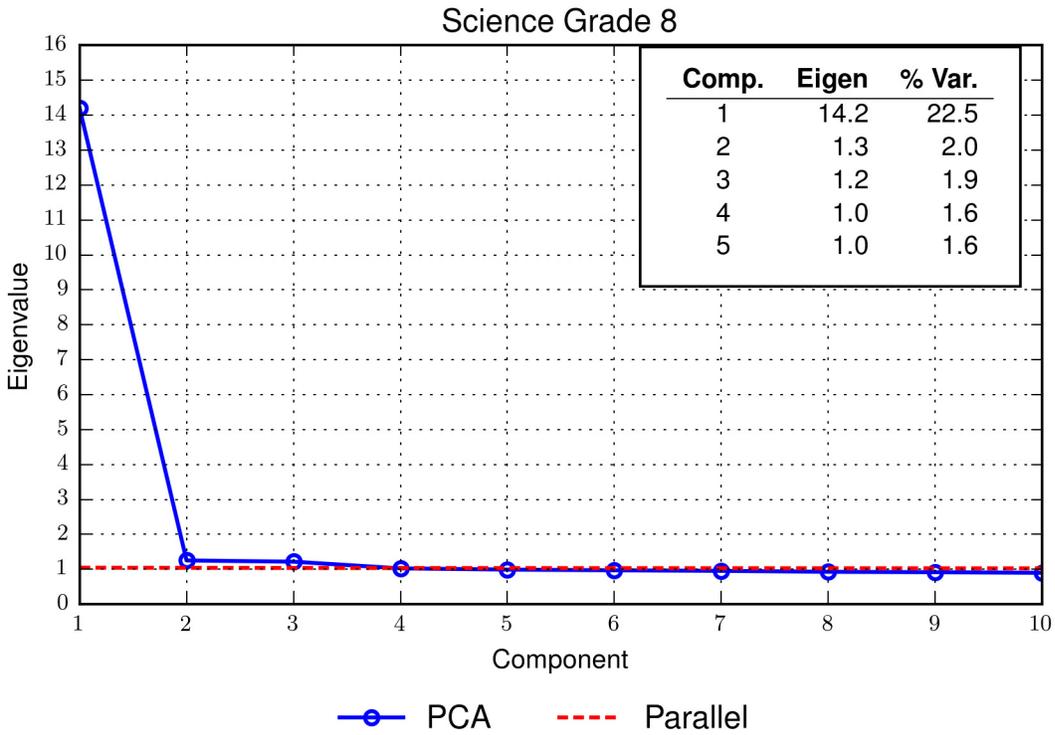
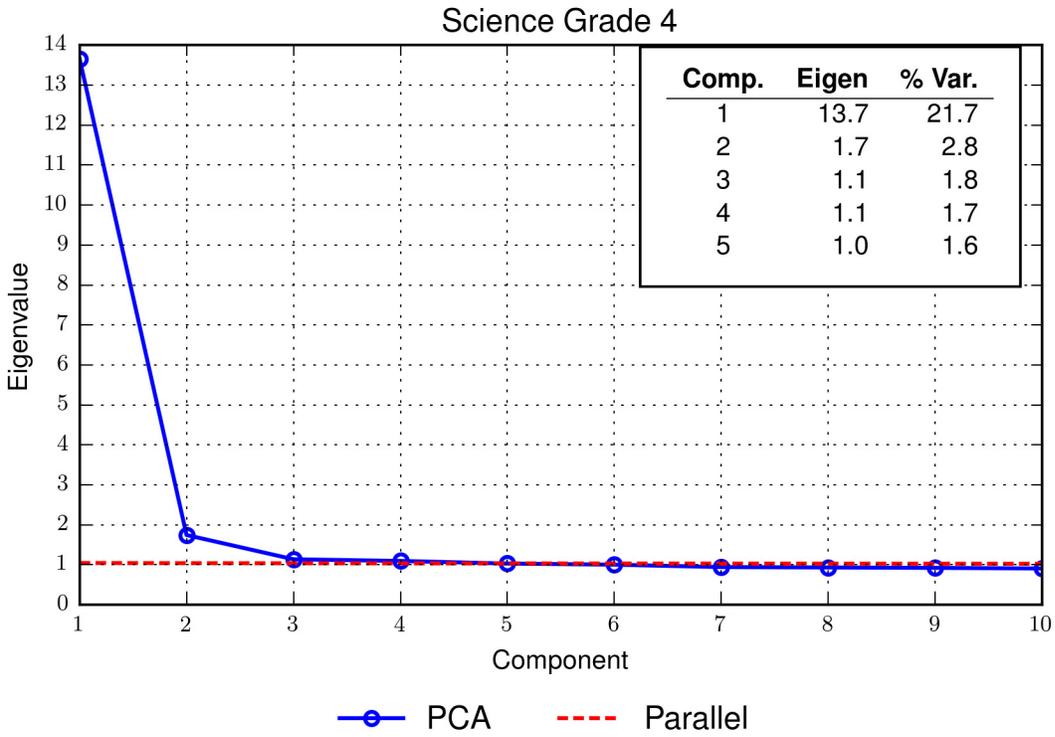
ELA Grade 5



ELA Grade 6







Local independence (LI) is a fundamental assumption of IRT. No relationship should exist between examinees' responses to different items after accounting for the abilities measured by a test. In formal statistical terms, a test X that is comprised of items X_1, X_2, \dots, X_n is locally independent with respect to the latent variable θ if, for all $x = (x_1, x_2, \dots, x_n)$ and θ ,

$$P(\mathbf{X} = \mathbf{x} | \theta) = \prod_{i=1}^I P(X_i = x_i | \theta).$$

This formula essentially states that the probability of any pattern of responses across all items (\mathbf{x}), after conditioning on the abilities (θ) measured by the test, should be equal to the product of the conditional probabilities across each item (cf. the multiplication rule for independent events where the joint probabilities are equal to the product of the associated marginal probabilities).

The equation above shows the condition after satisfying the strong form of local independence. A weak form of local independence (WLI) was proposed by McDonald (1979). The distinction is important as many indicators of local dependency are actually framed by WLI. The requirement would be for the conditional covariances of all pairs of item responses, conditioned on the abilities, to be equal to zero. When this assumption is met, the joint probability of responses to an item pair, conditioned on abilities, is the product of the probabilities of responses to these two items, as shown below. (This is a weaker form because higher-order dependencies among items are allowed.) Based on the WLI, the following expression can be derived:

$$P(X_i = x_i, X_j = x_j | \theta) = P(X_i = x_i | \theta) P(X_j = x_j | \theta).$$

Marais and Andrich (2008) pointed out that local item dependence in the Rasch model can occur in two ways that some may not distinguish. The first way occurs when the assumption of unidimensionality is violated. Here, other nuisance dimensions besides a dominant dimension determine student performance (this can be called "trait dependence"). The second violation occurs when responses to an item depend on responses to another. This is a violation of statistical independence and can be called response dependence. Many people treat the assumptions of unidimensionality and local independence as one phenomenon and believe that once unidimensionality holds, that local independence also holds. By distinguishing the two sources of local dependence, one can see that while local independence can be related to unidimensionality, the two are different assumptions and therefore, require different tests.

Residual item correlations provided in WINSTEPS for each item pair were used to assess the local dependence among the PSSA items. In general, these residuals are computed as follows. First, expected item performance based on the Rasch model is determined using ability and item parameter estimates. Next, deviations (residuals) between the examinees' expected and observed performance is determined for each item. Finally, for each item pair, a correlation between the respective deviations is computed.

Three types of residual correlations are available in WINSTEPS: raw, standardized, and logit. It should be noted that the raw score residual correlation essentially corresponds to Yen's Q_3 index, a popular LI statistic. The expected value for the Q_3 statistic is approximately $-1/(k-1)$ when no local dependence exists, where k is test length (Yen, 1993). Thus, the expected Q_3 values should be approximately -0.02 for the PSSA tests (since most of the PSSA tests had more than 50 core items). Index values that are greater than 0.20 indicate a degree of local dependence that probably should be examined by test developers (Chen & Thissen, 1997).

Since the three residual correlations are very similar, the default "standardized residual correlation" in WINSTEPS was used for these analyses. Table 12–1 shows the summary statistics—mean, SD, minimum, maximum, and several percentiles (P_{10} , P_{25} , P_{50} , P_{75} , P_{90})—for all the residual correlations for each test. The total number of item pairs (N) and the number of pairs with the residual correlations greater than 0.20 are also reported in this table. The mean residual correlations were slightly negative and the values were close to 0.00. The vast majority of the correlations were very small, suggesting local item independence generally holds for the PSSA ELA, mathematics, and science tests, noting that mathematics grade 3 showed 4 correlations greater than 0.20 (in absolute magnitude) with the largest being 0.40. Details regarding these items are discussed below.

Table 12–1M. Summary of Item Residual Correlations for PSSA Mathematics

Statistic	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
N	1953	1953	1953	1953	1953	1953
Mean	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02
SD	0.03	0.02	0.02	0.02	0.02	0.02
Minimum	-0.09	-0.10	-0.10	-0.07	-0.09	-0.11
P ₁₀	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
P ₂₅	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
P ₅₀	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
P ₇₅	0.00	0.00	0.00	0.00	0.00	0.00
P ₉₀	0.01	0.01	0.01	0.01	0.01	0.01
Maximum	0.40	0.19	0.14	0.31	0.20	0.11
> 0.20	4	0	0	1	0	0

Table 12–1E. Summary of Item Residual Correlations for PSSA English Language Arts

Statistic	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
N	990	1176	1176	1176	1176	1176
Mean	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01
SD	0.03	0.03	0.03	0.04	0.03	0.03
Minimum	-0.13	-0.16	-0.16	-0.21	-0.22	-0.19
P ₁₀	-0.05	-0.03	-0.05	-0.04	-0.04	-0.04
P ₂₅	-0.03	-0.01	-0.02	-0.02	-0.02	-0.02
P ₅₀	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01
P ₇₅	0.00	0.00	0.01	0.01	0.01	0.01
P ₉₀	0.02	0.02	0.02	0.02	0.02	0.02
Maximum	0.10	0.09	0.10	0.13	0.14	0.13
> 0.20	0	0	0	1	2	0

Table 12–1S. Summary of Item Residual Correlations for PSSA Science

Statistic	Grade 4	Grade 8
N	1953	1953
Mean	-0.01	-0.02
SD	0.02	0.02
Minimum	-0.08	-0.08
P ₁₀	-0.04	-0.04
P ₂₅	-0.03	-0.03
P ₅₀	-0.02	-0.02
P ₇₅	-0.01	0.00
P ₉₀	0.01	0.01
Maximum	0.19	0.06
> 0.20	0	0

Table 12–2 lists all item pairs with residual correlations greater than 0.20 with the added information of session, sequence, and Eligible Content. Item sequence in the table is the master core form’s item sequence, but the MC items are scrambled across forms.

The pattern that is evident is that these correlated items share identical or very similar Eligible Content and are testing the same or similar skills when the correlations are positive. ELA’s large residual correlations were observed with Evidence Based Select Response (EBSR) items and Text Dependent Analysis (TDA) items, and they were negatively correlated. Test blueprints determine what Assessment Anchors, as defined by the Eligible Content, will be assessed. PDE and DRC make every effort to avoid one item cueing another through careful item selection and sequencing.

Table 12–2. Item Pairs With Large Residual Correlations

Subject	Grade	Item 1 Seq.	Item 1 Type	Item 1 Eligible Content	Item 2 Seq.	Item 2 Type	Item 2 Eligible Content	Resid. Corr.
Mathematics	3	4	MC	A-F.1.1.5	28	MC	A-F.1.1.5	0.38
Mathematics	3	4	MC	A-F.1.1.5	73	MC	A-F.1.1.5	0.32
Mathematics	3	17	MC	C-G.1.1.2	62	MC	C-G.1.1.2	0.27
Mathematics	3	28	MC	A-F.1.1.5	73	MC	A-F.1.1.5	0.40
Mathematics	6	2	MC	A-N.1.1.1	4	MC	A-N.1.1.1	0.31
ELA	6	44	ESR	A-K.1.1.3	68	TDA	E.1.1	-0.21
ELA	7	36	ESR	A-K.1.1.3	68	TDA	E.1.1	-0.22
ELA	7	43	ESR	A-K.1.1.3	68	TDA	E.1.1	-0.21

ITEM FIT

WINSTEPS provides two item fit statistics (infit and outfit) for evaluating the degree to which the Rasch model predicts the observed item responses. Each fit statistic can be expressed as a mean square (MnSq) statistic or on a standardized metric (Zstd with mean = 0 and variance = 1). MnSq values are more oriented toward practical significance, while Zstd values are more oriented toward statistical significance. Though both are informative, the Zstd values are very likely too sensitive to the large sample sizes observed on the PSSA. In this situation it is recommended that the Zstd values be ignored if the MnSq values are acceptable (Linacre, 2014).

Both infit and outfit MnSq are the average of standardized residual variance (the difference between the observed score and the Rasch estimated score divided by the square root of the Rasch model variance). The difference is that the outfit statistic gives all examinees equal weight in computing the fit and tends to be affected more by unexpected responses far from the person, item, or rating scale category measure (i.e., it is more sensitive to outlying, off-target, low-information responses). The infit statistic is weighted by the examinee locations relative to item difficulty and tends to be affected more by unexpected responses close to the person, item, or rating scale category measure (i.e., informative, on-target responses). Some feel that extreme infit values are a greater threat to the measurement process than extreme outfit since most tests intend to measure the on-target population rather than extreme outliers.

The expected MnSq value is 1.0 and can range from 0 to infinity. Deviation in excess of the expected value can be interpreted as noise or lack of fit between the items and the model. Values lower than the expected value can be interpreted as item redundancy or overfitting items (too predictable, too much redundancy), and values greater than the expected value indicate underfitting items (too unpredictable, too much noise). Rules of thumb regarding “practically significant” MnSq values vary. More conservative users might prefer items with MnSq values that range from 0.8 to 1.2. Others believe reasonable test results can be achieved with values from 0.5 to 1.5. In the results below, values outside of 0.7 to 1.3 are given practical importance.

Table 12–3 presents the summary statistics of infit and outfit mean square statistics for the PSSA ELA, mathematics, and science tests, including the mean, SD, and minimum and maximum values. The number of items

within the range of [0.7, 1.3] is also reported in Table 12–3. As can be seen, the mean values for both fit statistics were close to 1.00 for all subjects. Almost all the items had infit values falling in the range of [0.7, 1.3], suggesting reasonable model infit. More outfit values fell above the 1.30 threshold, however, which can sometimes suggest higher than normal guessing or careless mistake patterns. Examples with higher misfit values include mathematics grades 3, 4, and 8, and ELA grades 3, 5, 7, and 8.

Table 12–3. Summary of Infit and Outfit Mean Square Statistics for PSSA Mathematics, ELA, and Science

Subject	Grade	Mean*	SD*	Min*	Max*	[0.7,1.3]*	Mean†	SD†	Min†	Max†	[0.7,1.3] †
Mathematics	3	0.99	0.11	0.77	1.23	63/63	0.98	0.20	0.63	1.61	52/63
Mathematics	4	0.99	0.10	0.79	1.25	63/63	1.00	0.18	0.66	1.61	58/63
Mathematics	5	1.00	0.11	0.79	1.23	63/63	0.99	0.17	0.66	1.38	58/63
Mathematics	6	0.99	0.10	0.81	1.29	63/63	0.99	0.18	0.67	1.39	56/63
Mathematics	7	1.00	0.11	0.75	1.19	63/63	1.00	0.16	0.68	1.33	61/63
Mathematics	8	0.99	0.11	0.79	1.24	63/63	0.99	0.17	0.60	1.52	57/63
ELA	3	1.00	0.13	0.79	1.48	43/45	0.98	0.21	0.63	1.65	37/45
ELA	4	1.01	0.11	0.77	1.20	49/49	1.05	0.18	0.68	1.37	43/49
ELA	5	1.02	0.15	0.72	1.45	47/49	1.04	0.25	0.53	1.73	39/49
ELA	6	1.01	0.13	0.69	1.32	47/49	1.04	0.22	0.58	1.42	40/49
ELA	7	1.01	0.16	0.63	1.64	47/49	1.05	0.24	0.60	1.74	42/49
ELA	8	1.02	0.13	0.64	1.41	47/49	1.08	0.25	0.63	2.22	43/49
Science	4	0.99	0.10	0.79	1.30	62/63	0.97	0.18	0.56	1.40	57/63
Science	8	1.00	0.10	0.85	1.31	62/63	0.99	0.16	0.68	1.33	59/63

*Infit Mean Square

†Outfit Mean Square

POPULATION INVARIANCE

The property of invariance is regarded as the cornerstone of IRT and is its major distinguishing attribute from classical test theory (Hambleton, Swaminathan, & Rogers, 1991). It is this property that makes many IRT applications possible (e.g., equating, item banking, investigation of item bias, and adaptive testing) (Hambleton et al., 1991, p.25). Inferences from these IRT applications are valid to the extent that the property of invariance holds. Therefore, it is important to evaluate invariance whenever applying IRT.

Invariance should hold for both item and ability parameters. Item invariance implies that item parameter estimates do not depend on the particular sample of examinees used to derive them. Person (ability parameter) invariance means that examinees' ability estimates do not depend on which items are administered. For the Rasch item calibrations, it is more important to determine how well the item invariance assumption holds. Therefore, only item invariance is evaluated here. We call item invariance “population invariance” with the intention that item parameters do not depends on particular population.

Population invariance was examined using the root mean squared difference (RMSD) and the root expected mean standardized difference (REMSD) statistics (Dorans and Holland, 2000; von Davier & Wilson, 2008). The RMSD statistic quantifies the difference in the equating relationship at a given observed 2014 raw score point in terms of the subgroup relationship and the full group (population) equating relationship. The RMSD statistic is given as follows:

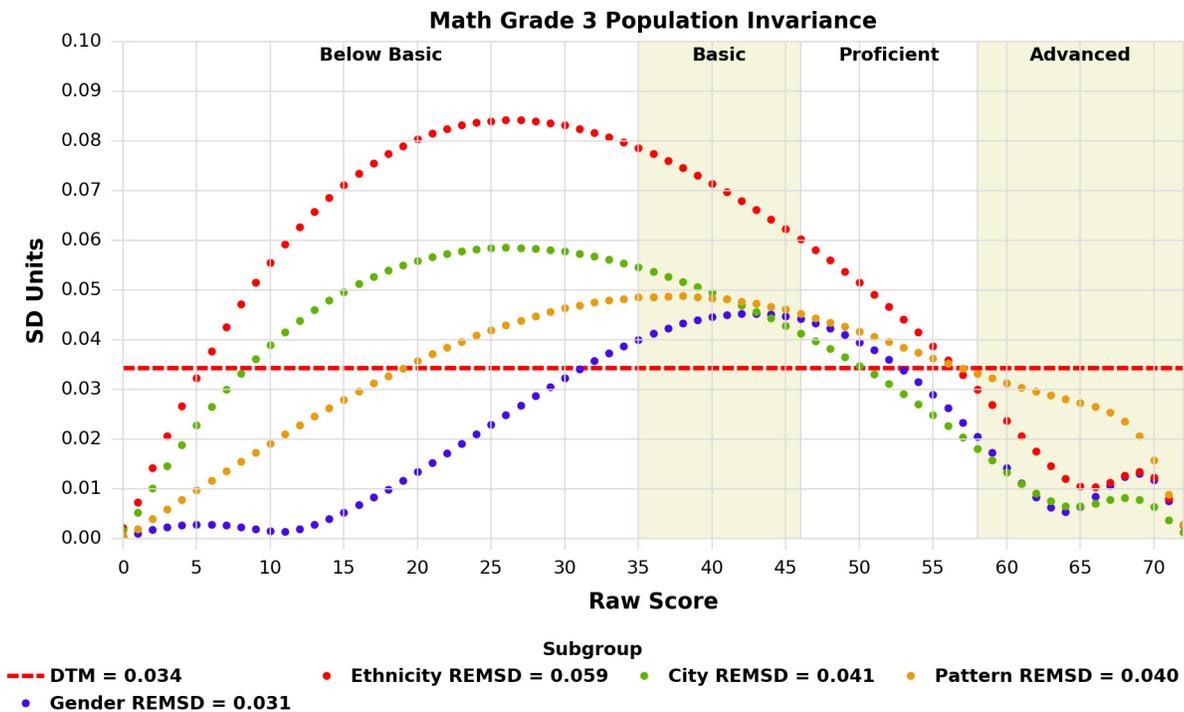
$$RMSD_x = \frac{\sqrt{\sum_{j=1}^J w_j [\hat{y}_{jx} - \hat{y}_{Px}]^2}}{\sigma_Y},$$

where x is an observed current year (scale of X) raw score, \hat{y}_{jx} is the expected previous year's raw score for subgroup j (based on the subgroup calibration/equating) given current year's raw score x , \hat{y}_{Px} is the expected previous year raw score for population (P , based on calibration/equating with all students) given current year's raw score, the weight, w_j , is the proportion for the subgroup, and σ is the standard deviation of the previous year raw scores with all students. A related index, REMSD, summarizes the average difference between the equating across all observed score points. Dorans, Holland, Thayer and Tatenkeni (2003) used the notion of a "difference that matters" (DTM) to provide further context for interpreting the population invariance results. The DTM for a particular assessment depends on the reporting scale. For the PSSAs, one raw score point translates to different scaled scores and potentially different performance level classifications. Differences in equating functions greater than half a raw score point could result in different scores reported. For this reason, a DTM of a half a point is used for our evaluation of population invariance. RMSD and REMSD are compared relative to the standardized DTM which is obtained by dividing 0.5 by the standard deviation in the denominator of the RMSD and REMSD.

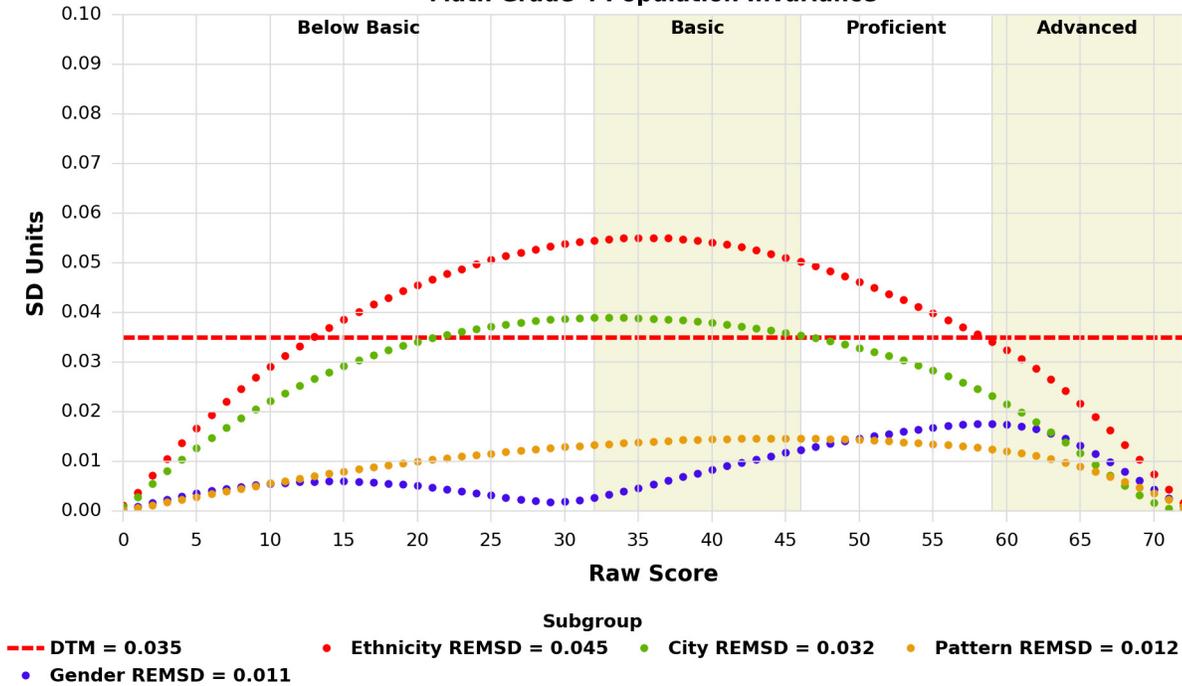
The subgroups considered within the population invariance analyses are gender (male, female), ethnicity (White, Black, and Hispanic), city (City or Not City), and scrambling pattern (A, B, C, D, E, F, G, M). The REMSD statistics, which provide a summary of the differences across all observed score points, were all lower than the DTM for mathematics grades 6 and 7, and ELA grade 3. All other grade and content areas showed at least one subgroup with REMSD that exceeded the DTM at least slightly. Population invariance has been included as part of equating analyses since 2013. The fact that equating differences have been seen in different grade/subject/subgroup analyses over the last four years suggests that population invariance of equating may not be a stable trait of an examination. Population invariance of the equating in will continue to be monitored in subsequent PSSA administrations.

Figure 12–2 presents the RMSDs (y -axis) for gender, ethnicity, city, and scramble pattern group and includes REMSD estimates for each equating set. The population invariance curves (or deviance curves) of the RMSDs fell below the DTM for all score points across each test.

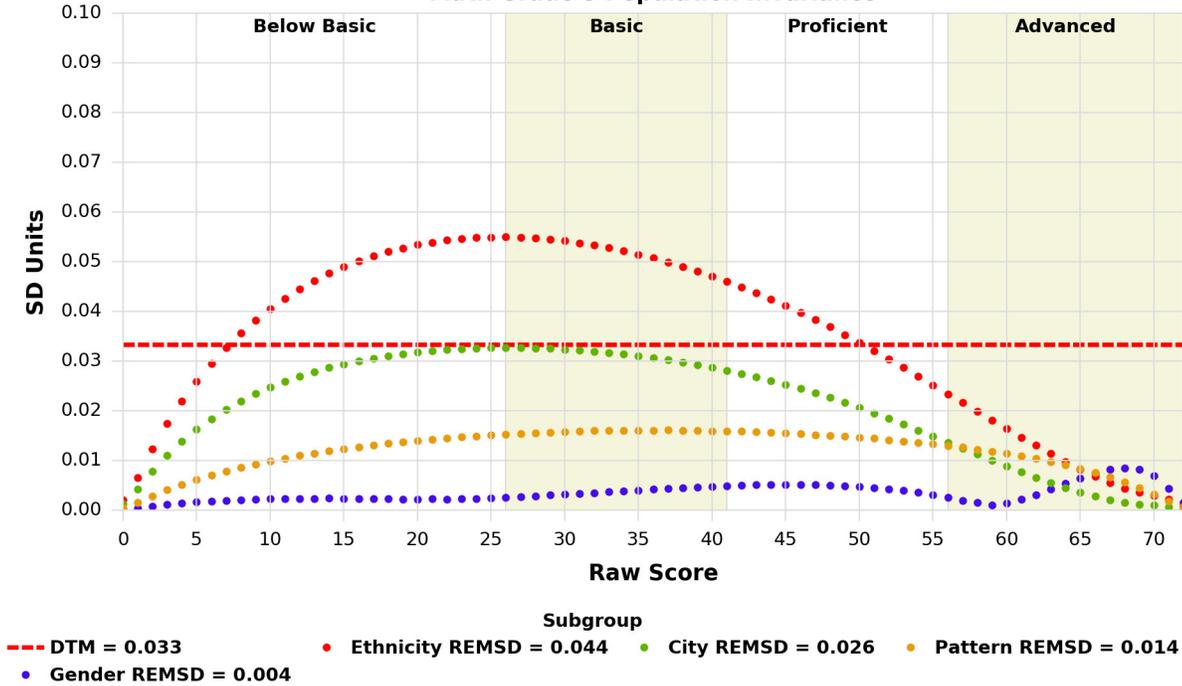
Figure 12–2. Population Invariance Plots



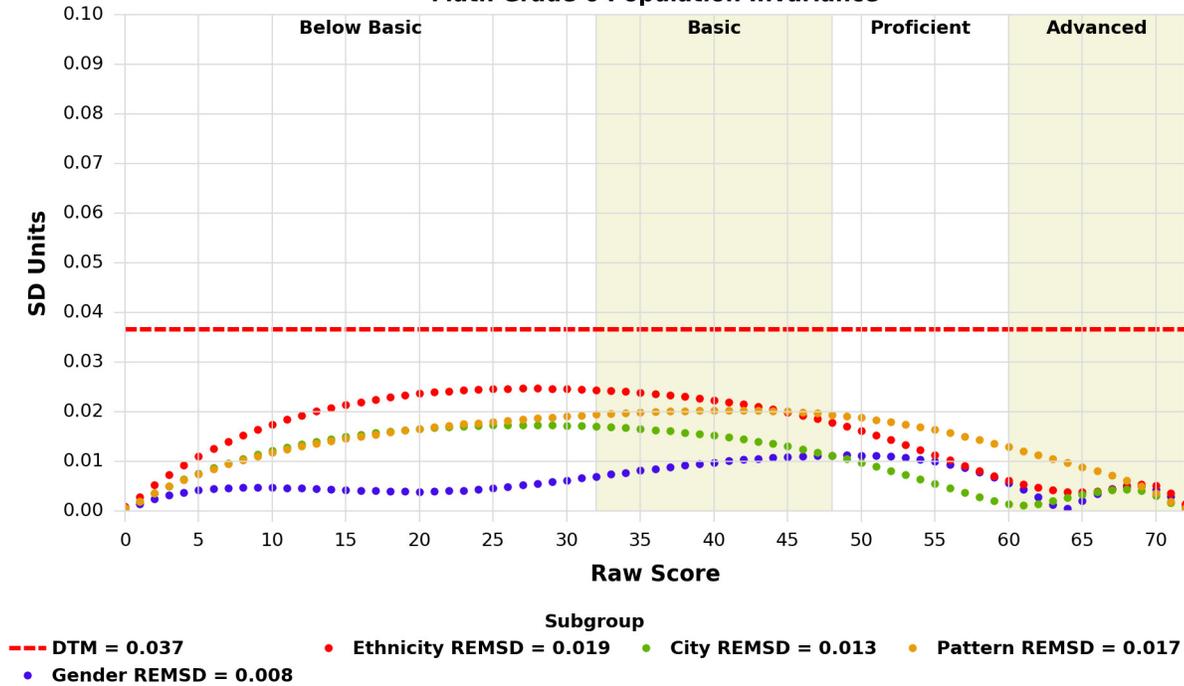
Math Grade 4 Population Invariance



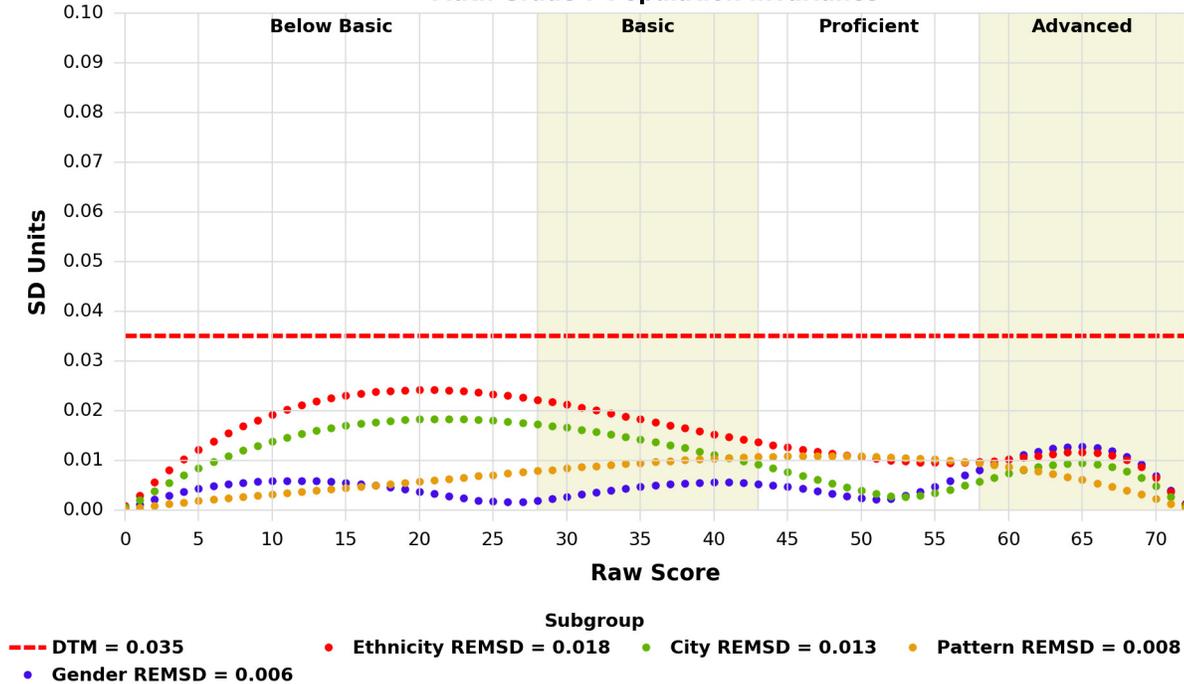
Math Grade 5 Population Invariance



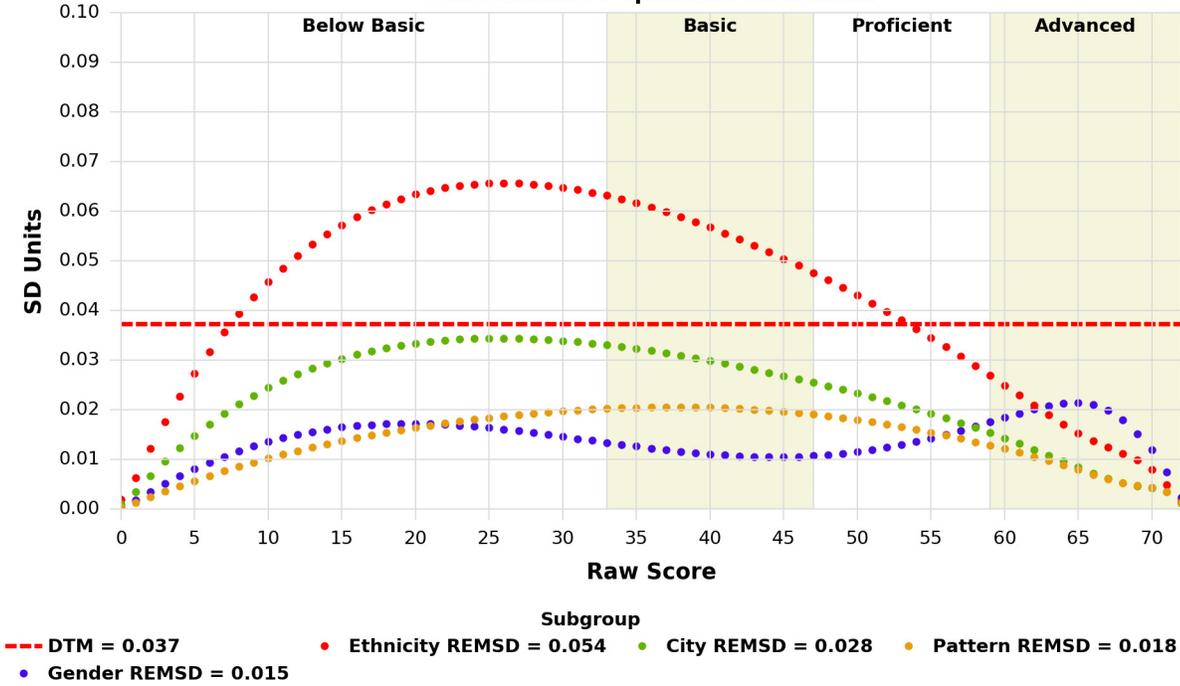
Math Grade 6 Population Invariance



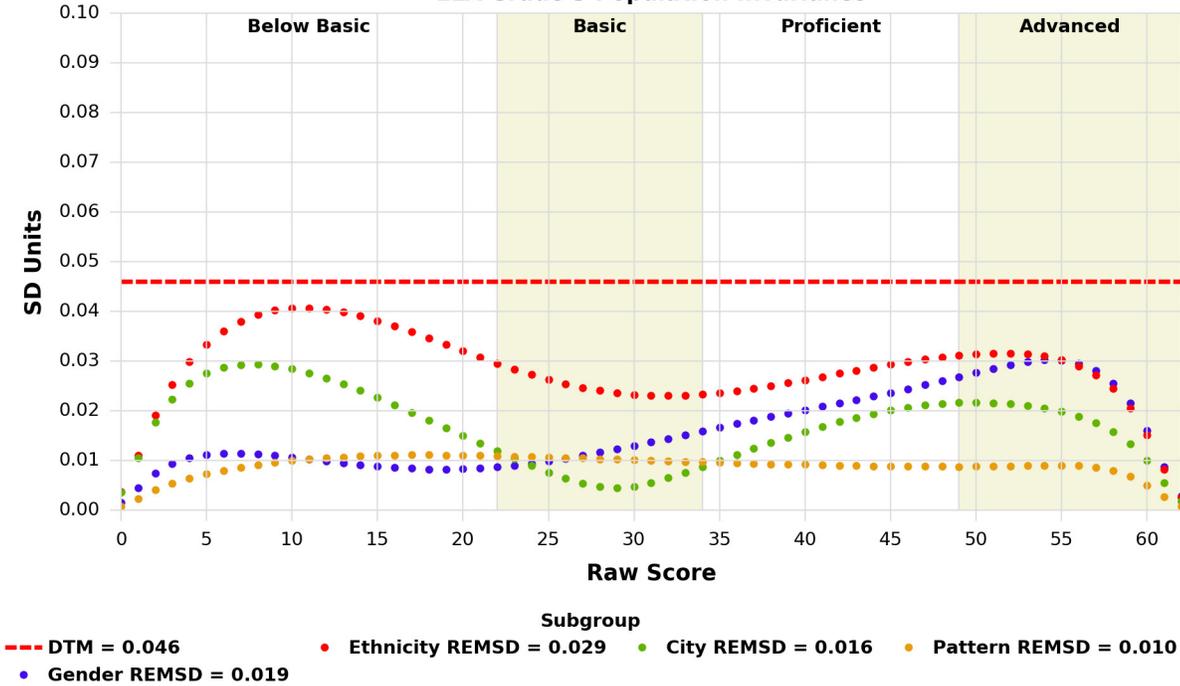
Math Grade 7 Population Invariance



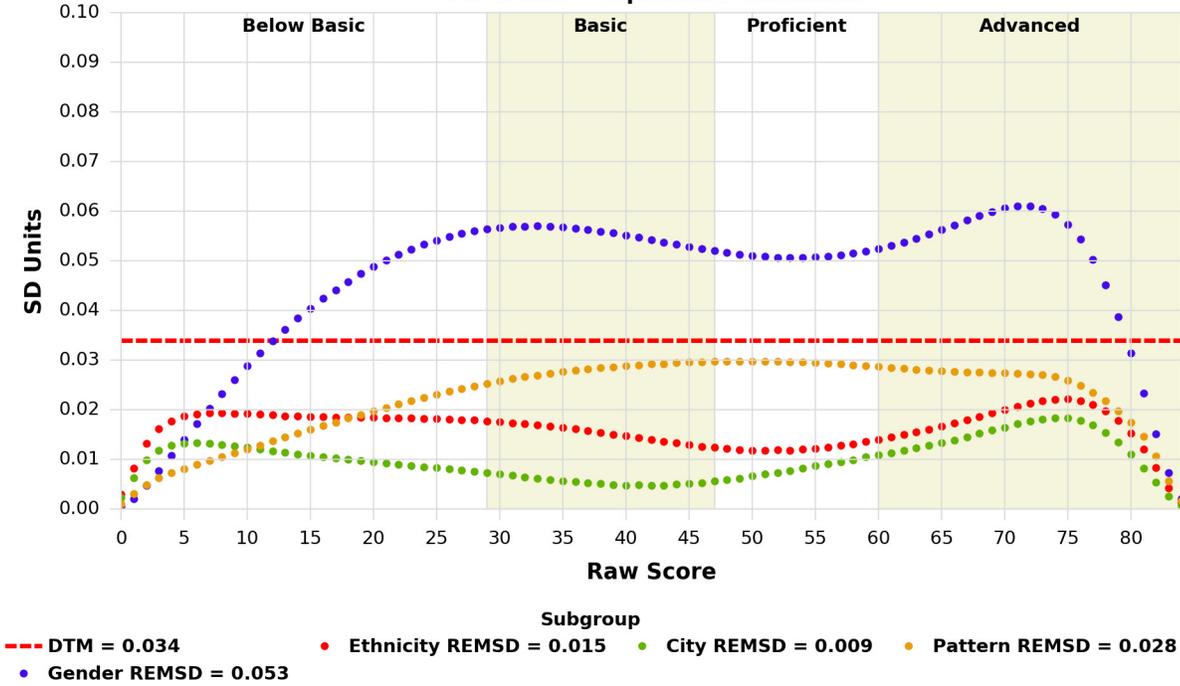
Math Grade 8 Population Invariance



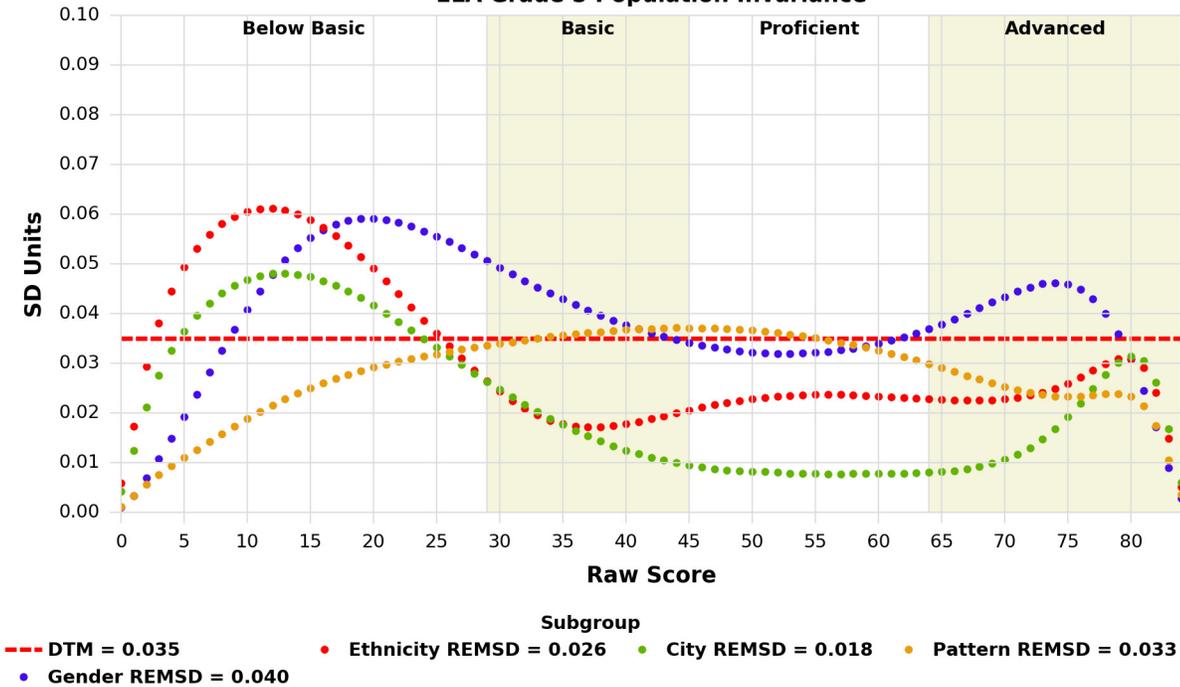
ELA Grade 3 Population Invariance



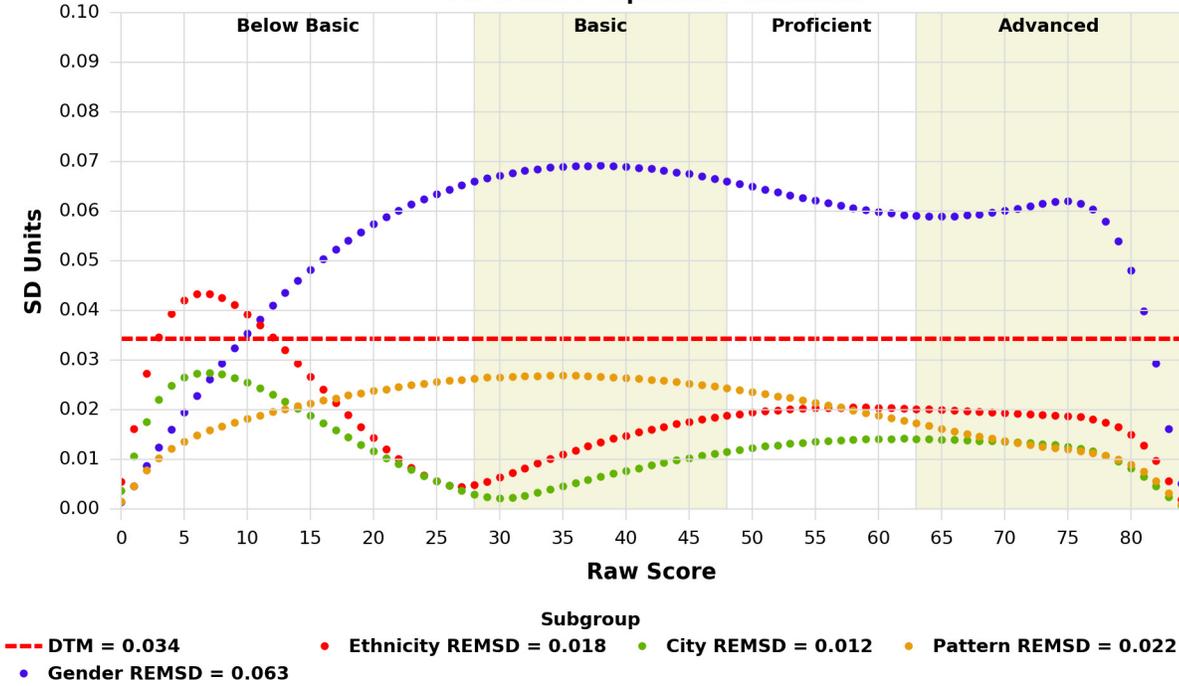
ELA Grade 4 Population Invariance



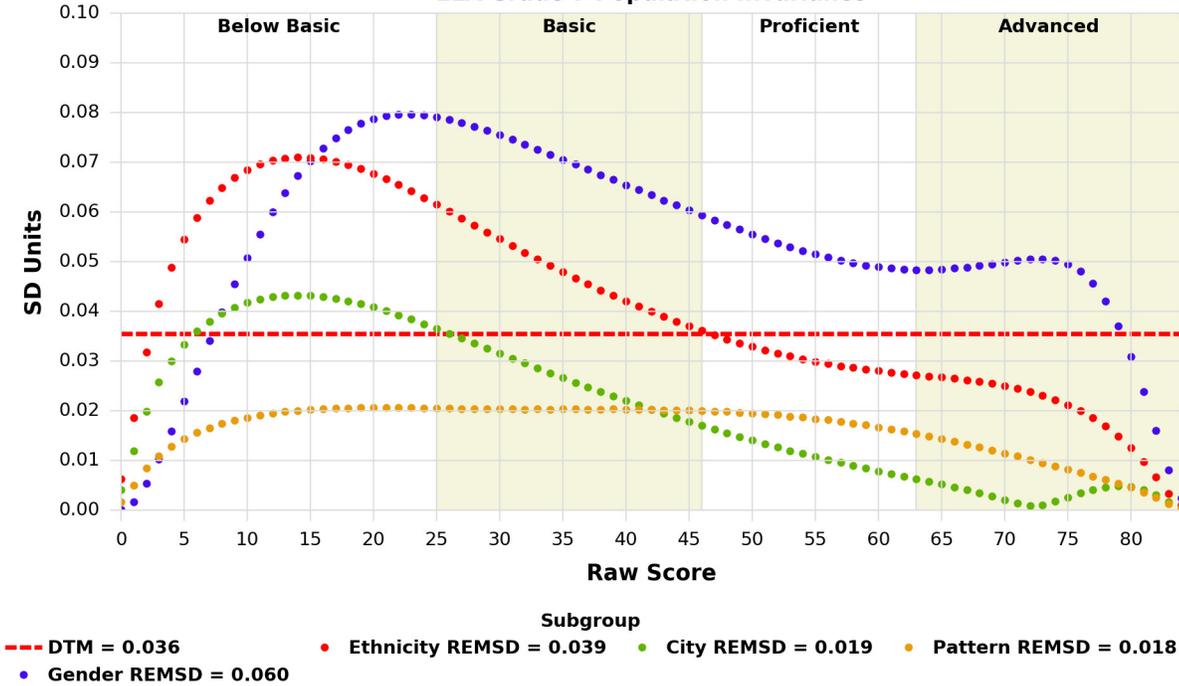
ELA Grade 5 Population Invariance



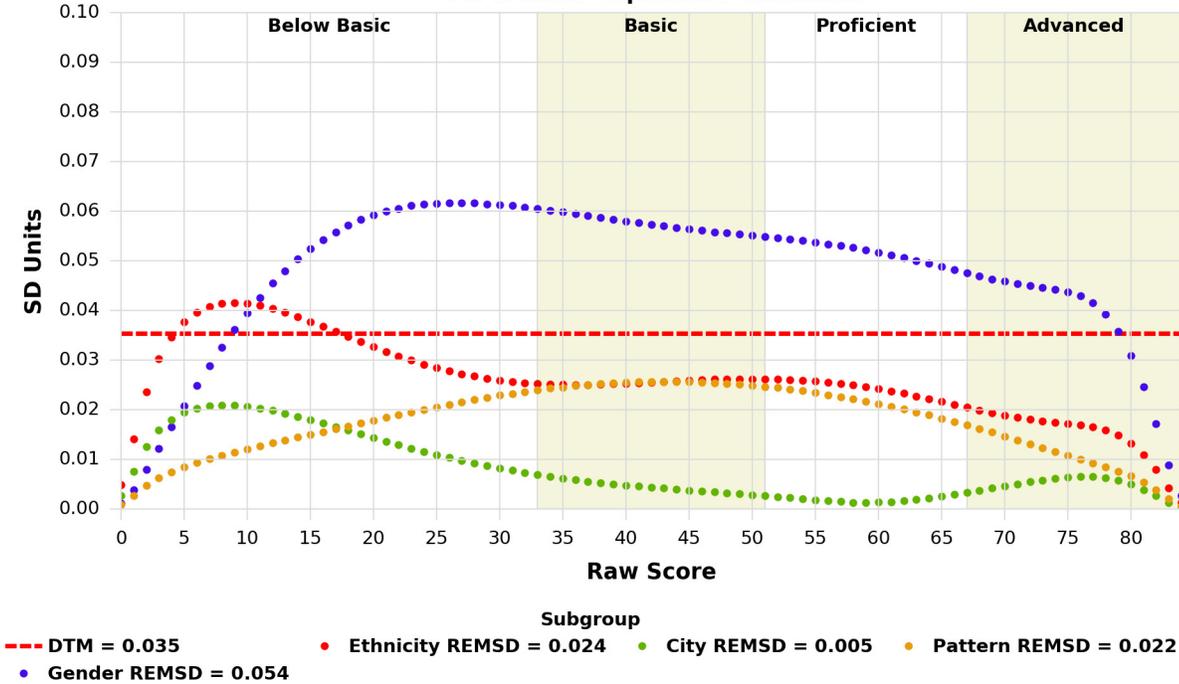
ELA Grade 6 Population Invariance



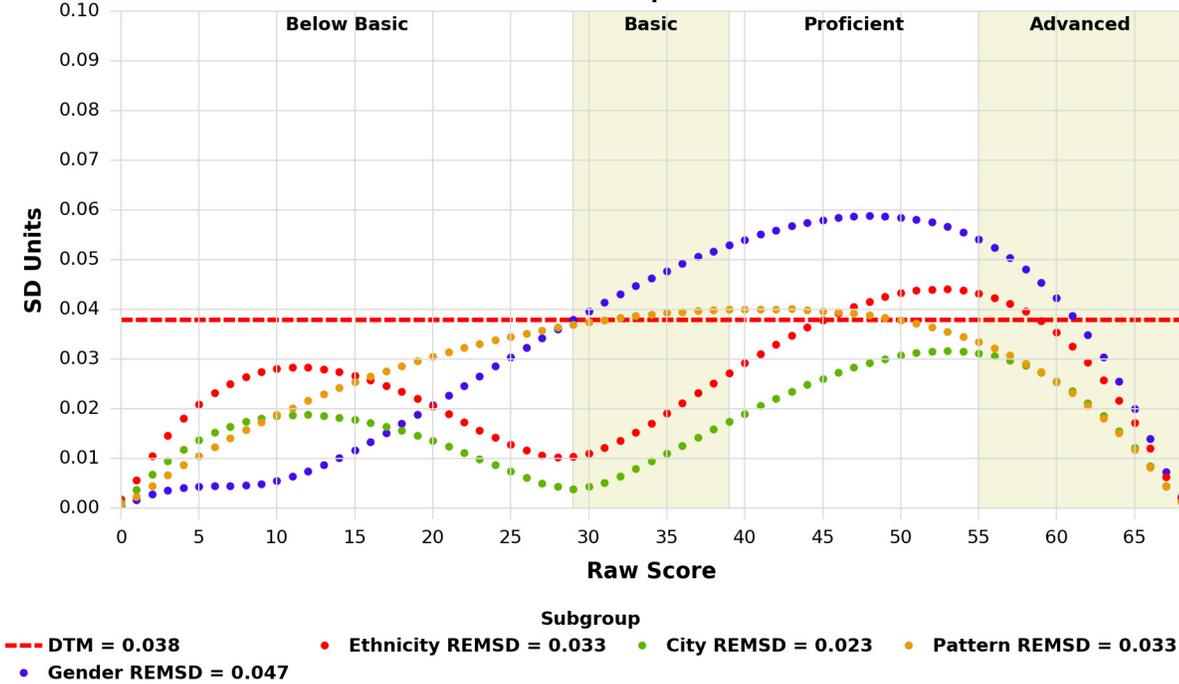
ELA Grade 7 Population Invariance

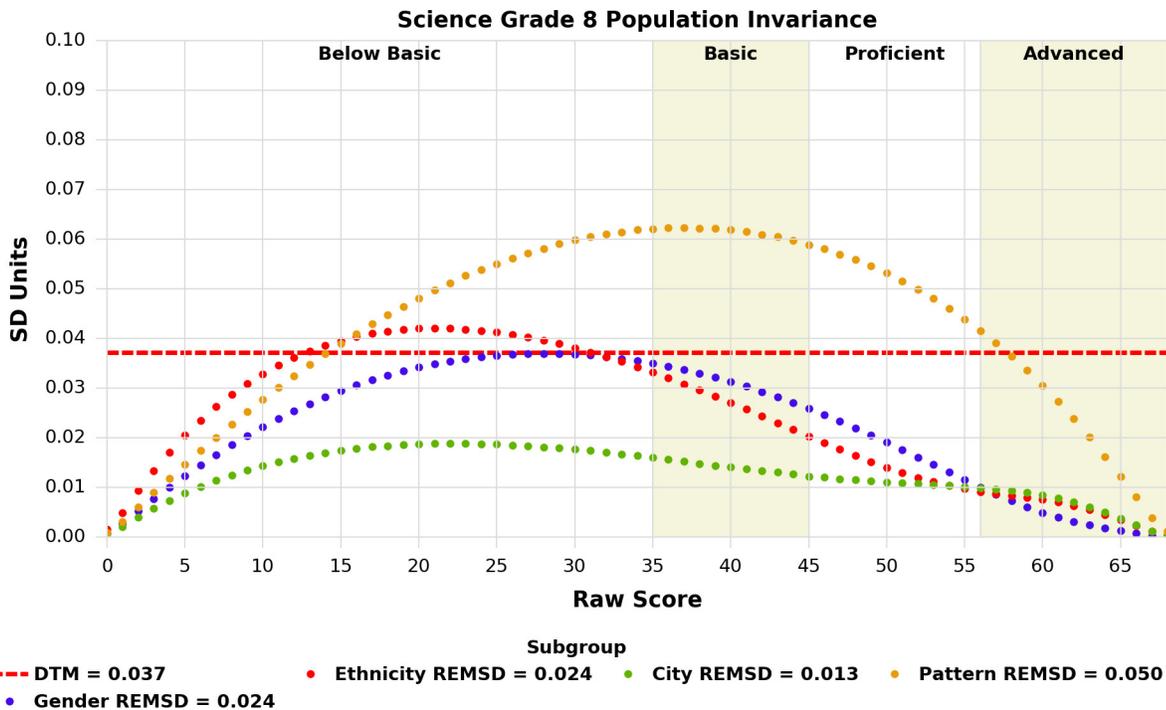


ELA Grade 8 Population Invariance



Science Grade 4 Population Invariance





RASCH ITEM STATISTICS

As noted earlier, the Rasch model expresses item difficulty (and student ability) in units referred to as logits, rather than on the percent-correct metric. The logit metric has several mathematical advantages. Logits have an interval scale, meaning that two items with logits of 0.0 and +1.0 (respectively) are the same distance apart as two items with logits of +3.0 and +4.0. Logits are not dependent on the ability level of the students. For example, a test form can have a mean logit of zero, whether the average item p -value for the student sample is 0.8 or 0.3.

The standard Rasch calibration procedure arbitrarily sets the mean difficulty of the items on any form at zero. Under normal circumstances where all students are administered the same set of items, any item with a p -value lower than the average item on the form receives a positive logit difficulty and any item with a p -value higher than the average receives a negative logit. Consequently, the logits for any calibration, whether it is a third-grade ELA test or a grade 8 science test, relate to an arbitrary origin defined by the center of items on that form. The average third-grade ELA item will have a logit of zero; the average grade 8 science item will have a logit of zero. Logits for both item difficulties and student abilities are placed on the same scale and relate to the same mean item difficulty.

There are a number of other arbitrary choices that could be made for centering the item difficulties. Rather than using all the items, the origin could be defined by a subset. For the PSSA, all test forms in a particular grade and content area share the same operational item set. All items on each form can then be easily adjusted to a single (but still arbitrary) origin by defining the origin as the mean of the operational items. With this done, the origins for all the forms will be statistically equal. For example, items on any two forms that are equally difficult will now have statistically equal logit difficulties. This is partly how PSSA items can be placed on the same logit difficulty scale across years. Chapter Fifteen has more detailed information about the PSSA scale linking procedures.

Appendix F reports the item statistics including classical and Rasch logit difficulties for all the operational items. Table 12–4 summarizes the Rasch logit difficulties of the operational items on each test. The minimum and maximum values and standard deviations suggest that the PSSA items covered a relatively wide range of difficulties. It is important to note that the logit difficulty values presented have not been linked to a common scale of measurement across grades and subjects. Therefore, the relative magnitude of the statistics across content areas and grades cannot be compared. The mean item difficulties are not exactly zero with mathematics and ELA although there was no equating was conducted. This is because the first round of calibration is only with a subset of all items (operational MC items only). Calibration of non-MC items are conducted anchoring the MC item. See Chapter Fifteen for more detailed information on mathematics and ELA calibration.

Table 12–4. Summary of Rasch Item Difficulties for PSSA Mathematics, ELA, and Science

Subject	Grade	N	Mean	SD	Min	Max
Mathematics	3	63	-0.41	0.92	-2.29	1.62
Mathematics	4	63	-0.61	0.83	-2.37	1.73
Mathematics	5	63	-0.03	0.62	-1.19	1.50
Mathematics	6	63	-0.26	0.77	-2.19	1.99
Mathematics	7	63	-0.11	0.60	-1.51	1.49
Mathematics	8	63	-0.35	0.84	-2.33	1.71
ELA	3	45	0.04	0.89	-1.97	1.58
ELA	4	49	-0.06	0.73	-1.63	2.13
ELA	5	49	0.07	0.74	-2.05	1.59
ELA	6	49	0.13	0.71	-1.91	1.57
ELA	7	49	0.11	0.87	-1.85	1.52
ELA	8	49	-0.23	0.79	-1.93	1.57
Science	4	63	-0.08	0.74	-1.69	1.28
Science	8	63	-0.32	0.53	-1.65	1.30

Note. The mean logit values not necessarily 0.0 because the items have been placed on a scale that was developed in prior years.

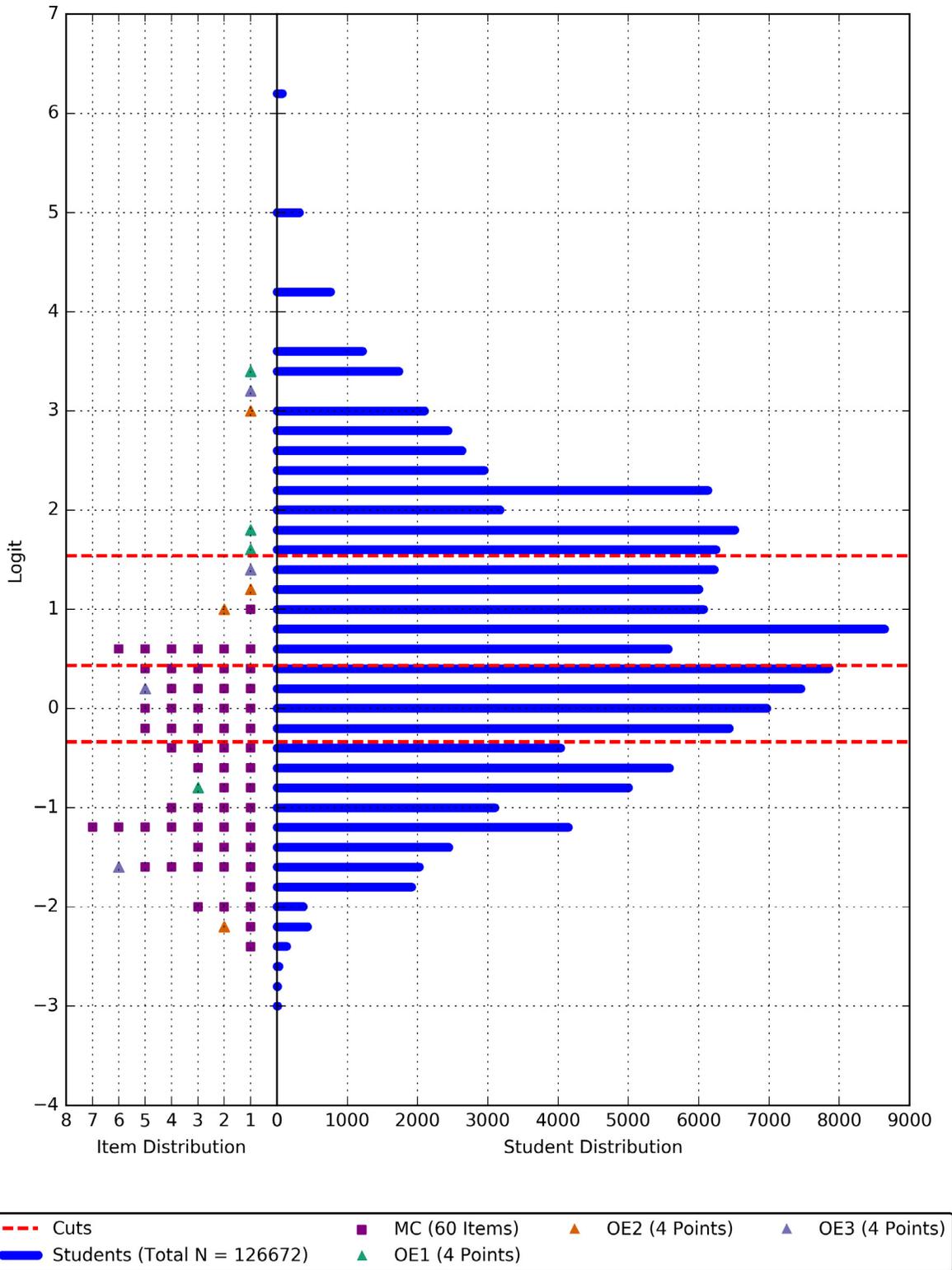
ITEM DIFFICULTY-STUDENT ABILITY WRIGHT MAPS

The distributions of the Rasch item logits (item difficulty estimates) are shown on the item difficulty-student ability maps presented in Figure 12–3. In each item-student map, markers on the left-hand side represent item difficulty parameter estimates, whereas markers on the right hand side represent person ability parameter estimates. One MC item is represented by one symbol on the left-hand side of the plots and one OE item has multiple symbols to present score points. As noted earlier, the Rasch model enables placement of both items and students on the same scale. Consequently, one can easily visualize information about how the difficulty of the test items related to the ability distribution of students who took the test. The students located in the upper right quadrant of any given plot have relatively higher ability. Items in the lower left quadrant are relatively easier. High ability students have higher probabilities of correctly answering easier items. Similarly, low ability students (in lower right quadrant of any given plot) have lower probabilities of answering harder items (in upper left quadrant).

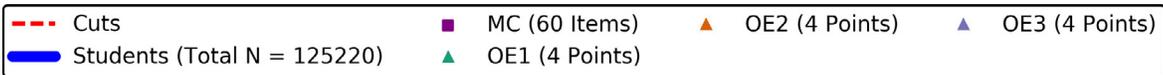
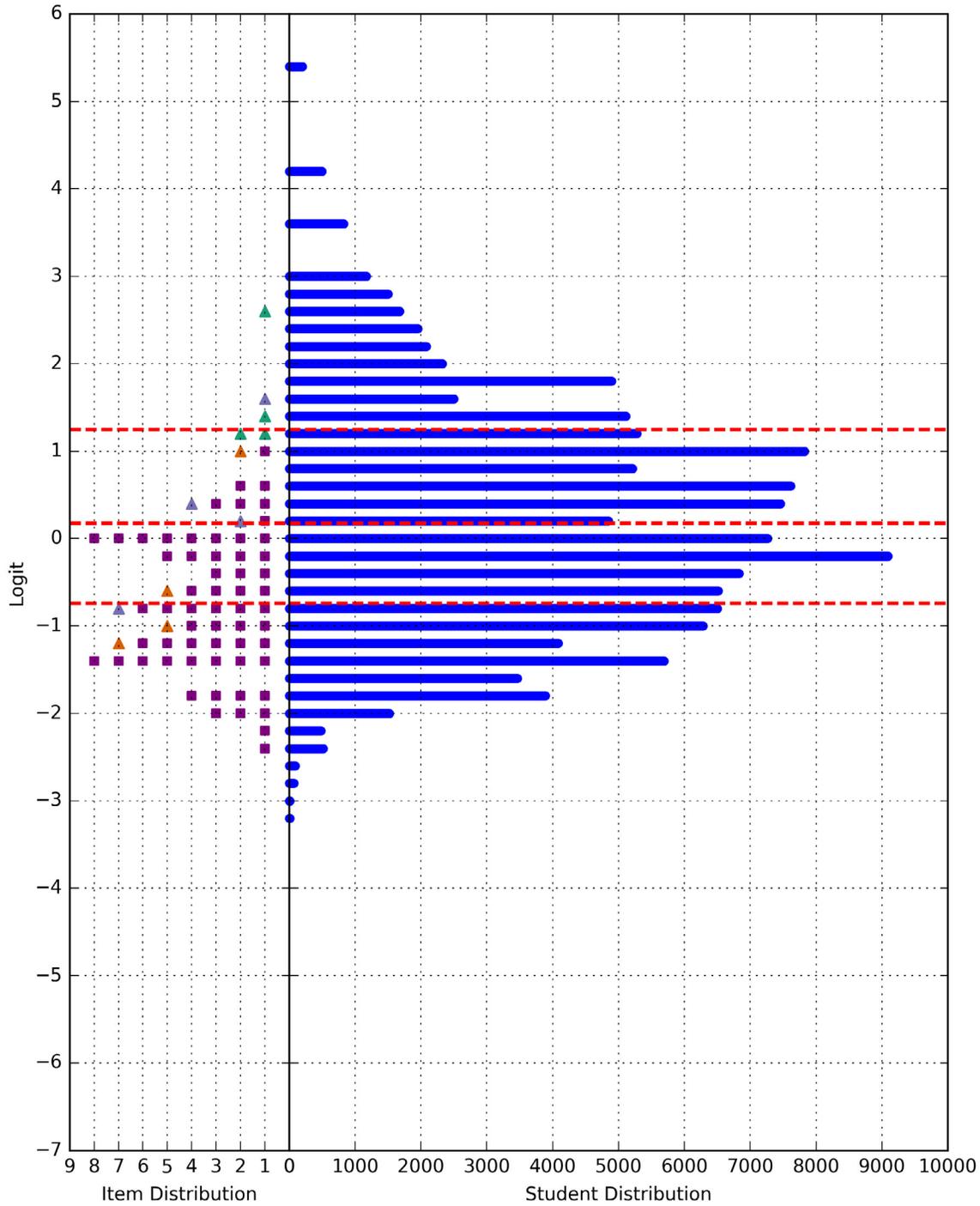
In 2016, as in previous years, a common pattern seen across the maps for most grades and content areas was for students to have relatively higher ability and for items to be relatively easier. Accordingly, test development for the 2017 PSSAs focused on centering the predicted test difficulties on the center of the 2016 examinee ability distribution to more closely align item difficulty with examinee performance.

Figure 12–3. Item-Student Maps

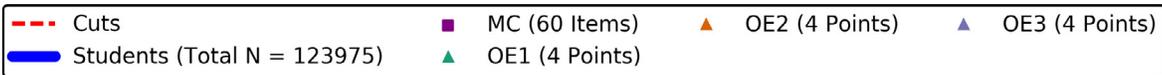
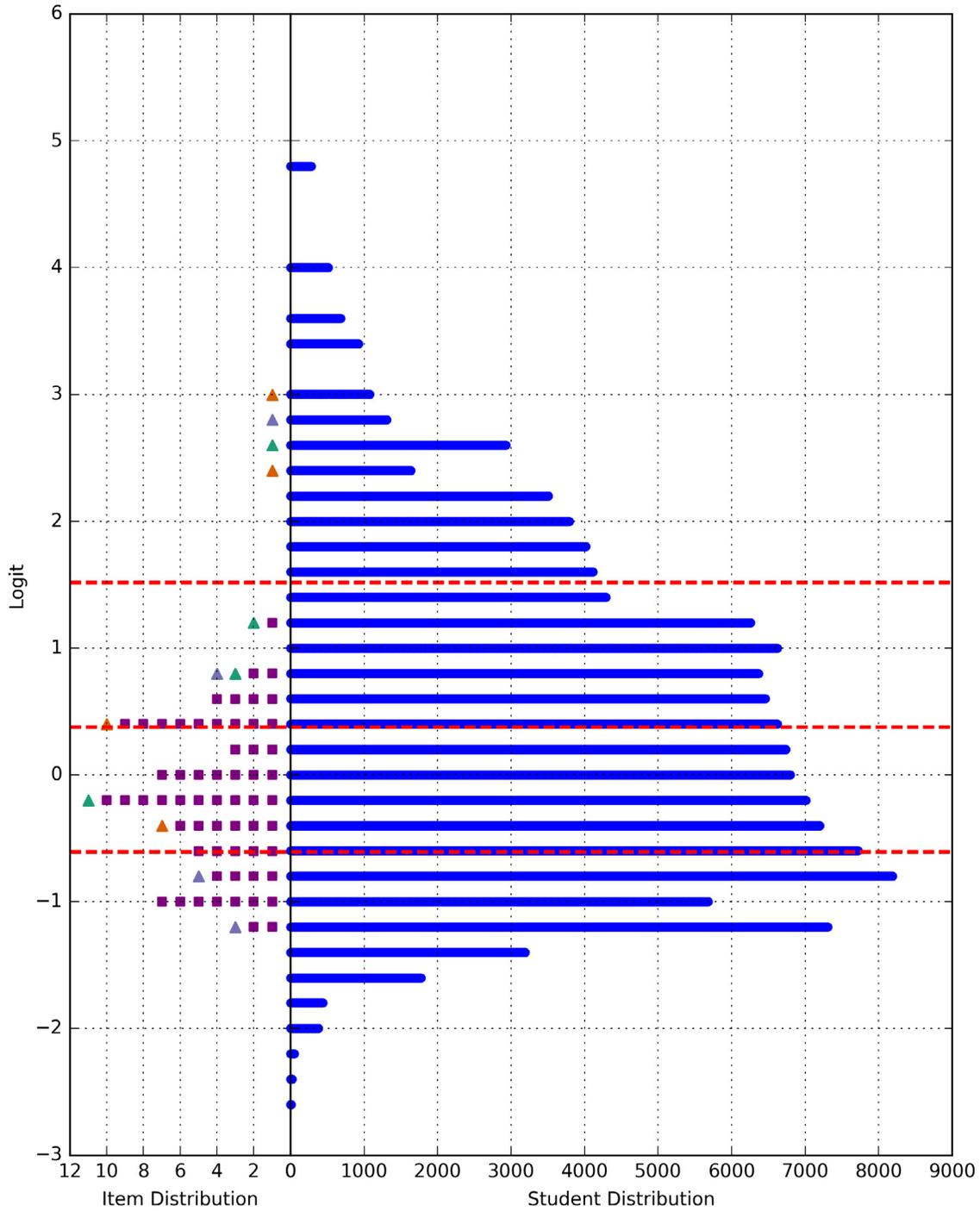
Mathematics Grade 3



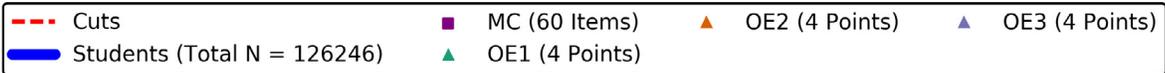
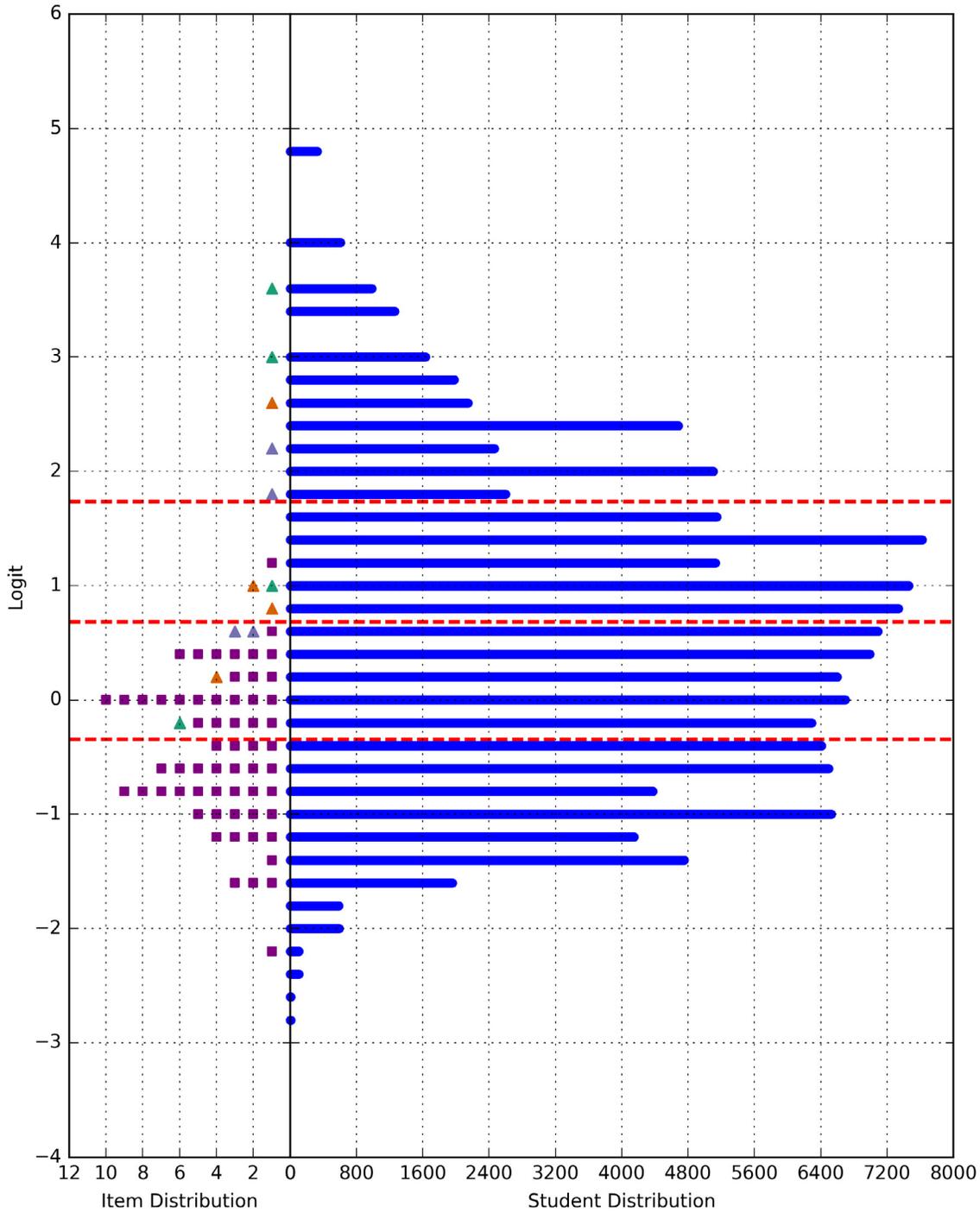
Mathematics Grade 4



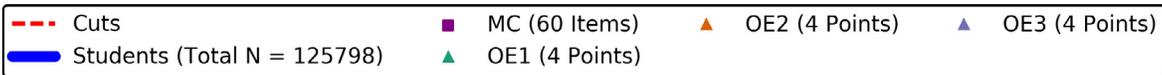
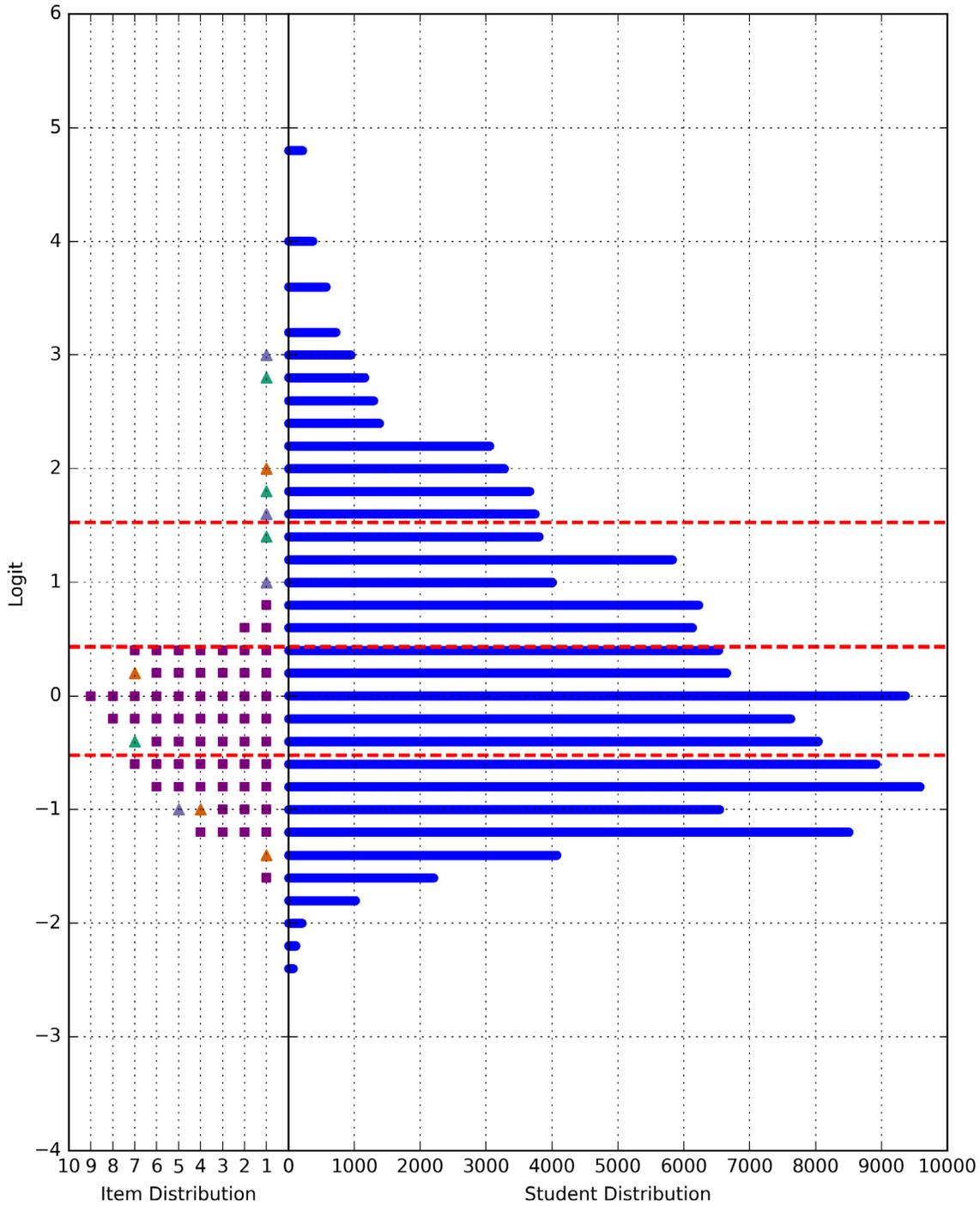
Mathematics Grade 5



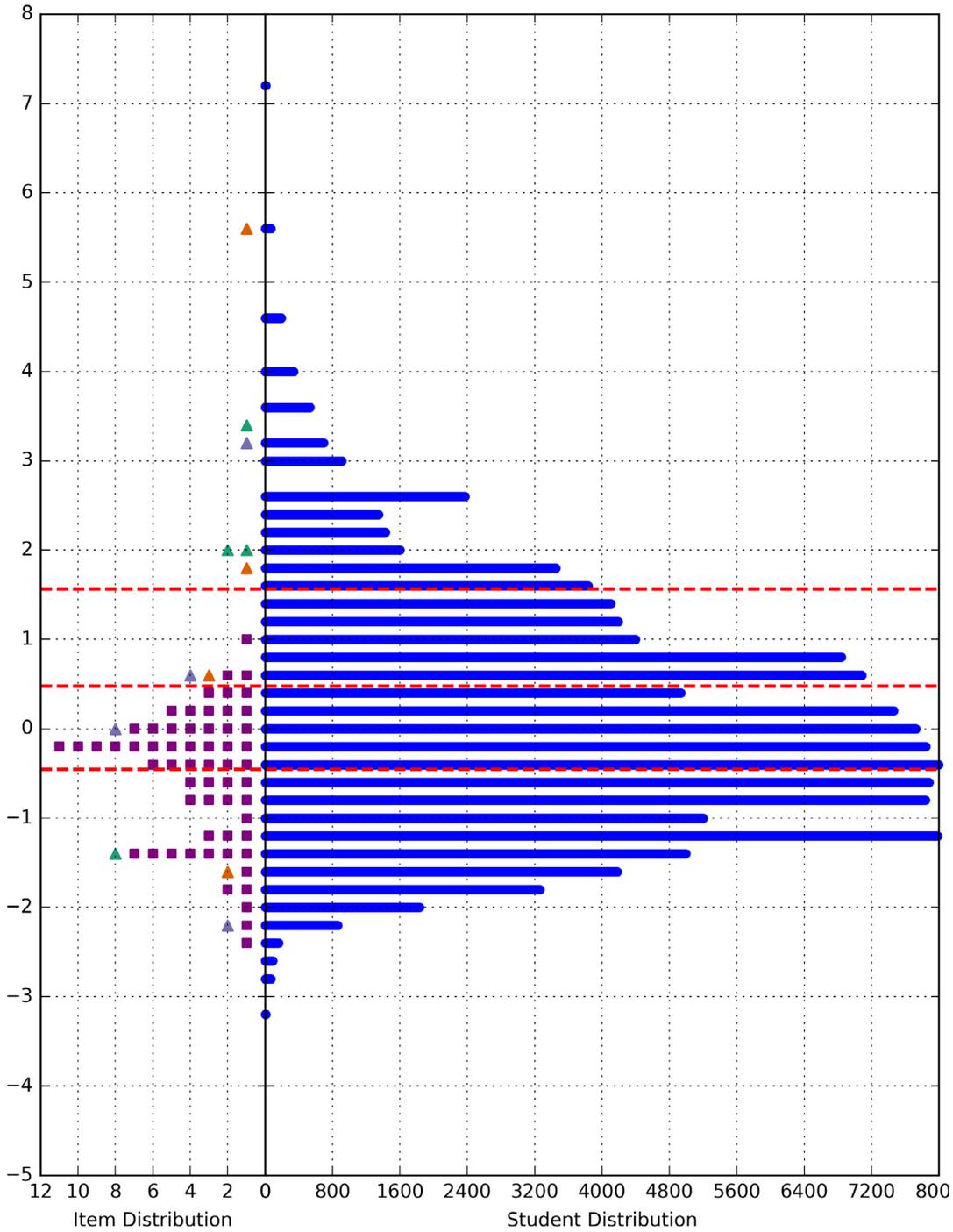
Mathematics Grade 6



Mathematics Grade 7

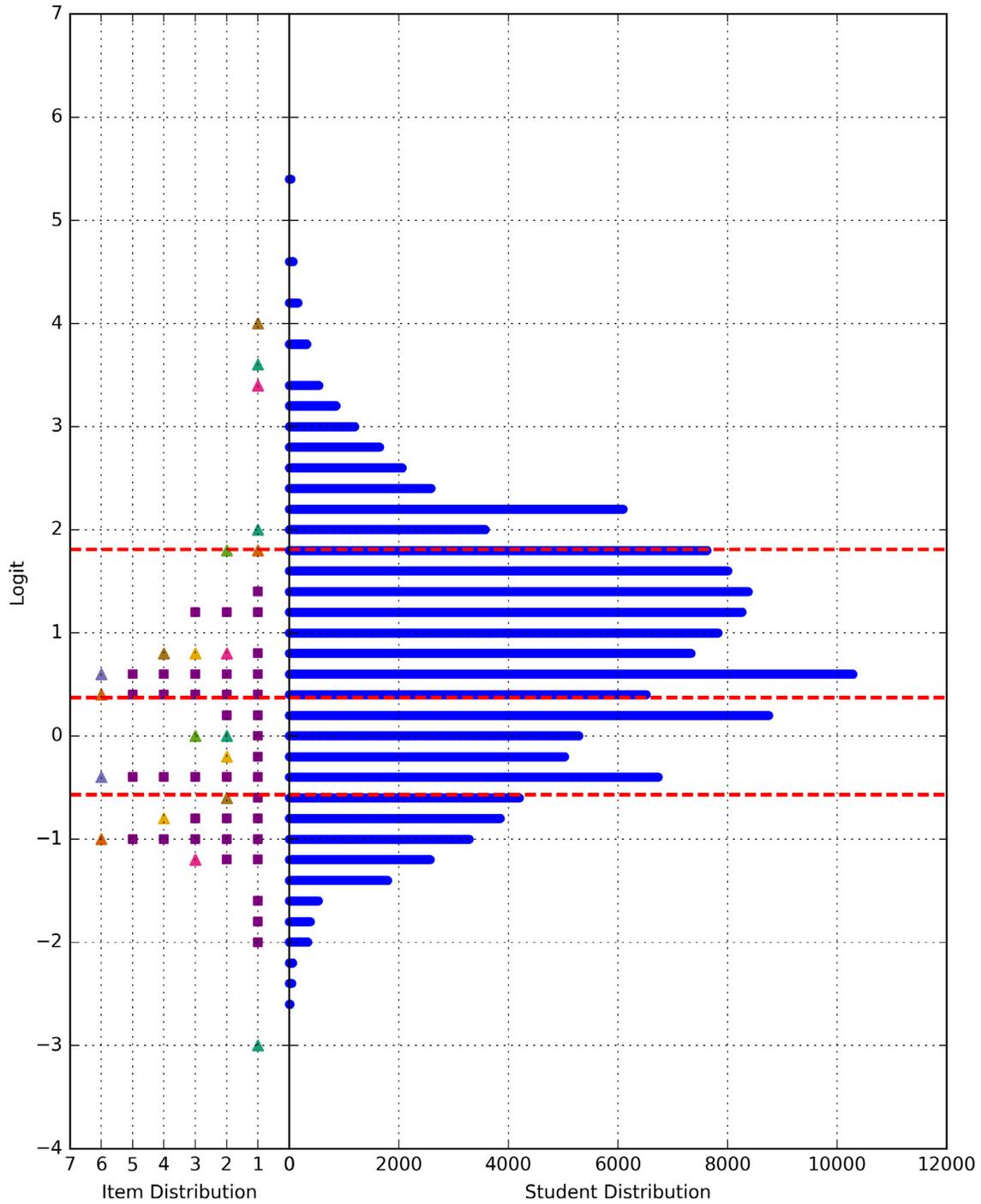


Mathematics Grade 8

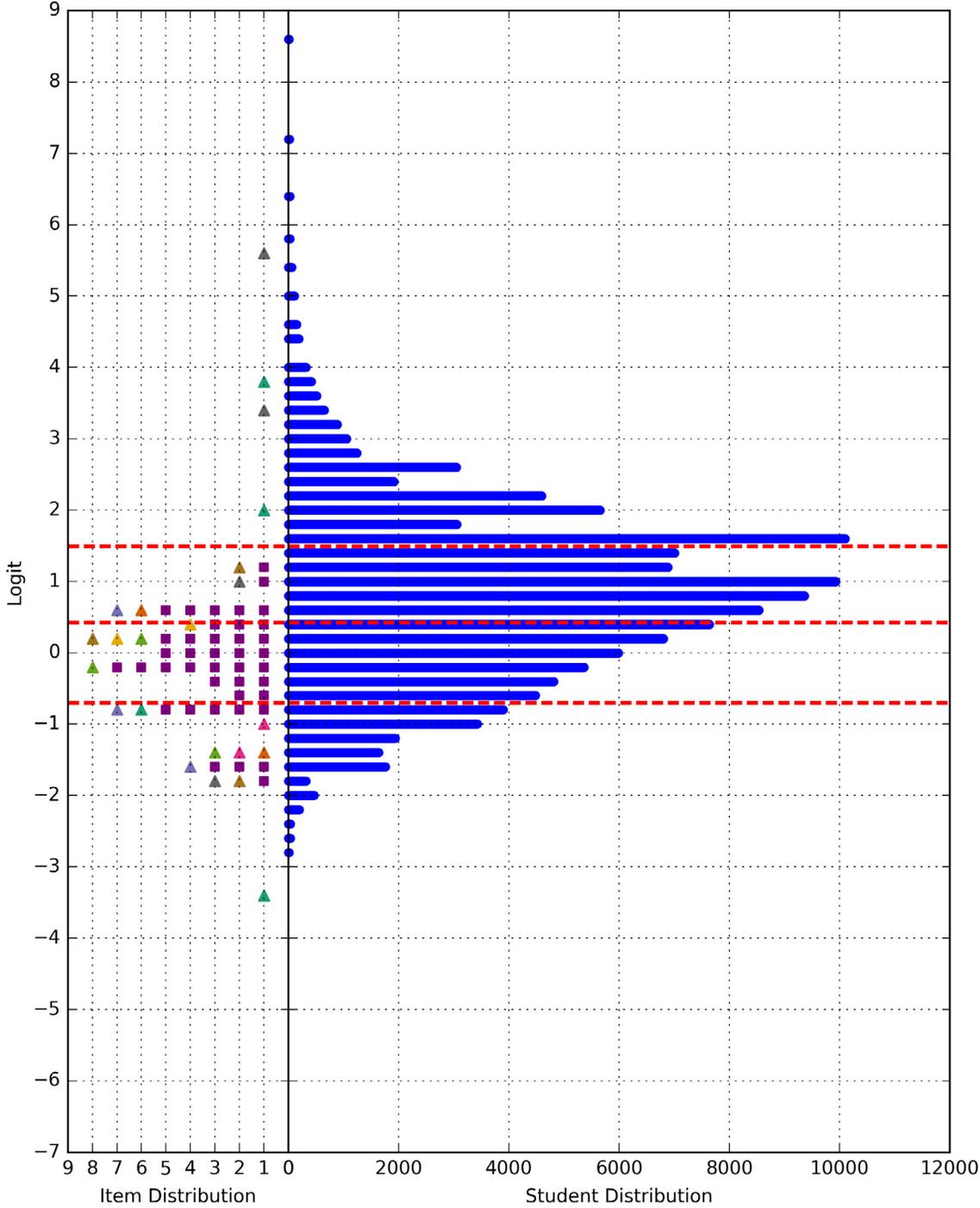


- Cuts
- MC (60 Items)
- ▲ OE2 (4 Points)
- ▲ OE3 (4 Points)
- Students (Total N = 123654)
- ▲ OE1 (4 Points)

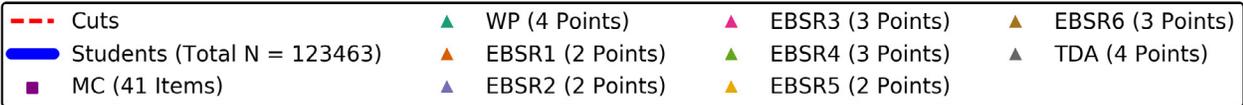
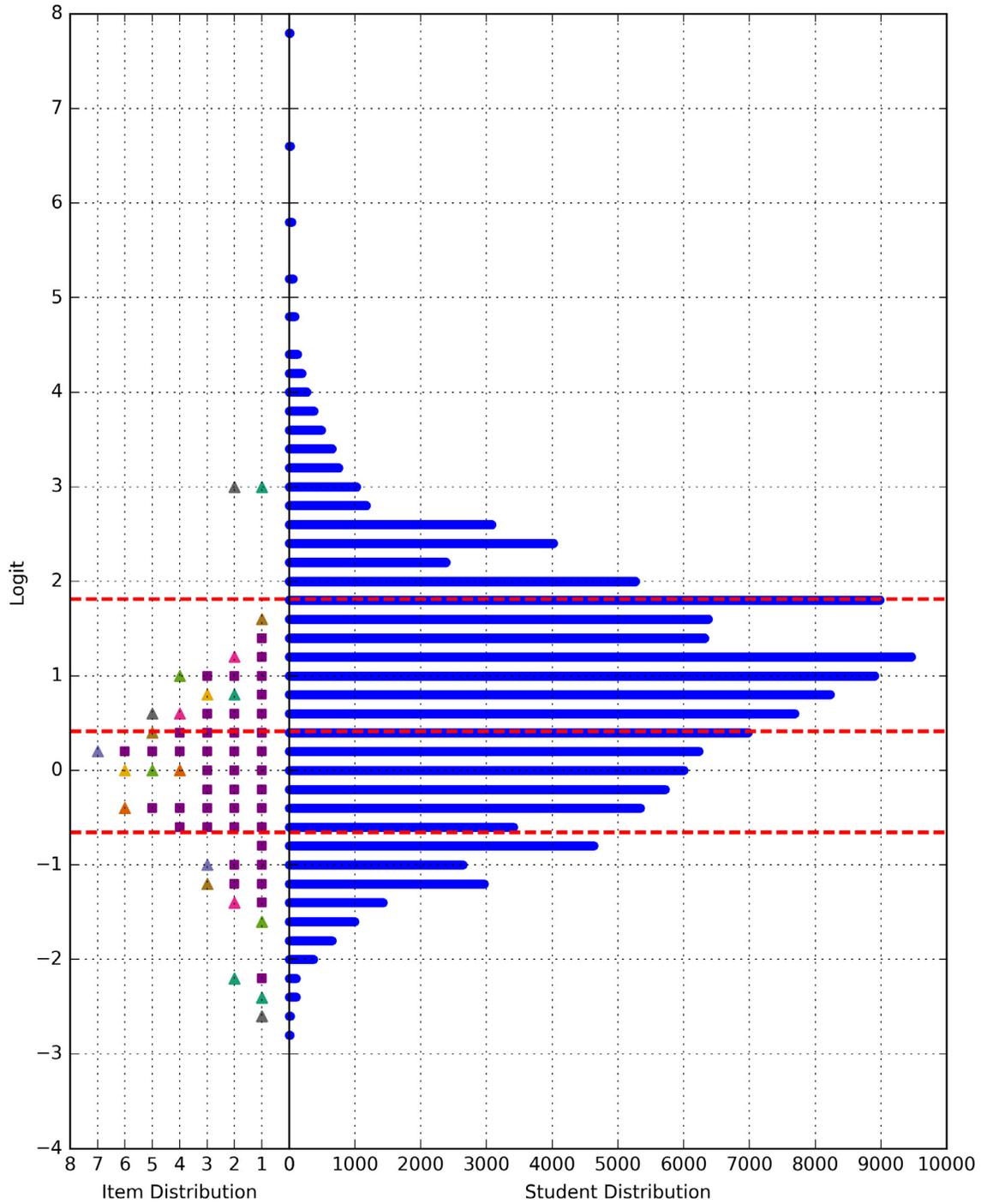
ELA Grade 3



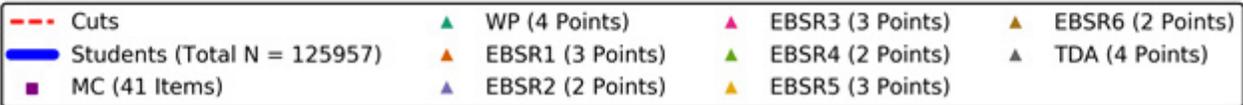
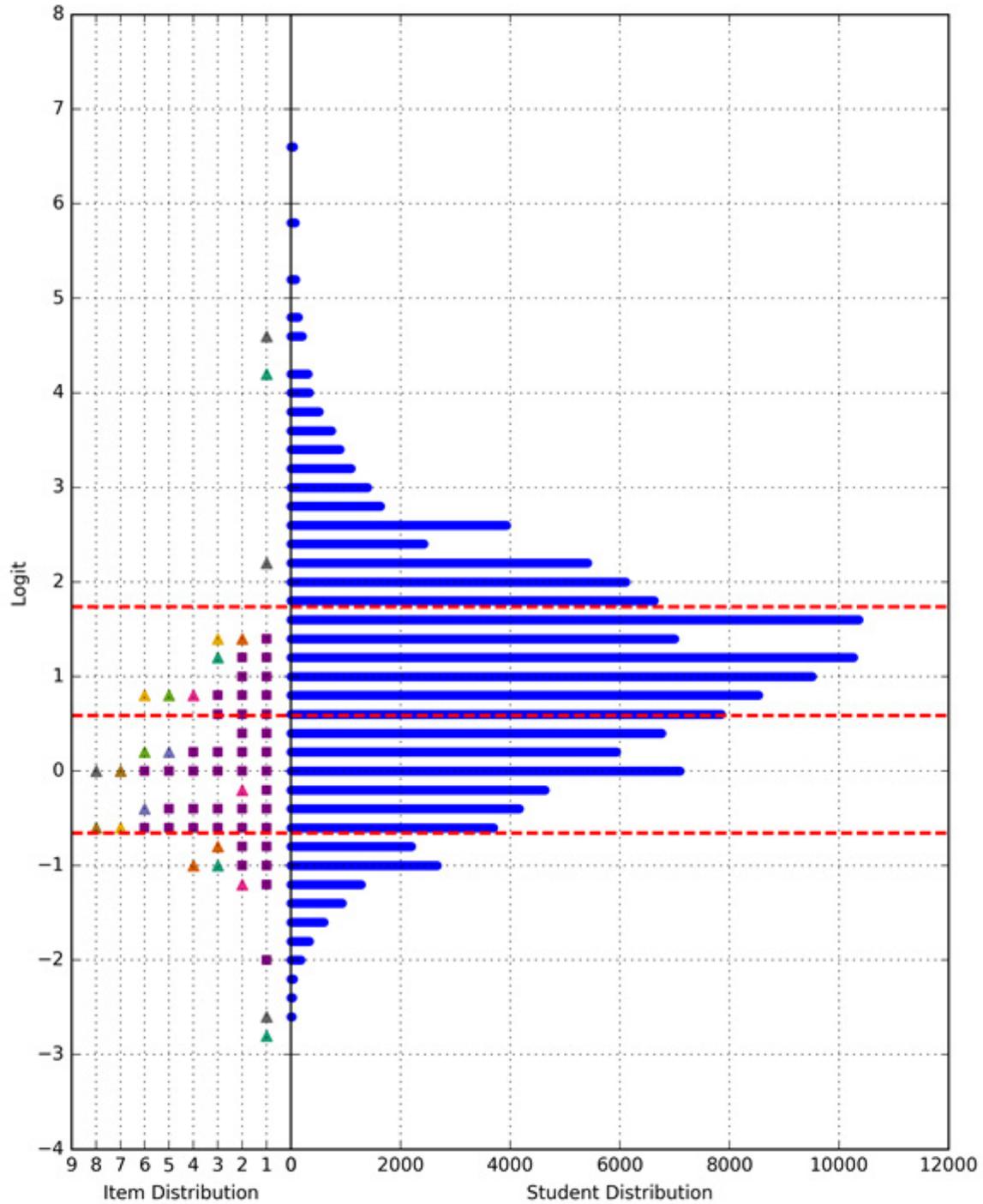
ELA Grade 4



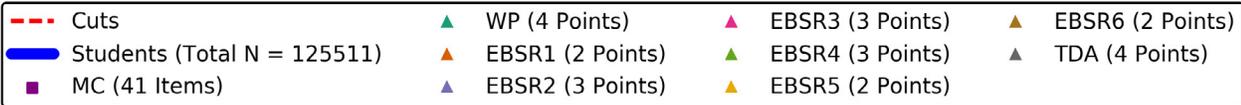
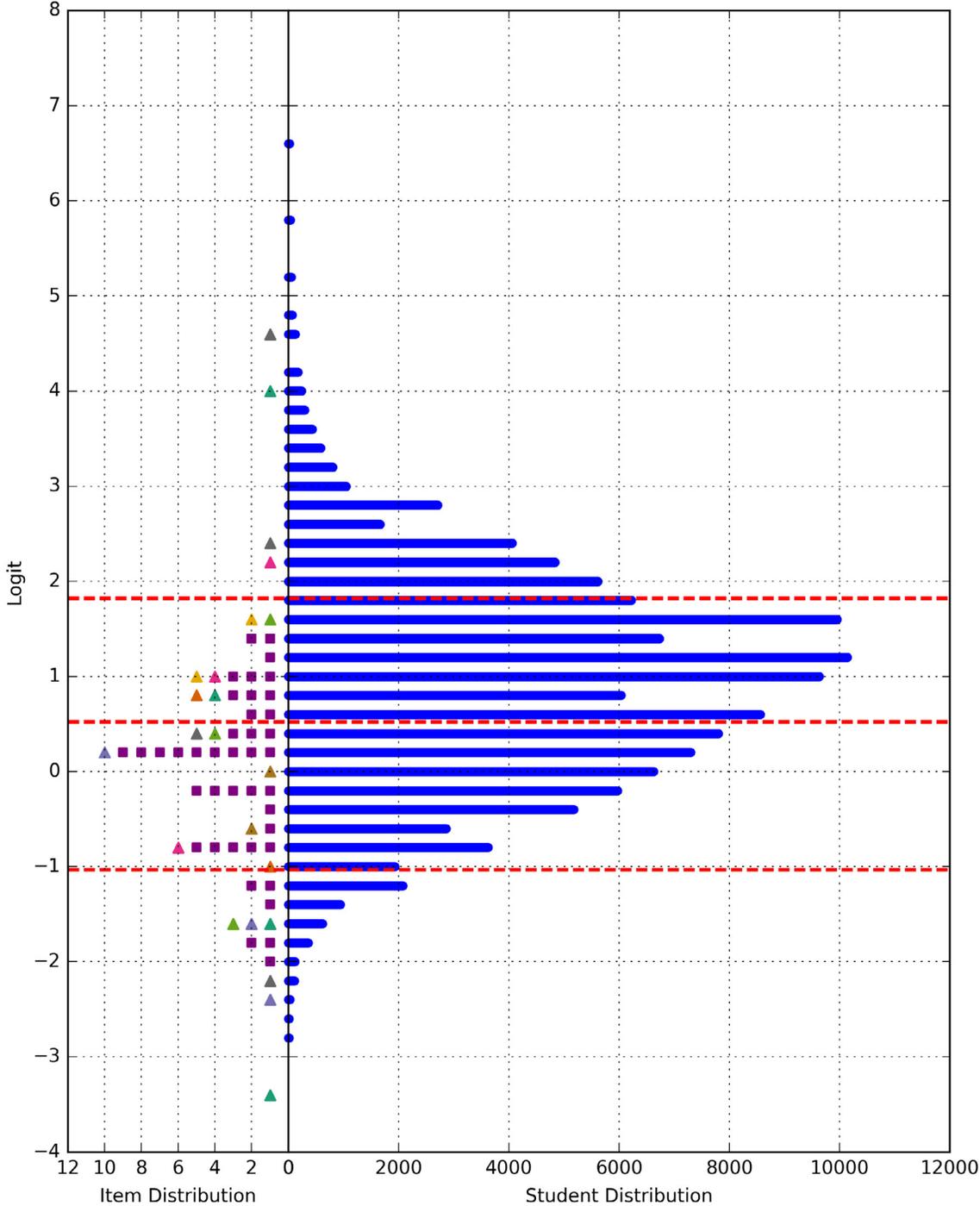
ELA Grade 5



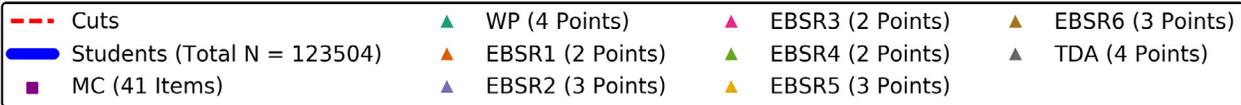
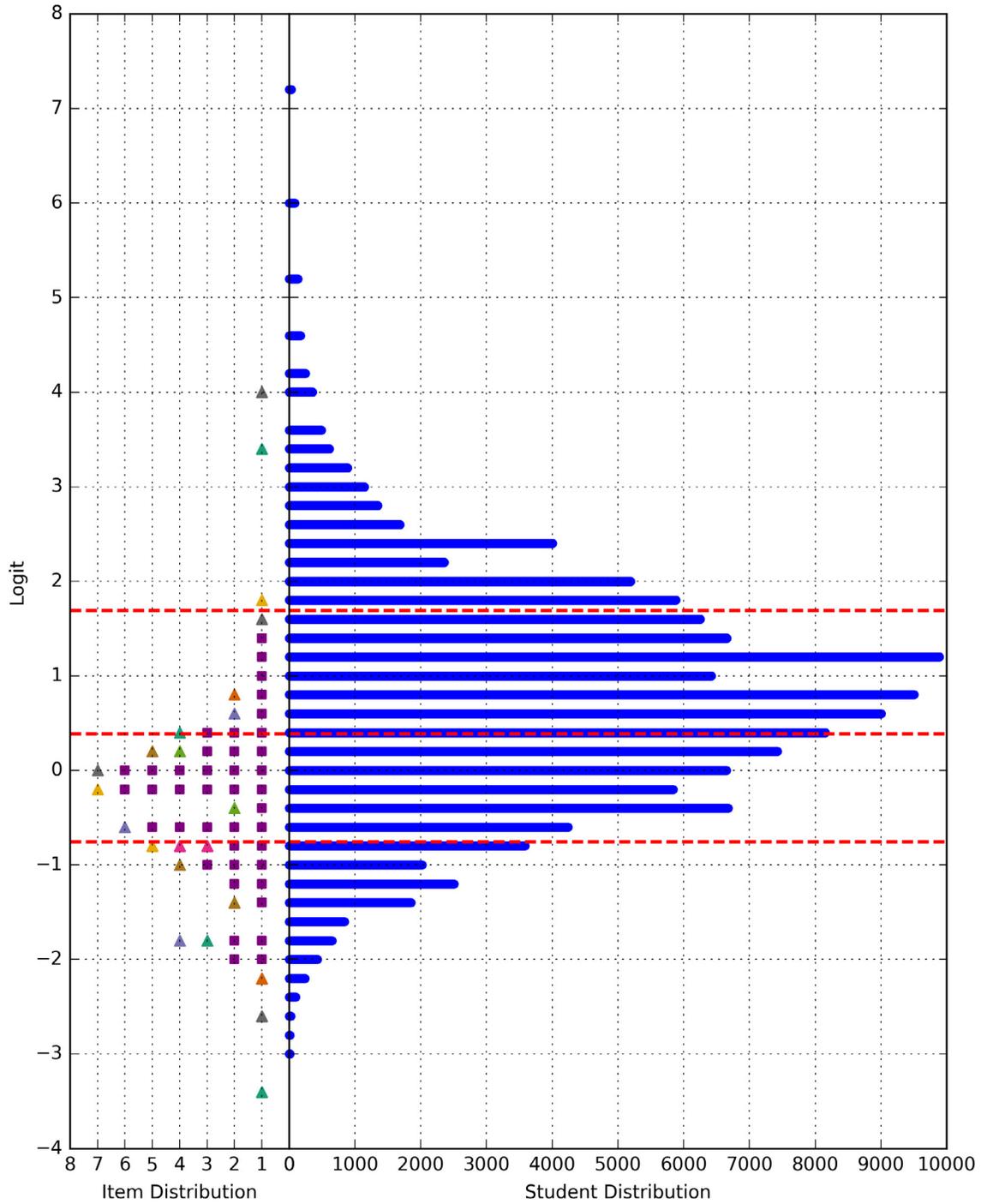
ELA Grade 6



ELA Grade 7



ELA Grade 8



CHAPTER THIRTEEN: PERFORMANCE LEVEL SETTING

Performance level setting events for grades 3 through 8 in mathematics and ELA took place June 9–12, 2015. No performance level setting occurred for science this year. A history (dates and methodology) of performance level setting events are provided in Table 13–1. The resulting cut scores from those events are provided in Table 13–2. For additional details about sciences standard setting event, refer to the PSSA science performance level setting technical report in 2008. For mathematics and ELA, please refer to the performance level setting report in 2015.

Table 13–1. Performance Level Setting/Validation Event Dates and Methodology

Subject	Grade	Methodology	Validation?	Event Date
Mathematics	3,4,5,6,7,8	Bookmark	No	Summer 2015
ELA	3,4,5,6,7,8	Bookmark	No	Summer 2015
Science	4, 8, 11	Bookmark	No	Summer 2008

PSSA CUT SCORES

Appendix M provides the Rasch ability and scaled score cuts for each PSSA test. For reader convenience, these are documented next in a different format. Table 13–2 documents the cut scores on the scaled-score metric. PSSA scaling procedures are discussed further in Chapter Fourteen.

Table 13–2. PSSA Scaled-Score Metric Cut Scores by Grade and Subject Area

Subject	Grade	BB/B	B/P	P/A
Mathematics	3	923	1000	1110
Mathematics	4	908	1000	1107
Mathematics	5	901	1000	1113
Mathematics	6	897	1000	1105
Mathematics	7	904	1000	1109
Mathematics	8	906	1000	1108
ELA	3	905	1000	1143
ELA	4	887	1000	1107
ELA	5	893	1000	1139
ELA	6	875	1000	1115
ELA	7	845	1000	1130
ELA	8	886	1000	1130
Science	4	1150	1275	1483
Science	8	1150	1275	1464

Note. BB = Below Basic; B = Basic; P = Proficient; and A = Advanced.

CHAPTER FOURTEEN: SCALING

The purpose of a scaling analysis is to create a score scale. Scaling is used to transform test score values onto a scale more easily interpreted by users. For the PSSA, the resulting scaled scores will be used for score reporting and performance level classification. The PSSA classifies students into four achievement levels: Below Basic, Basic, Proficient, and Advanced.

The adoption of the Pennsylvania Core Standards in 2013 brought a number of changes to the PSSA in mathematics and ELA. In mathematics, content changed grades levels, items involved more problem solving for deeper understanding, rulers were provided in grade 3 only, protractors were provided in grade 4, and formula sheets were provided in grades 4 through 8. In ELA, the new PSSA replaces PSSA Reading and PSSA Writing. Additional changes in ELA include reading passages that reflect the increased expectations of text complexity and new item types to reflect the emphasis on text-based answers and evidence to support claims. PSSA science continues to be aligned to the Pennsylvania Academic Standards for Science, Technology, Environment and Ecology.

The changes to mathematics and ELA necessitated performance level setting and the establishment of new score scales in 2015. Therefore, mathematics and ELA scaled scores for 2016 are not comparable to years prior to 2015. Science score scales were established in 2008 and no changes were made to science cutpoints or score scales since that time. Therefore, science scaled scores are comparable to previous years back to the 2008 scores. Table 14–1 shows the scale score cutpoints.

SCALED SCORES

Individual student scores are reported as scaled scores. However, they are initially estimated as Rasch abilities (more information on the Rasch model is given in Chapter Twelve). Generally, scaled scores are preferred over Rasch ability values for reporting purposes. One issue is that Rasch ability values are on a scale that includes negative and decimal values. By transforming the Rasch ability values to scaled scores, all reported values can become positive integers. Scaled scores are usually obtained through some linear transformation of the Rasch ability values. The linear transformations used for the PSSA produce numeric values with three or four digits that are unit interval scaled scores. Each grade and subject has its own unique PSSA scaled score. Positive scores with no decimals make more sense to parents and students. Since Rasch ability values are comparative after linking to the base year, the transformed scaled scores have a common scale across years, even though the corresponding raw scores may differ. (Linking is discussed further in Chapter Fifteen.)

Essentially, PSSA scaled scores are derived through a two-step process. First, there is a nonlinear transformation that converts number correct scores to Rasch ability logits. Second, a linear transformation is used to convert logits to scaled scores. These and some additional considerations (e.g., rounding rules), are discussed further below.

DEFINITION OF SCOREABILITY

Answer documents are considered scoreable if they meet the attempt logic criterion for inclusion in the data files (see Chapter Nine).

At the item level, responses that were considered non-attempted or non-scoreable were assigned a score of zero. Details by item type are provided below.

- Multiple-choice (MC) items: All omit (no response) and multiple marks (more than one response selected without machine-discernible erasures) were scored as zeroes.
- Open-ended (OE) items: All blank, copied, non-scorable, foreign language, off-task, refusal, or unreadable responses were scored as zeroes.
- Evidence-based selected response (EBSR) items: Blank response for both parts OR part one marked with multiple marks and part two marked for all responses were scored as zeroes.

WINSTEPS SCALING

Parameter estimates are derived using the WINSTEPS 3.81.00 computer program (Linacre & Wright, 2014), which employs unconditional (UCON), joint-maximum-likelihood estimation (JMLE). WINSTEPS provides a conversion table that maps raw scores to logits (Rasch ability estimates). The logits are transformed to scaled scores as discussed below. Every year each test is scaled separately and then linked (see Chapter Fifteen).

ZERO AND PERFECT SCORES

WINSTEPS does not provide a direct ability estimate for zero (no points earned) or perfect (all points earned) raw scores. However, WINSTEPS has a default procedure for estimating such extreme scores, and this was used for the PSSA. Essentially, a fractional raw score (a value less than one) is added to zero scores and subtracted from perfect scores to determine the corresponding logit values for these extreme scores.

LINEAR TRANSFORMATION FORMULAS

PSSA scaled scores are obtained through a linear transformation of the Rasch ability estimates ($\hat{\theta}$). Specifically,

$$SS = m\hat{\theta} + b,$$

where m is the slope and b is the intercept.

For mathematics and ELA, the slope and intercept for each grade were derived by anchoring the Proficient cutpoint to a scaled score of 1000 and fixing the slope at 100. For science, the slope and intercept for each grade were derived by anchoring the Basic cutpoint at 1150 and the Proficient cutpoint at 1275.¹

The slopes and intercepts for deriving PSSA scaled scores are provided in Table 14–2. For reference purposes, the PSSA theta cut scores have been reproduced in this table as well.

ROUNDING

The linearly transformed scaled scores are generally rounded to the nearest integer value for reporting purposes. Values greater than or equal to 0.50 are rounded up. Values less than 0.50 are rounded down.²

LOWEST OBTAINABLE SCALED SCORES

PSSA mathematics and ELA tests have a lowest obtainable scaled score (LOSS) of 600. For PSSA science, the LOSS values have been set to 1050 at Grades 4 and 925 for Grade 8. The selection of a LOSS is mainly based on two considerations: 1) extreme low scaled scores may have an impact on the average of the scaled scores at school/district level and 2) score truncation makes sense from a score precision perspective given measurement errors at the extremes are large. The LOSS values are documented in Table 14–1. See tables in Appendix N for LOSS n -counts.

HIGHEST OBTAINABLE SCALED SCORES

A highest obtainable scaled score (HOSS) is not set for the PSSA. Thus, the maximum possible scaled score value is allowed to float for each subject and grade. The upper bound varies from year to year, depending on the difficulty of the test form. Table 14–1 shows the maximum possible observed score for the current year's test. (Note: It may be that no student actually earned the maximum possible.) See tables in Appendix N for HOSS n -counts.

¹ Anchoring two cutpoints for mathematics and ELA was considered. However, this led to large variability in scaled scores across grades. Therefore, it was determined that one cutpoint would be anchored and the slope set at 100 for all grades.

² One exception to this rounding is in science where scores are rounded up (even if less than 0.50) if this action would put the rounded score into a higher performance level. This rounding rule has been in place for science since the establishment of the score scale and cutpoints in 2008.

RAW-SCORE-TO-SCALED-SCORE TABLES

Full raw-to-scaled score tables can be found in Appendix N.

Table 14–1. PSSA Scaled Score Cuts for Each Performance Level by Grade and Subject Area

Subject	Grade	Min	BB/B ¹	B/P ¹	P/A ¹	Max ²
Mathematics	3	600	923	1000	1110	1564
Mathematics	4	600	908	1000	1107	1518
Mathematics	5	600	901	1000	1113	1548
Mathematics	6	600	897	1000	1105	1515
Mathematics	7	600	904	1000	1109	1541
Mathematics	8	600	906	1000	1108	1662
ELA	3	600	905	1000	1143	1628
ELA	4	600	887	1000	1107	1798
ELA	5	600	893	1000	1139	1728
ELA	6	600	875	1000	1115	1721
ELA	7	600	845	1000	1130	1720
ELA	8	600	886	1000	1130	1677
Science	4	1050	1150	1275	1483	2208
Science	8	925	1150	1275	1464	2278

Notes. 1. BB = Below Basic; B = Basic; P = Proficient; and A = Advanced.
2. Scaled Score Maximum Values are unique for the each year's test.

Table 14–2. PSSA Cut Scores (on θ metric), Intercept, and Slope by Grade and Subject Area

Subject	Grade	BB/B	B/P	P/A	Intercept	Slope
Mathematics	3	-0.3376	0.4319	1.5392	956.31	100
Mathematics	4	-0.7377	0.1758	1.2478	981.92	100
Mathematics	5	-0.6086	0.3781	1.5176	961.69	100
Mathematics	6	-0.3443	0.6809	1.7350	931.41	100
Mathematics	7	-0.5217	0.4334	1.5262	956.16	100
Mathematics	8	-0.4543	0.4774	1.5637	951.76	100
ELA	3	-0.5715	0.3703	1.8082	962.47	100
ELA	4	-0.7059	0.4201	1.4935	957.49	100
ELA	5	-0.6565	0.4118	1.8092	958.32	100
ELA	6	-0.6578	0.5872	1.7381	940.78	100
ELA	7	-1.0305	0.5185	1.8201	947.65	100
ELA	8	-0.7553	0.3839	1.6911	961.11	100
Science	4	-0.4280	0.2792	1.4560	1225.65	176.75
Science	8	-0.2435	0.4091	1.3958	1196.64	191.54

Notes. Linear Transformation Intercepts and Slopes are used to derive the Scaled Scores.
BB = Below Basic; B = Basic; P = Proficient; and A = Advanced

STRAND (REPORTING CATEGORY) SCORE STRENGTH PROFILE

Strength profiles for strand (reporting category) scores have been provided since 2009. New mathematics and ELA continue to report the strength profile. The following process was followed to derive the profile:

- The items for each strand were identified.
- WINSTEPS runs were undertaken that anchored the logit values for each strand's items to get the raw-to-logit score table for each strand. This is sometimes referred to as fixed item parameter scaling.
- The appropriate linear transformations (based on content and grade from Table 14–2) were applied to the logit values to derive strand scaled scores.

The strand scaled scores were categorized as follows: L=Low; M=Medium; H=High. The maximum possible strand scaled score was converted to H in cases where no strand scaled score equaled or exceeded the Advanced scaled score cut. Note that these designations are provided as an indication of performance levels within a strand, but as standards have not been set that describe strand performance as has been done at the overall test level, performance level descriptions for the overall test should not be used to describe strand performance. See Chapter Sixteen for information regarding strength profiles are used in score reports.

CHAPTER FIFTEEN: LINKING

In large-scale testing programs it is a common practice to have different item sets appear in test forms within and/or across years. Linking operational scores from the different test forms to a common scale of measurement ensures that all forms for a given grade and subject area provide comparable scores. Consequently, students are not given an unfair advantage or disadvantage because the particular test form they took is easier or harder than a test form taken by other students.

In order to account for the differences between different test forms, an application of an item response theory (IRT) linking methodology is required to place the item parameters and student ability estimates on the same scale as other forms. (As cautioned earlier, the success of these methods depends on how well the IRT assumptions are met.) The IRT model used for the PSSA is the Rasch Partial Credit Model (RPCM; Masters, 1982). Further descriptions of the RPCM are given in Chapter Twelve. Without linking analyses, the Rasch item calibrations for the new test items and associated scores on these items would be unique to the new test administration.

A chained linking design is utilized for the mathematics, ELA, and science PSSA operational scores. With a chained linking design, scores from the new test form are linked to the scale of previous test forms. The chain originates from scale of measurement defined for each test's base form, which is used as the reference for calibrating all items in the item pool. The base form is usually the form upon which the cut scores were established (see Chapter Thirteen). In the case of the PSSA, scales and cut scores were established for Science in 2008, and 2015 for ELA and mathematics. Therefore, the 2016 mathematics and ELA test are linked to the scales set in 2015 and the science tests are linked to the scales set in 2008. When the item parameters from the new test are placed on the test scale, the resulting scaled scores for the new test form will be expressed on the same as the scale as defined by the base form.

This chapter begins with an explanation of specific PSSA design elements and associated analysis procedures. This is followed by a summary of the entire PSSA linking procedure. Some summary results are also provided. The linking procedure described will be used for each year-to-year linking cycle to ensure year-to-year comparability of scores for all PSSAs.

PSSA MATHEMATICS, ELA, AND SCIENCE

The test designs for the operational PSSA mathematics, ELA, and science assessments used multiple test forms that shared several common elements. The operational items are the same on all forms and for all students. Student total raw scores and scaled scores, as well as accountability reporting, are based exclusively on the operational items. In addition, each test form has a different set of nonoperational items (i.e., items that are not part of student scores). One such example is the embedded field test items that are tested for possible inclusion in the PSSA item pool. Equating block items were included to bolster the linking design (discussed further below). The forms containing the nonoperational items were spiraled to ensure the items would have randomly equivalent samples of students responding to them. In summary, each test form for 2016 mathematics, ELA, and science was composed of core operational, equating block, and field test sections.

DATA COLLECTION DESIGN

The item status codes used in the IDEAS item banking system are given in Table 15–1. For brevity, these codes are used for the remainder of this chapter.

The link between years was based on the core linking (LK) and equating block (EB) items. These items had been used in previous administrations (most often from the prior year). The LK and EB items were used in approximately the same context. That is, the items were not altered in any way, they appeared in about the same position in the booklet, and they were administered at about the same time of year.

The equivalence of student samples across years cannot be assumed. Further, the same item can have different properties in different years because of changes in the item's position or changes in the students' experiences. Consequently, between-year linking requires more scrutiny than within-year linking. This chapter focuses more on the linking between years.

The linking design employed for PSSA is often referred to as a common-item nonequivalent groups design. Test forms contained a set of common items, called core LK items or EB items, which served as anchors for linking test forms across years to a common scale. LK items were internal anchor items (i.e., they contribute to student test scores) and EB items were external anchor items (i.e., they did not contribute to student test scores). All EB items were MC items.

Since LK items were in the tests' operational sections, they were common across all test forms within a year. For the 2016 PSSA, all core MC LK items were from 2015 operational tests. The forms containing EB items were spiraled, and thus, randomly distributed across the student population. All EB items in the 2016 PSSA tests were also pulled from the 2015 tests.

The number of the LK/EB items are summarized in Table 15–2. Specifically, there were 16 LK MC items and 2 LK open-ended items for all mathematics and science grade levels, and 14–17 LK MC and 2–4 LK non-MC items across ELA grades. The number of EB items shown in Table 15–2 is the total number of EB items across all forms.

There were 60 core MC items in mathematics, 38 core MC items with grade 3 ELA, 41 core MC items in grades 4 and higher ELA, and science had 58 MC items. There were three core OE with mathematics, seven core OE¹ items in grade 3 ELA, eight with grades 4 and higher ELA. Further break down of OE items are also presented in Table 16-1 in Chapter Sixteen. There were three core OE items in mathematics. Science had five OE items.

Table 15–1. Item Status Codes in IDEAS

Item	Comments	Code in IDEAS
Core	Include core linking (i.e., anchor) items and unique core items	OP
Core linking	Linking items in the core section which include MC and OE items	LK
Equating Block	All items in the EB are MC linking items	EB
Field Test	Items in the embedded FT section	FT

Table 15–2. 2016 PSSA Linking Designs: Mathematics, ELA, and Science

Subject	Grade	Number Of Forms	Total Core MC	Total Core Non-MC	Core Links MC	Core Links Non MC	Equating Block (All MC)
Mathematics	3	9	60	3	16	2	18
Mathematics	4	9	60	3	16	2	18
Mathematics	5	9	60	3	16	2	18
Mathematics	6	9	60	3	16	2	18
Mathematics	7	9	60	3	16	2	18
Mathematics	8	9	60	3	16	2	18
ELA	3	9	38	7	14	3	15
ELA	4	9	41	8	17	2	15
ELA	5	9	41	8	15	3	15
ELA	6	9	41	8	17	4	15
ELA	7	9	41	8	16	3	15
ELA	8	9	41	8	17	3	15
Science	4	12	58	5	16	2	24
Science	8	12	58	5	16	2	24

¹ OE items in ELA include SA, EBSR, TDA, and WP in this chapter.

LINKING METHOD FOR PSSA

The first step in linking the 2016 PSSAs in mathematics, ELA, and Science to their base scales was to express all 2016 item parameters for each test on its same respective scale. This was accomplished by calibrating all OP (including LK) MC items with master core and paper students. Then the OP MC items were anchored to calibrate EB MC items with all forms and paper students. Next, the resulting MC item parameters were anchored in WINSTEPS while all OE items in the operational section (including OP LKs) items were calibrated including paper students.² At this point all OP and EB item parameters were on a unique scale for 2015. Between-year linking was required to place these items on the bank scale.

Between-year linking utilized the 2016 LK and EB item parameters and their previous item parameters. The scale transformation methodology used for PSSA is the mean-shift procedure. This has been the procedure employed by the PSSA program for some time. After evaluating the robustness of the link by identifying items that did not maintain their relative difficulty across years, the difference between the 2016 and previous parameters was then determined. The mean of the differences was then used to statistically adjust the 2016 parameters to the PSSA scales. The final (linking) item parameters were then used to estimate student abilities, which were, in turn, transformed to scaled scores. (Transformation formulas are provided in Chapter Fourteen.)

RATER DRIFT

Before the final mean-shift value was determined, a rater-effect adjustment was applied to the OE LK items. All OE linking items were in the Core section (LK OE). Students' responses from the previous administration ($n = 1,000$ per item) for the OE linking items were selected for the rater drift study (DRC jointly stratified by point value and on ability). The selected responses were scored by 2016 raters. Thus, the selected students' responses had scores from 2015 and 2016 raters and the difference between them was used to adjust for the rater effect. See Tables 18–11 through 18–13 (see Chapter Eighteen) for the correlations between the old and new scores for these OE LK items.

SUMMARY OF THE PSSA LINKING PROCEDURE

The following steps outline the linking procedure. Mathematics and ELA item calibration in 2016 followed the first and third steps followed by the eighth and ninth steps to calibrate MC and OE operational items and produce raw to scale score tables.

1. Calibrate all operational (OP) multiple-choice (MC) items in an unanchored Winsteps run
 - a. Include only the Master Core and paper students with completeness status "01" and "00" (all students with MC responses).
 - b. Include all MC items in the core operational section (OP MC).
 - c. Do not include any equating block (EB) items.
 - d. Do not include any field test (FT) items.
2. Calibrate selected multiple-choice (MC) items in an anchored run:
 - a. Include all forms, but only paper students with completeness status "01" and "00" (all students with MC responses).
 - b. Include all MC items in the core operational section (OP MC).
 - c. Include all equating block (EB) items.
 - d. Do not include any field test (FT) items.
 - e. Fix all OP MC items from Step 1.

² No field test items were included in any of these calibrations. FT items were calibrated after the operational linking by anchoring all OP and EB items. This placed all FT items on the bank scale.

3. Calibrate selected open-ended (OE) items in an anchored run by putting them on the MC item scale from Step 3:
 - a. Include all forms, but only paper students.
 - b. Include all OE items in the Core section (OP OE).
 - c. Do not include any FT items.
 - d. Fix all MC items from Step 2.

4. Compute the rater-effect constant for each OE-Link item:
 - a. Pull sample responses from the previous year ($N \sim 1,000$ students)³ and create a data file including the selected students' MC and OE response scores (from the previous year's raters).
 - b. Have the current year's raters score the selected OE responses.
 - c. Calibrate the difficulty parameters for OE items based on the previous year's scores. (This is done separately for each OE item.)
 - i. Calibrate all MC items (from the previous year's test) in an unanchored run using the data file from Step 4.a.
 - ii. Calibrate each OE item separately using an anchored run for each item.
 - c. Compute the rater-effect constant for each OE-Link item based on OE parameters from Step 4.c.ii.
 - i. Use current and previous year's rater raw score means as the true/expected raw scores.
 - ii. Using expected score distribution conditional on ability (item characteristic curve) for the previous year's rater scores, determine the two ability values for the two expected raw scores (i.e., the current and previous year's rater score means).
 - iii. The rater-effect constant is the difference between the two abilities.

5. For each OE linking item, adjust the item parameter estimate obtained in Step 3 by the Step 4 Value—remove the rater effect:
 - a. Each OE linking item (LK OE) has a specific rater-effect adjustment value.

6. Evaluate the stability of the linking items using Robust Z:
 - a. Include all core linking (LK) items—LK MC and LK OE.
 - b. Include all EB items.
 - c. LK OE item parameters should be obtained from Step 5.
 - d. Calculate Robust Z for each item in the linking.

Once the above calculations were made, the following guidelines were used in determining possible sets of linking items used for the equating:

 - e. Items with an absolute value of Robust Z exceeding 1.645 may be considered for exclusion.
 - f. No more than 20 percent of the pool of linking items may be considered for exclusion.
 - g. The ratio of the standard deviations of previous year and current Rasch difficulties should be in the 90 to 110 percent range.
 - h. The correlation of previous year and current year Rasch difficulties is greater 39 0.95.

³ This sample is generally stratified on previous year's total test scores; however, a minimum of 100 responses are selected for each possible score point.

Final decisions about the linking items were made in the national technical advisory committee (TAC) meeting in collaboration with PDE and DRC staff following these rules:

- i. Drop items that DRC identified as having a large Robust Z and were out of sequence because they were pulled from a separate FT form.
- j. If an item has been changed in any way from the previous year, it may no longer be used for linking.

Scatterplots of the linking item difficulties (logits) were constructed (i.e., the current year values were plotted against those from the prior year). Ideally, these plots should have a strong linear trend. Items straying from the trend line did not perform in the same way in both years. As noted above, items that departed significantly from this were further evaluated. The scatterplots with final LK/EB item sets are shown in Figure 15–1.

7. Calculate the mean shift over MC and OE linking items using global item difficulties (weighted by number of score points) for OE items:
 - a. Include all core linking (LK) items—LK MC and LK OE.
 - b. Include all EB items.
 - c. Weight LK OE items by maximum possible score.
8. Apply the mean shift to the item parameters calibrated in Steps 2 and 3:
 - a. All OP items (OP MC + OP OE).
 - b. All EB items.
9. Scale the operational test by fixing all operational (OP) items obtained in Step 8:
 - a. Include all students (all forms and all modes).
 - b. The result from this step is a Raw-to-Logit (Rasch Ability) table.
10. Apply the appropriate linear transformation to the logit values to derive the scaled scores and SEMs:
 - a. The result from this step is a Raw-to-Scaled Score table.

RESULTS SUMMARY

Table 15–3 shows the number of linking items and the shift parameters associated with those over the two years, and the correlation of item difficulties across years for each grade/content area. At first glance, some of the mean shift values may appear large. However, the shift constants are being applied to parameter estimates from Step 1 in the equating process (where the mean of the unanchored MC items is fixed at zero). The adjustment needed to place the Step 1 estimates on the current scale can be large in magnitude as it must take into account multiple factors (e.g., weighting in the case of the writing test, rater drift, changes in student ability since the base-year administration, and differences in difficulty).

Table 15–3. Summary Data for Linking Items

Subject	Grade	Final Counts MC	Final Counts OE	2015 Shift	2016 Shift	2016 Correlation
Mathematics	3	34	2	Base year*	-0.488	0.973
Mathematics	4	34	2	Base year*	-0.669	0.974
Mathematics	5	34	2	Base year*	-0.082	0.984
Mathematics	6	34	2	Base year*	-0.0352	0.961
Mathematics	7	34	2	Base year*	-0.165	0.972
Mathematics	8	34	2	Base year*	-0.434	0.977
ELA	3	29	3	Base year*	-0.091	0.990
ELA	4	32	2	Base year*	-0.089	0.983
ELA	5	30	3	Base year*	0.032	0.989
ELA	6	32	4	Base year*	0.096	0.990
ELA	7	31	3	Base year*	0.070	0.991
ELA	8	32	3	Base year*	-0.242	0.994
Science	4	40	2	0.010	-0.112	0.990
Science	8	40	2	-0.340	-0.407	0.990

Note. No item was dropped during the linking procedures.

**Base Year:* As the scale for mathematics and ELA was set in 2015, they were not linked to any prior score scales.

Appendix O provides the statistics for the linking items used. The previous and current values for item sequence, p -values, and logits are also provided. Appendix Q provides the mean raw and scaled score points across years. Together, these appendices provide a summary of how the items and test changed across years.

VISUALIZATION SUPPLEMENT

Linking analyses require considerable scrutiny given their critical role in reporting student performance. Items repeated over administrations can behave differently because of contextual changes or changes in the students' experiences. In addition to evaluating the linking items using Robust Z analyses, the graphs in Figure 15–1 provide a visualization to help identify extreme differences over different test administrations. The calibration data file described in Chapter Nine was used to construct these plots.

GRAPHS

This technical report uses figures to help one visualize the across-year differences in linking items at each grade. This section presents four types of figures, three of which illustrate the stability between the old (2015) and new (2016) item data:

1. Scatterplot of new-year p -values (2016) on old-year p -values (2015).
2. Scatterplot of new-year logits (2016) on old-year logits (2015).
3. Scatterplot of old and new p -values on new logits.
4. Test Characteristic Curves (TCCs) for the linked score distribution.

All four plots are presented for each grade and subject-area test. Each plot is described further below and Grade 4 science results are considered as an example of each.

NEW-YEAR *P*-VALUES ON OLD-YEAR *P*-VALUES

The top left-hand plot in Figure 15–1 describes the relationship between the item *p*-values for the two years. This type of scatter plot assists in a visualization of the year to year trends in item difficulty for items used in the linking procedure. The data points in these plots should have a clear trend where the vertical axis values rise as the horizontal axis values increases (i.e., as one moves from left to right). If the *p*-values for both years were correlated at 1.0, the relationship would be expected to fall on a straight line. Generally, linking items are not perfectly stable across years, so some scatter is expected. The extent to which the trend does not pass through the origin indicates a change in student performance.

NEW-YEAR LOGITS ON OLD-YEAR LOGITS

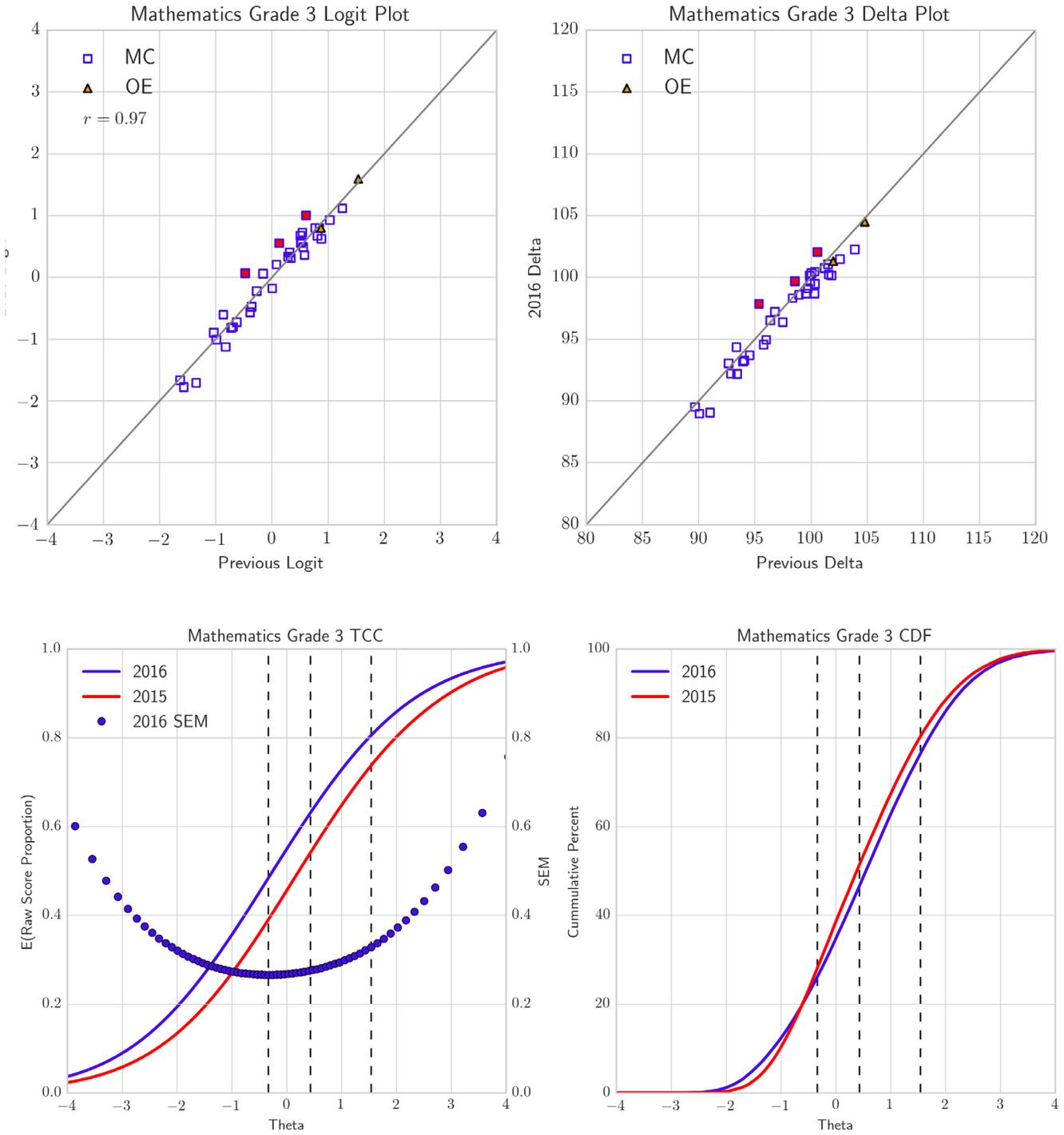
The top right-hand plot in Figure 15–1 focuses on the logit difficulties. It shows more clearly the relationship between new- and old-year item difficulties. Logit plots often provide more defined trends, but still can present varying degrees of scatter and in some instances reveal outlier data points. As with the associated *p*-value plots, these figures suggest good across-year stability of item difficulty based on both difficulty values.

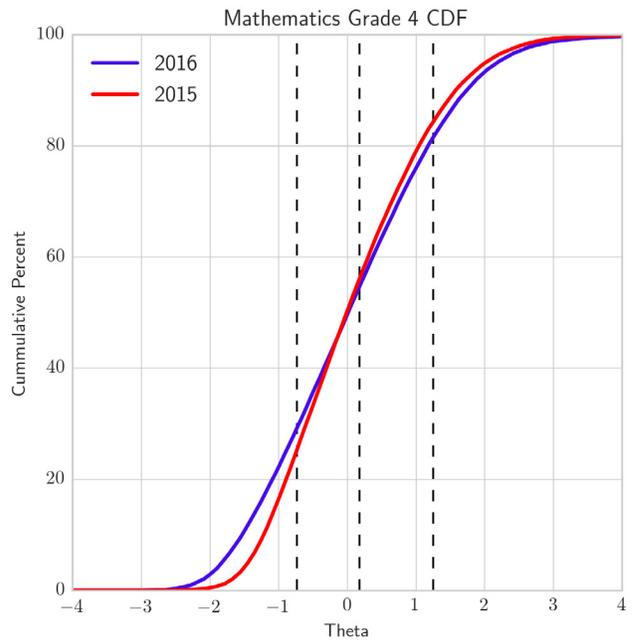
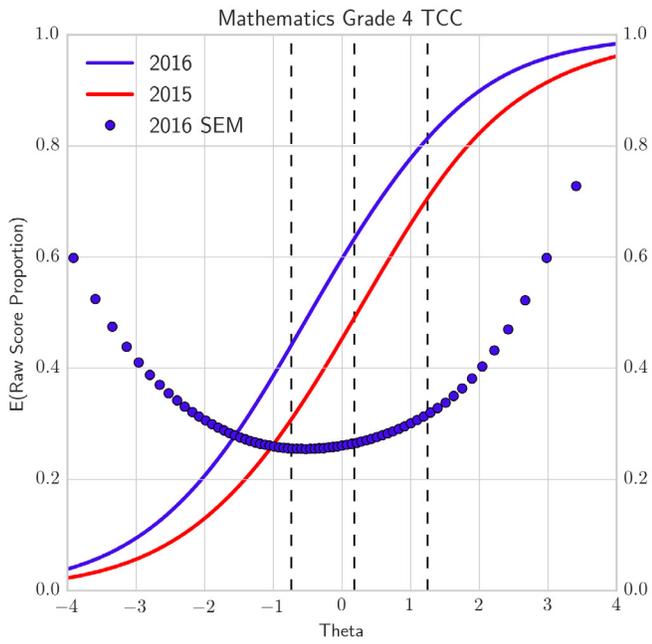
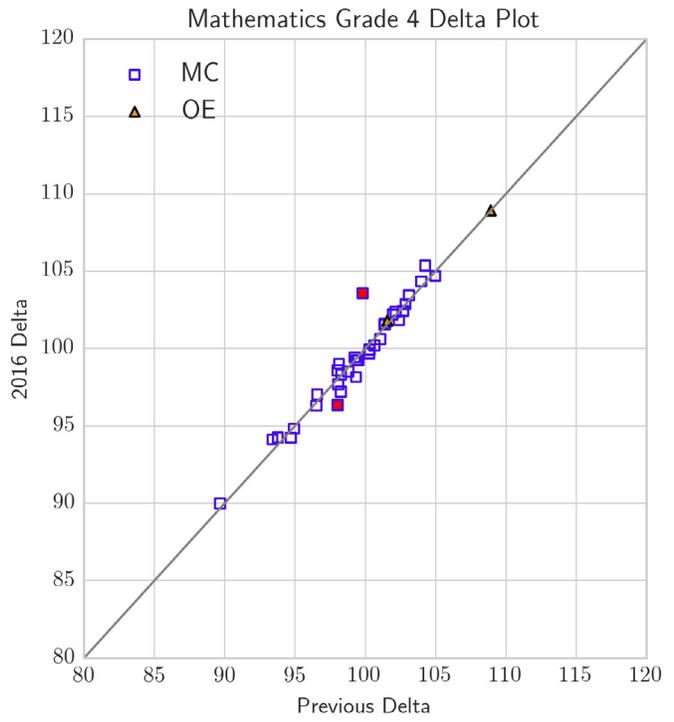
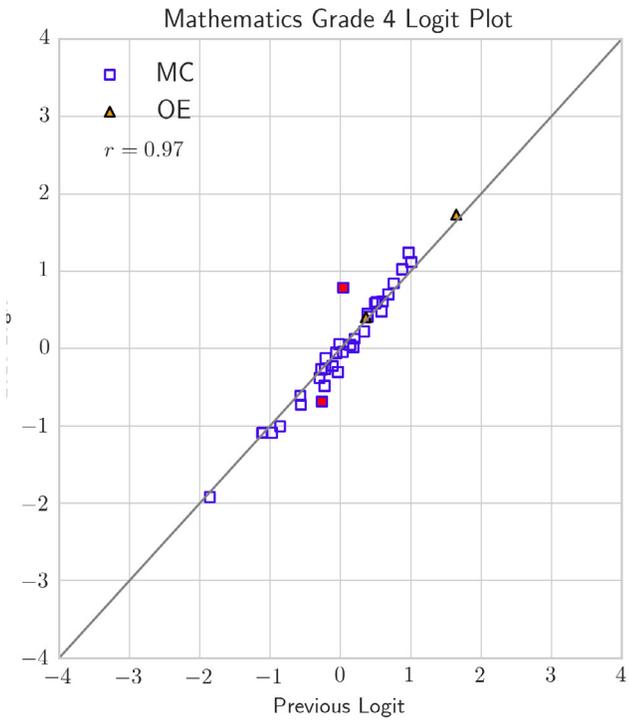
TEST CHARACTERISTIC CURVES

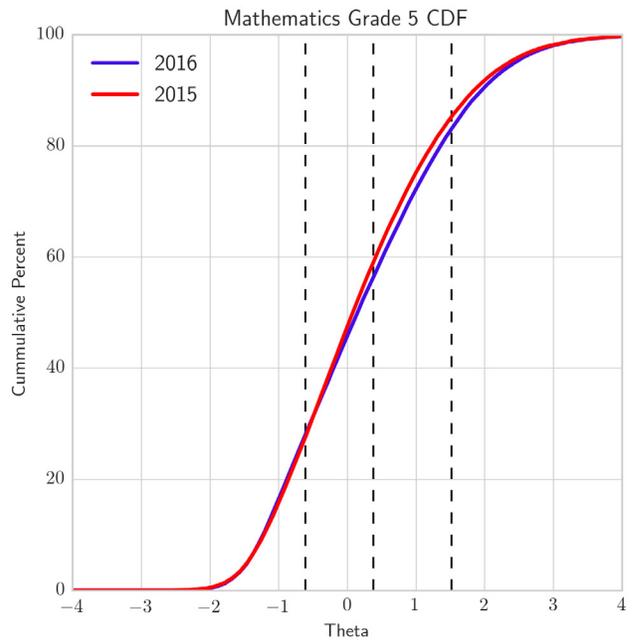
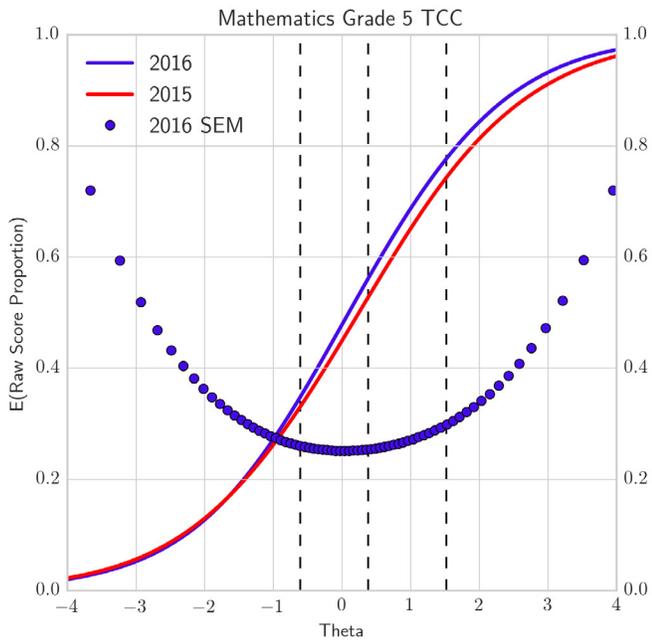
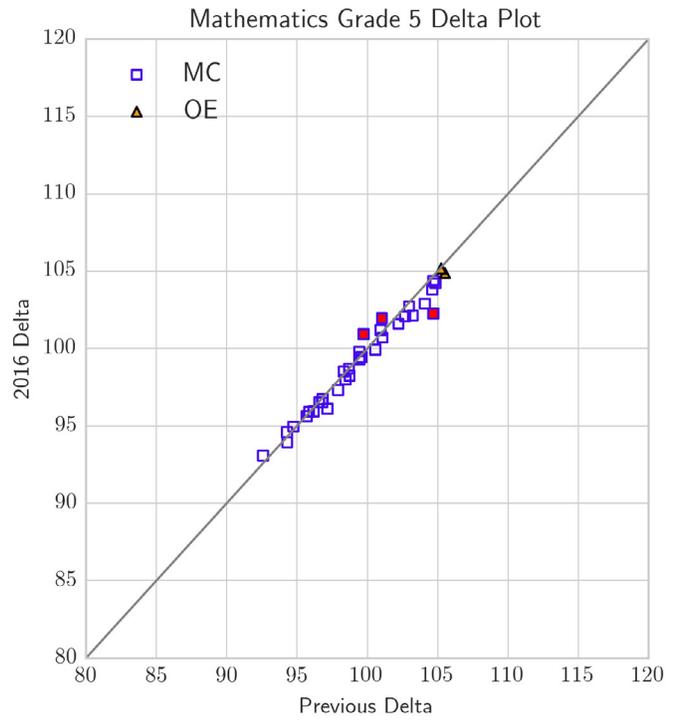
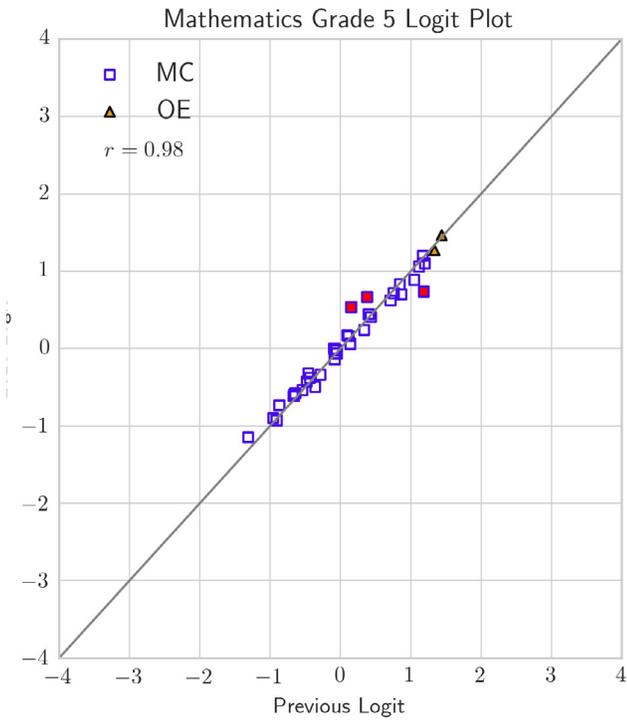
The old and new-year Test Characteristic Curves (TCCs) by grade and subject are shown in the bottom right-hand plot figures. The TCCs show the similarity between the new- and old-year tests in terms of difficulty in the logit metric (new-year results are for the final, linked values), with blue indicating the TCC for the current year and red indicating the TCC for the prior year. The TCCs for science show an additional green curve, which represents the predicted TCC produced during test construction. Note that this TCC is not included for reading and math as some non-linking items were included on the 2016 test that had not previously been placed on the 2015 base year scales.

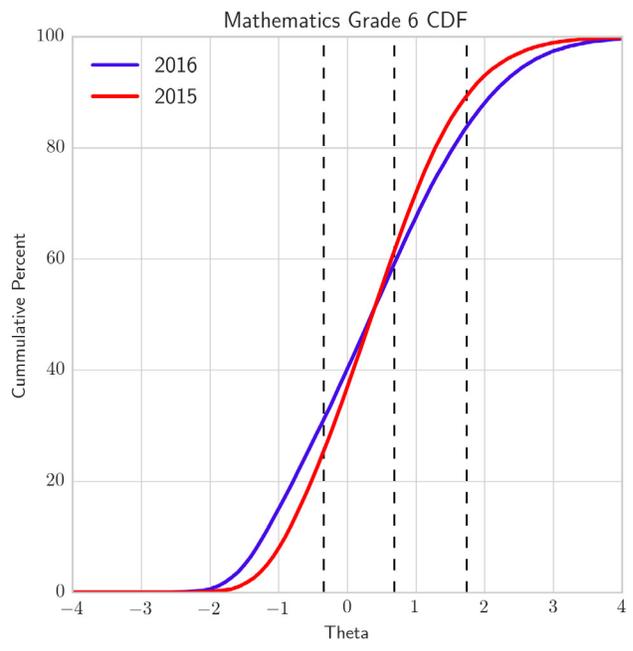
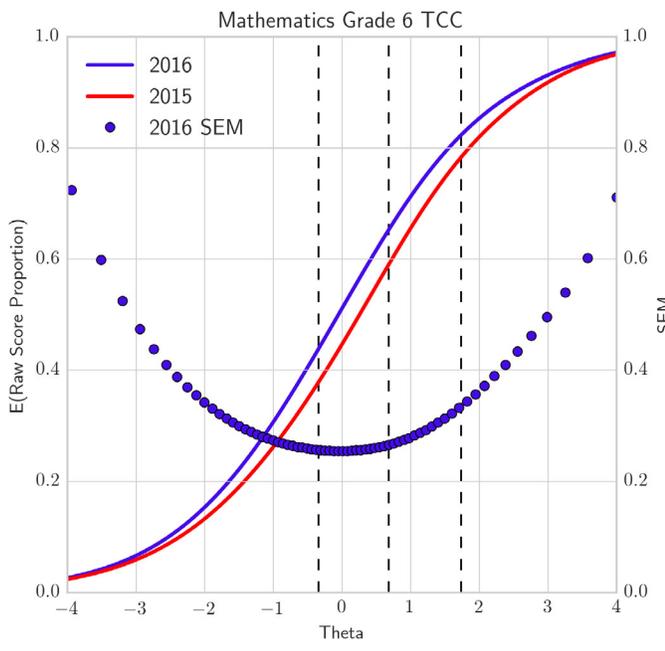
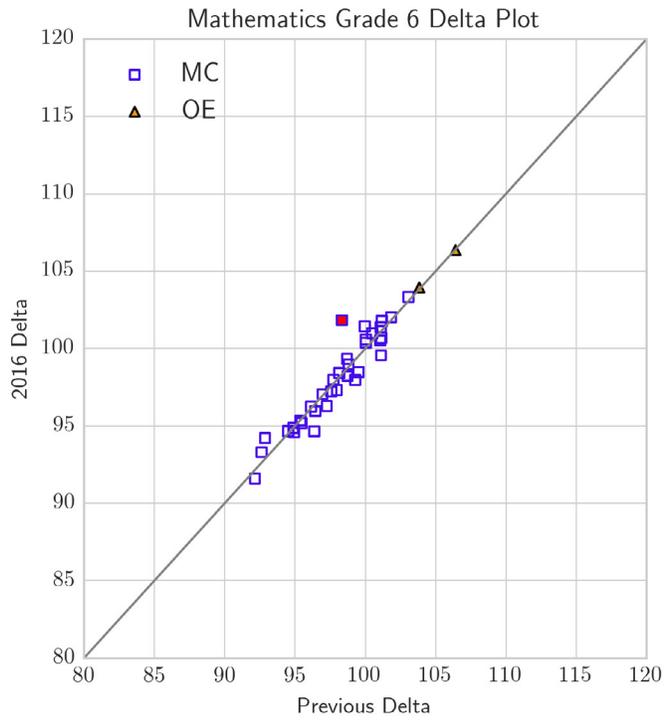
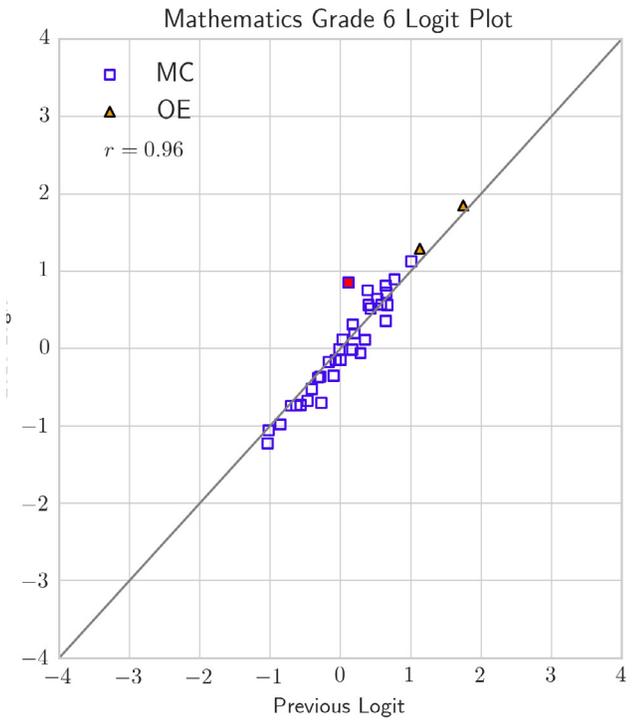
Regarding the prior and current year TCCs, curves that are close to being coincident will translate into similar raw-score cut points (and equating constants) across years. In most grade and content areas very small year to year differences in TCCs are noted for 2016. In mathematics grades 3, 4, 6, and 8, however, the differences are larger, suggesting that the 2016 mathematics tests in these grades were easier for students in 2016. For this reason, test construction for 2017, for all grades and content areas focused on small adjustments to the expected test difficulties in order to better align future tests with student ability.

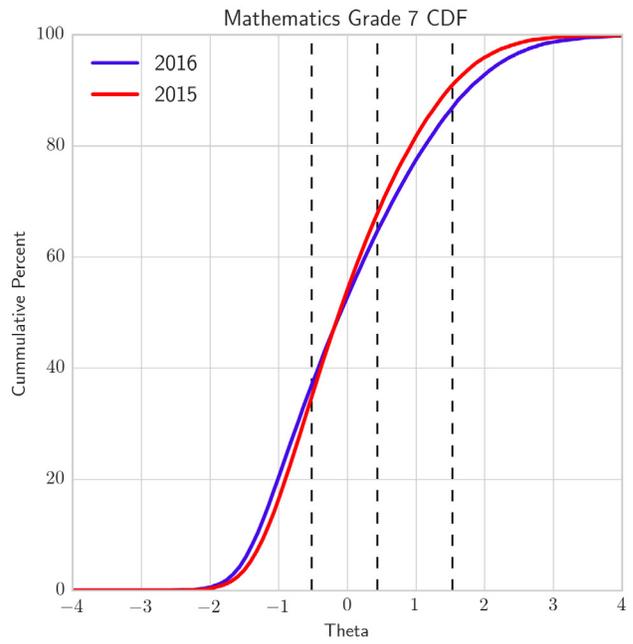
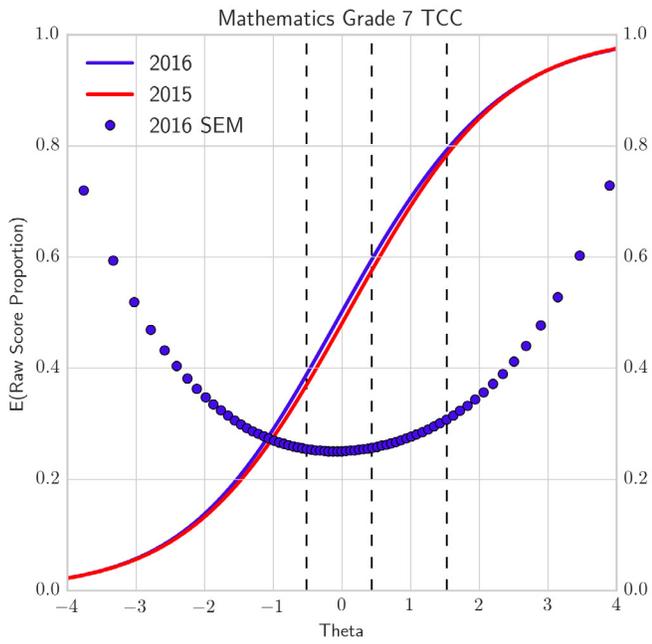
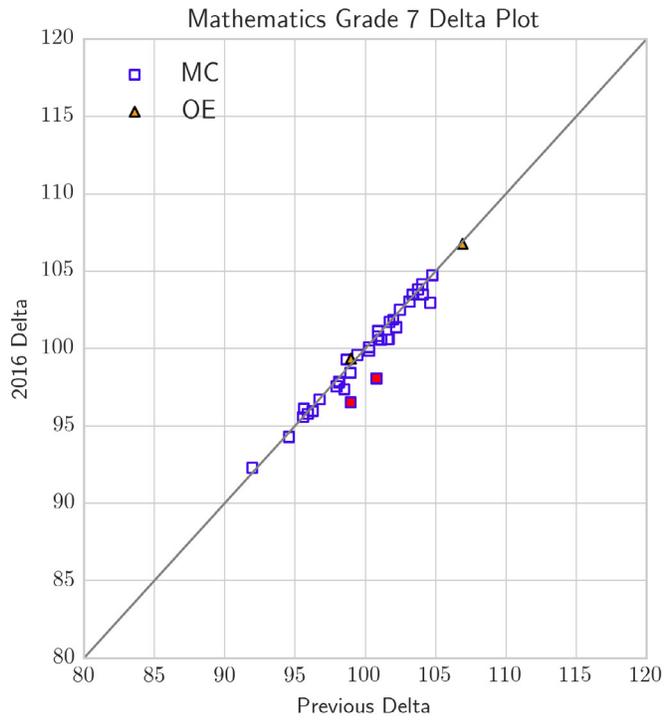
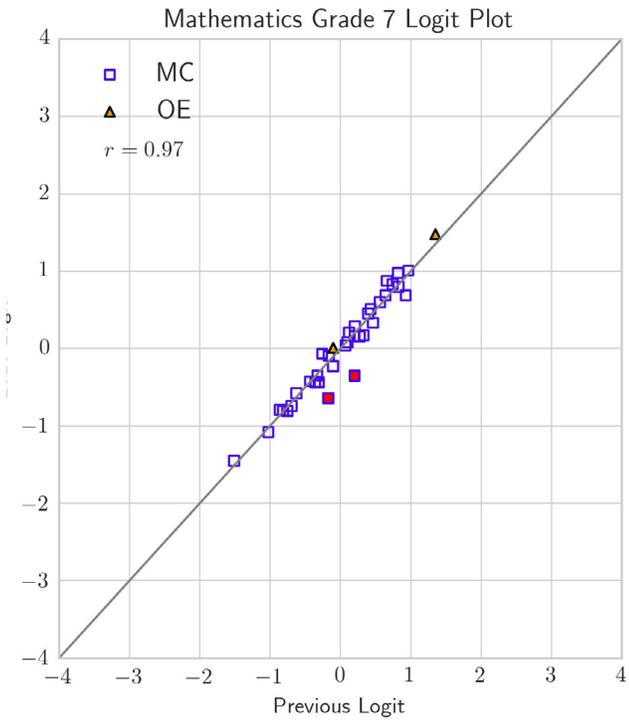
Figure 15–1. Item Stability Plots and Test Characteristic Curves

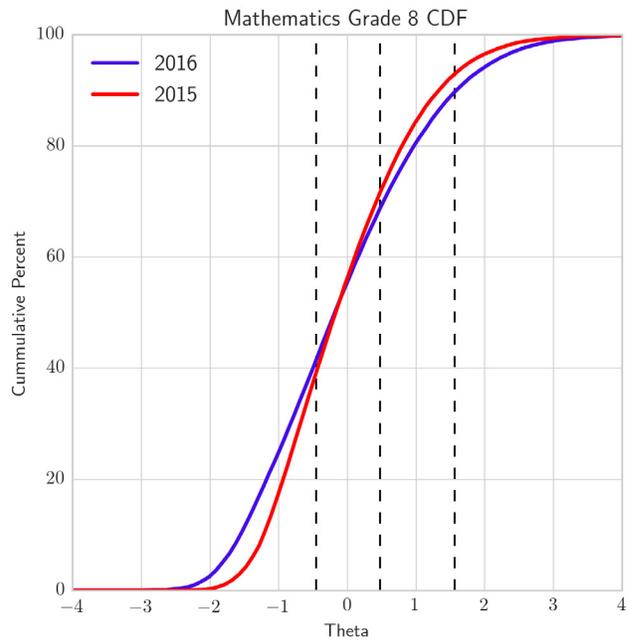
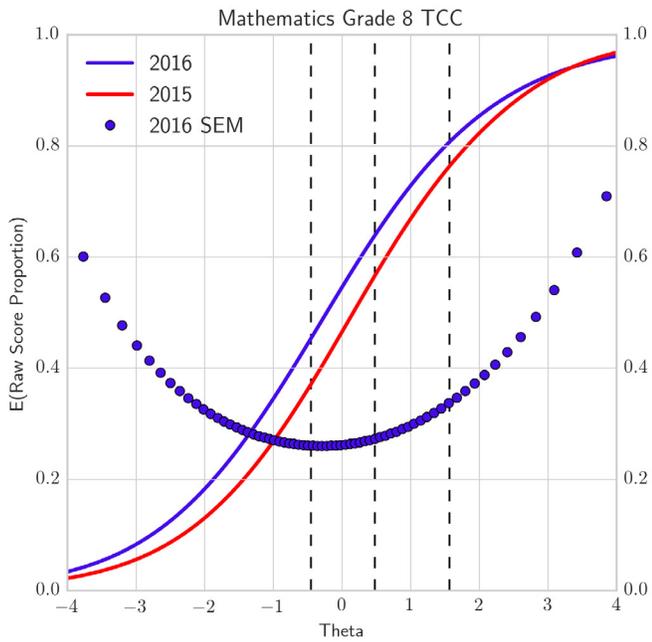
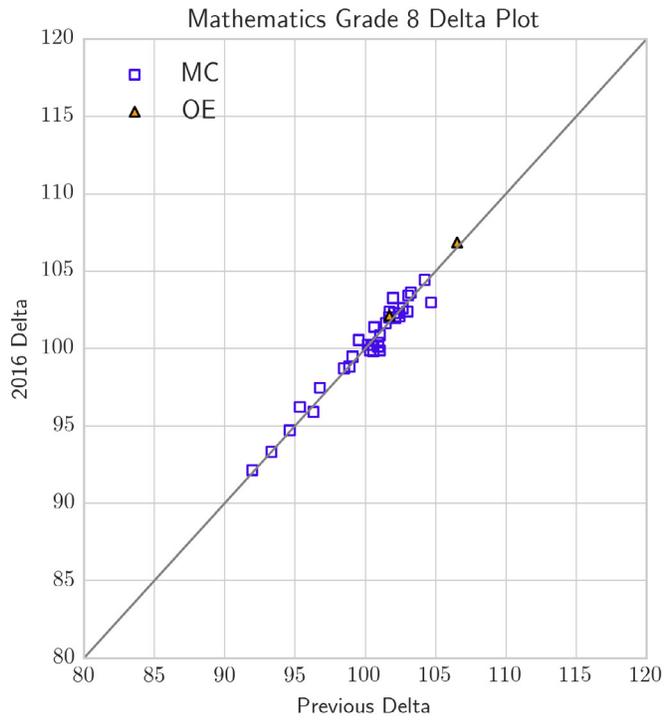
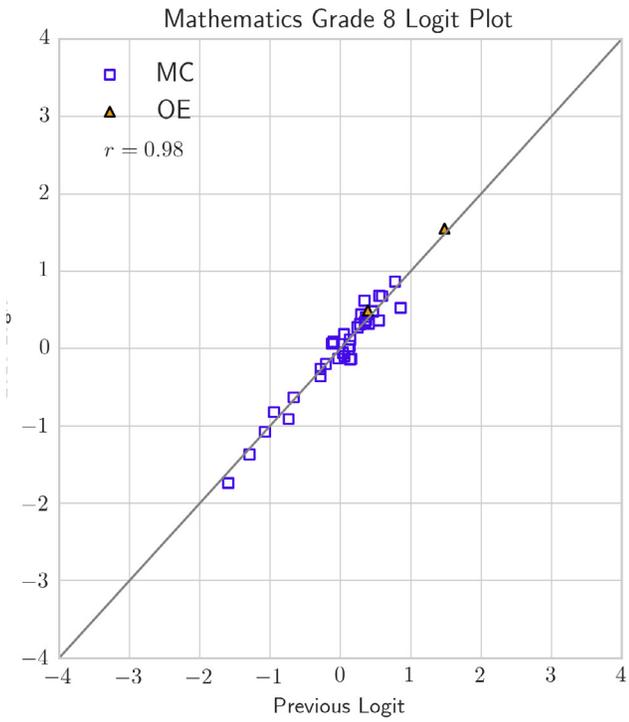


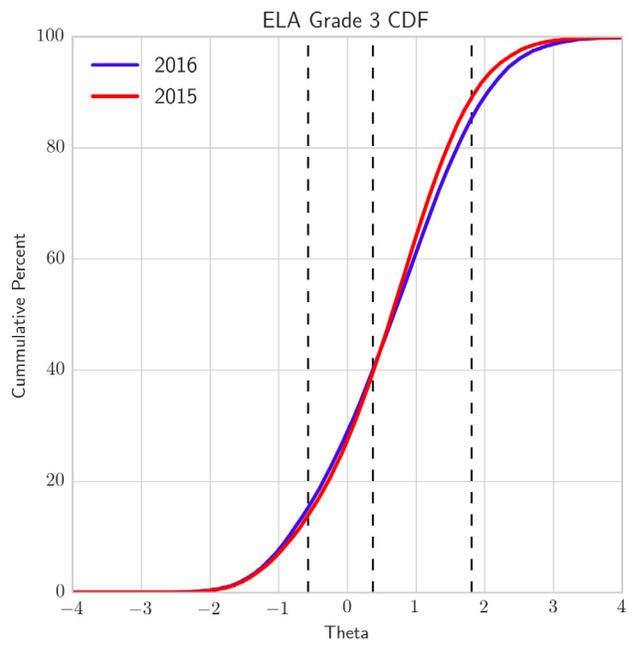
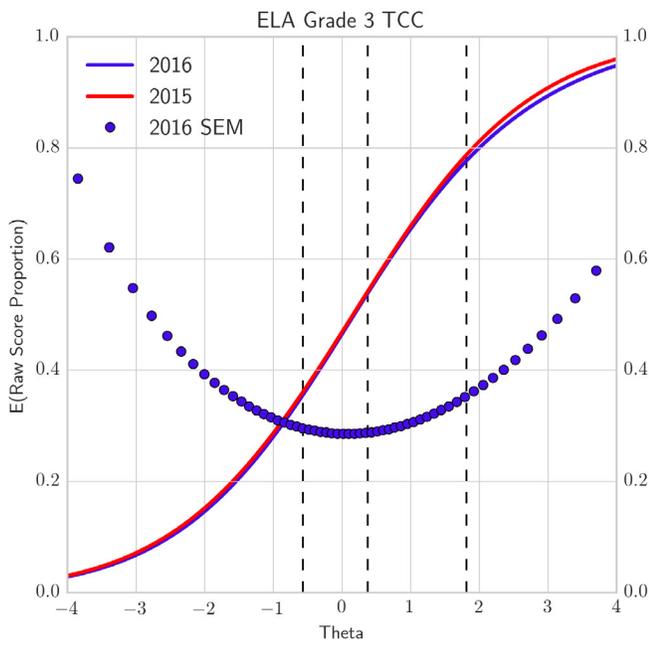
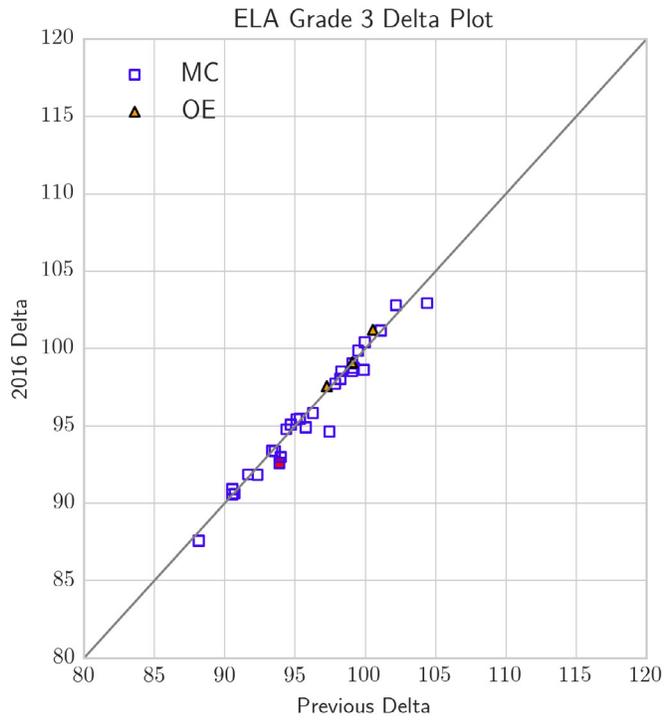
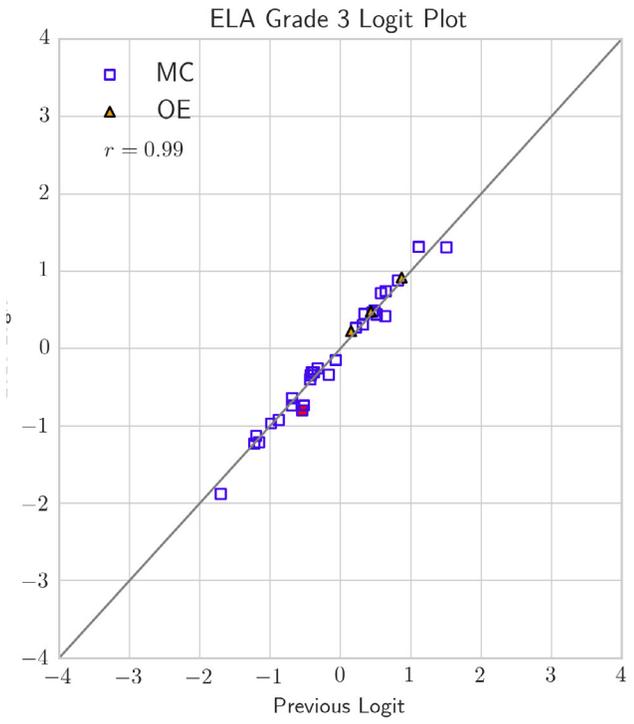


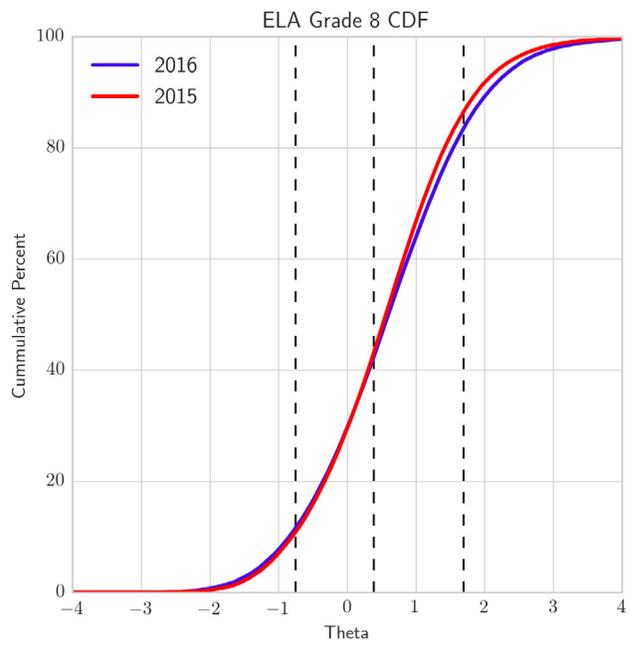
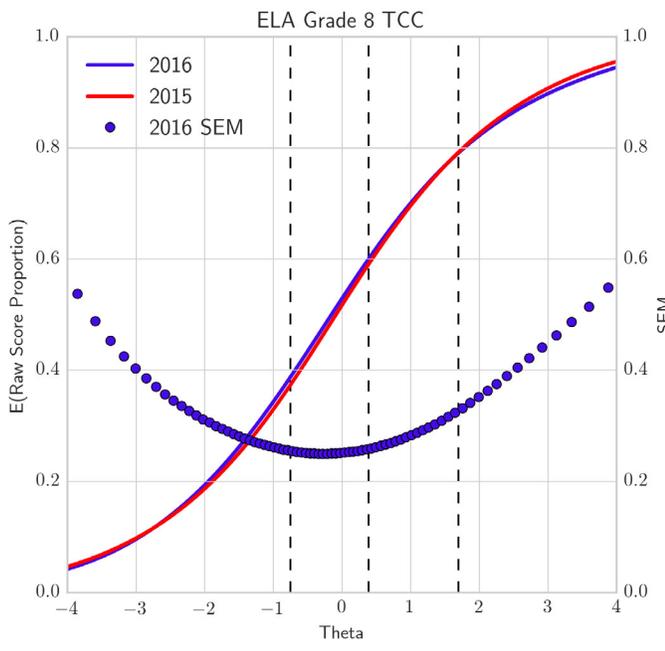
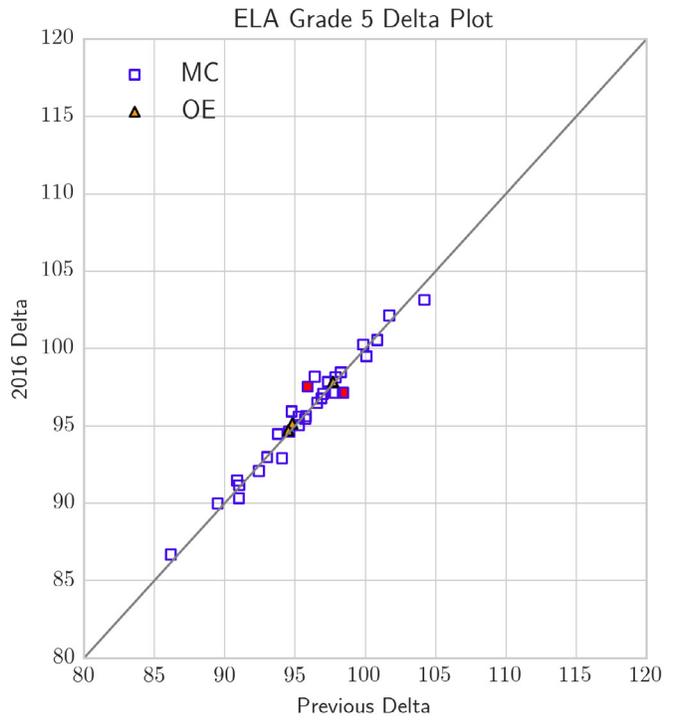
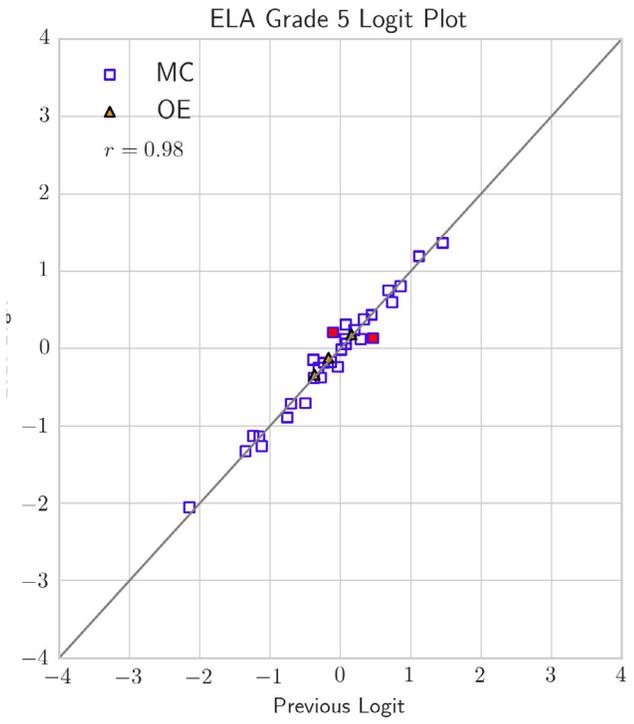


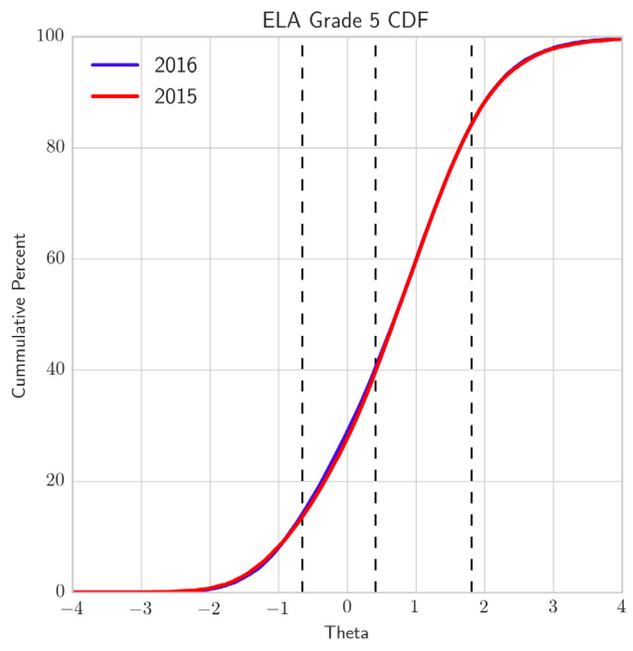
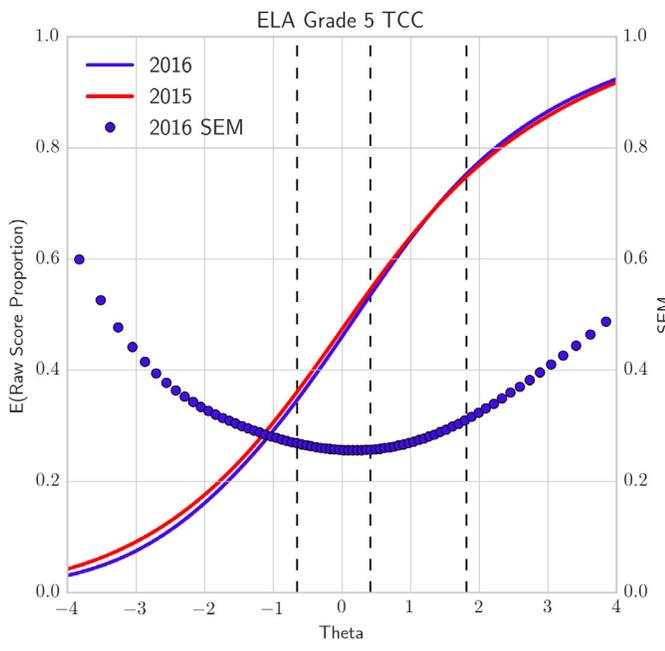
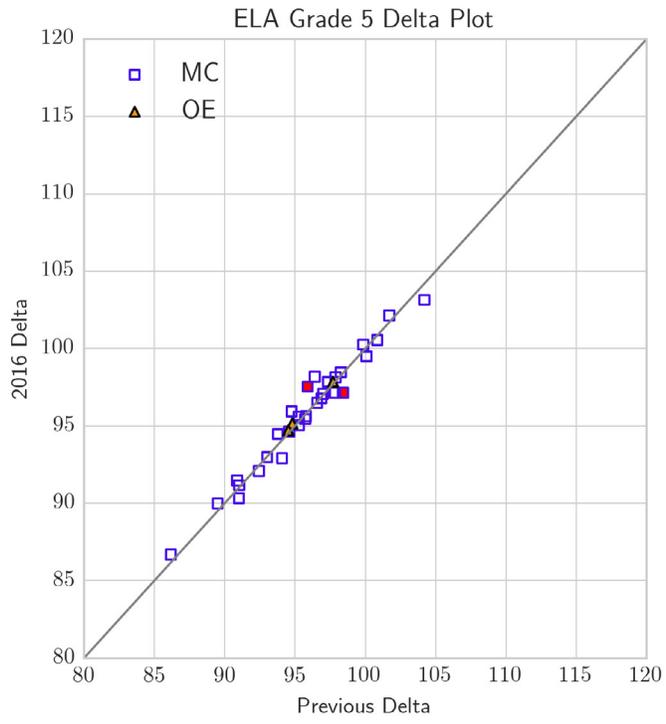
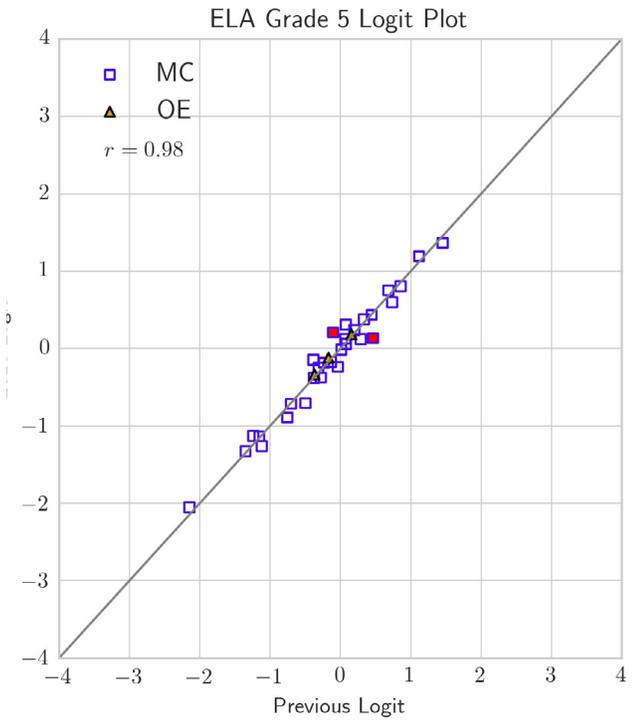


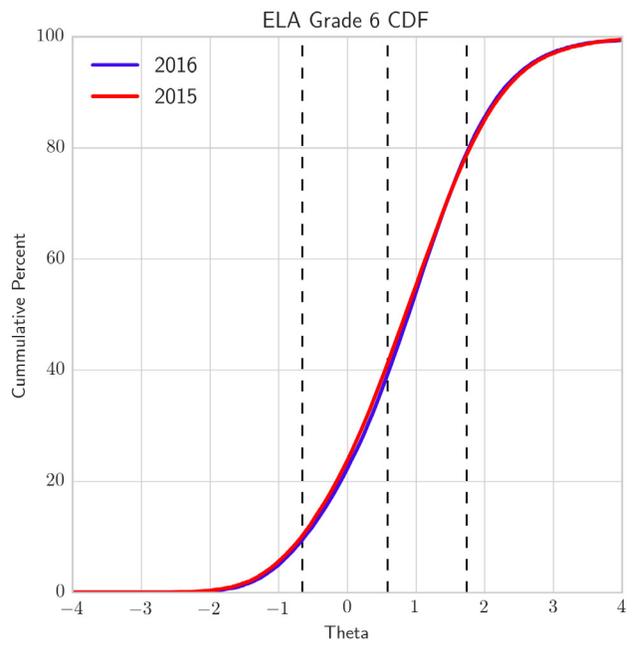
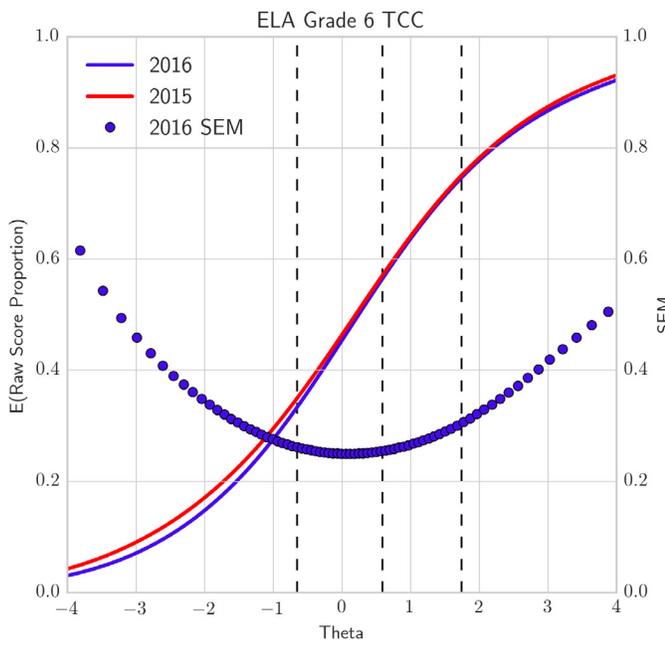
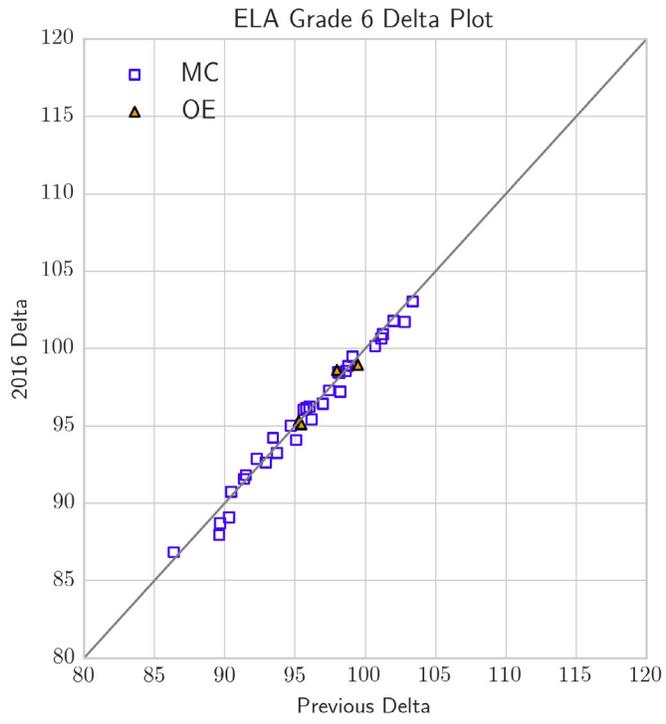
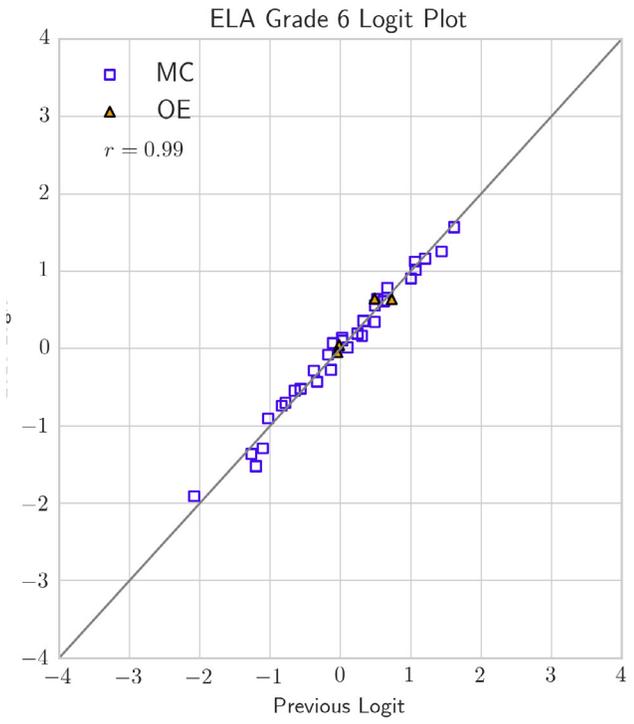


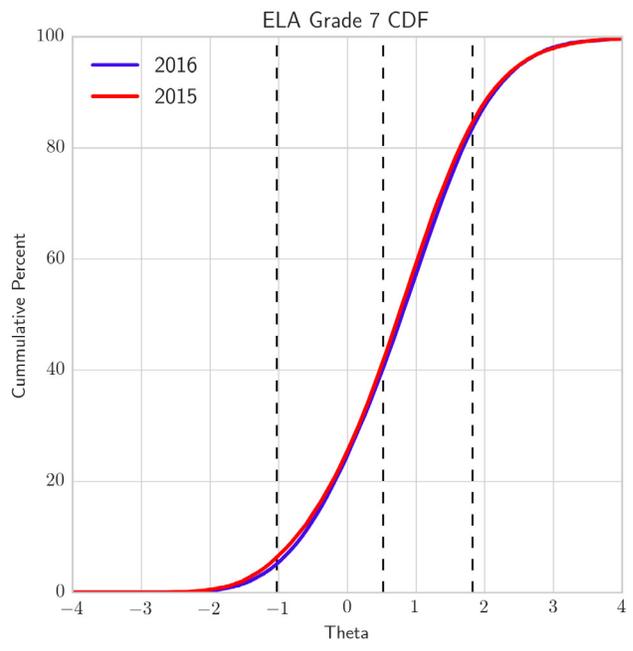
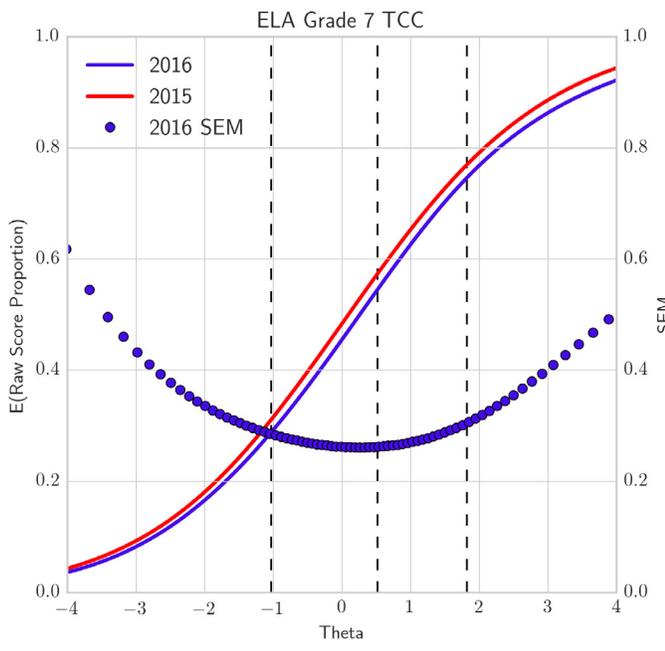
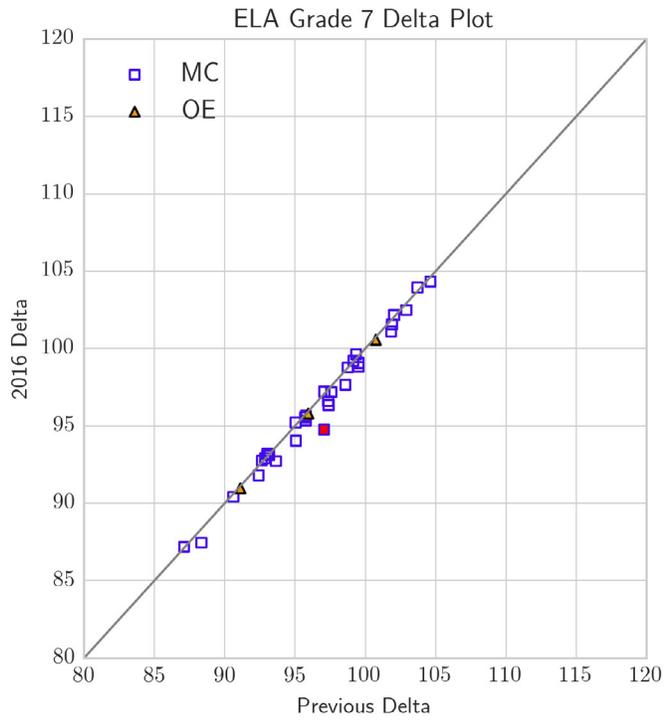
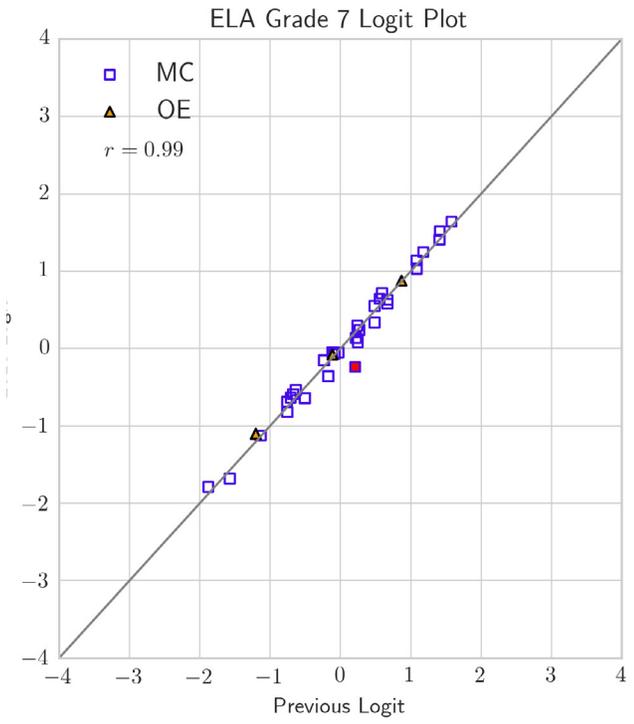


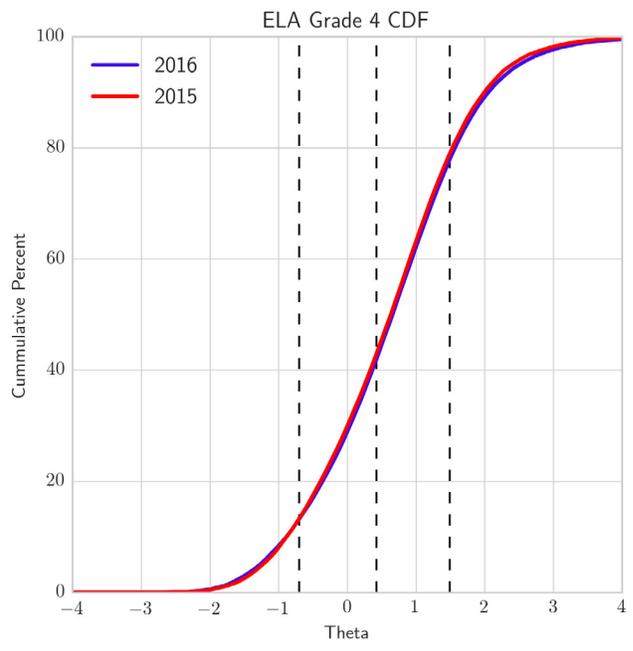
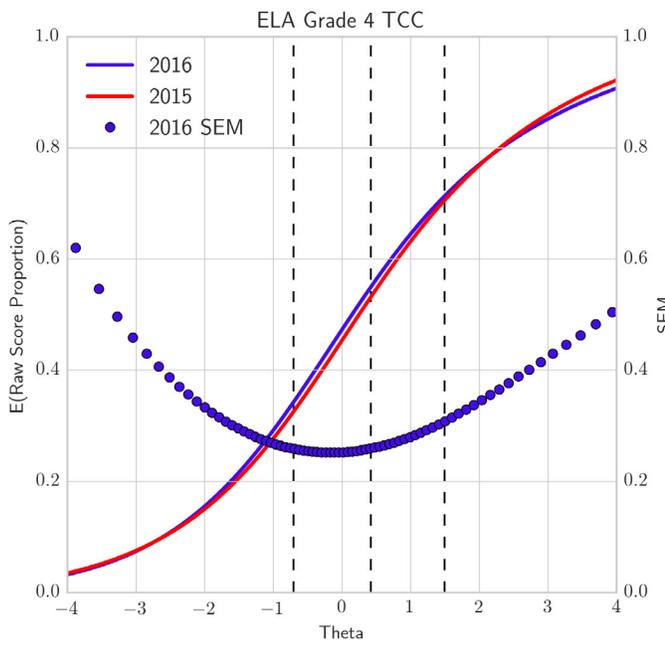
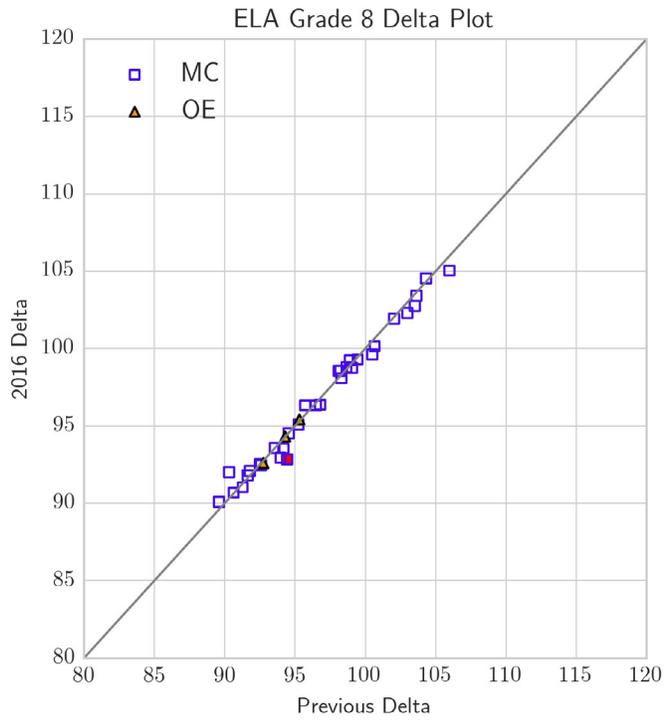
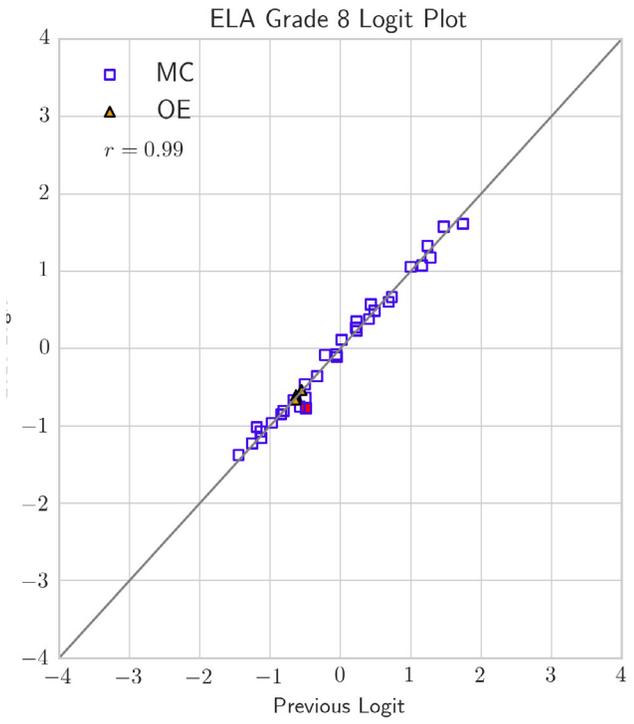


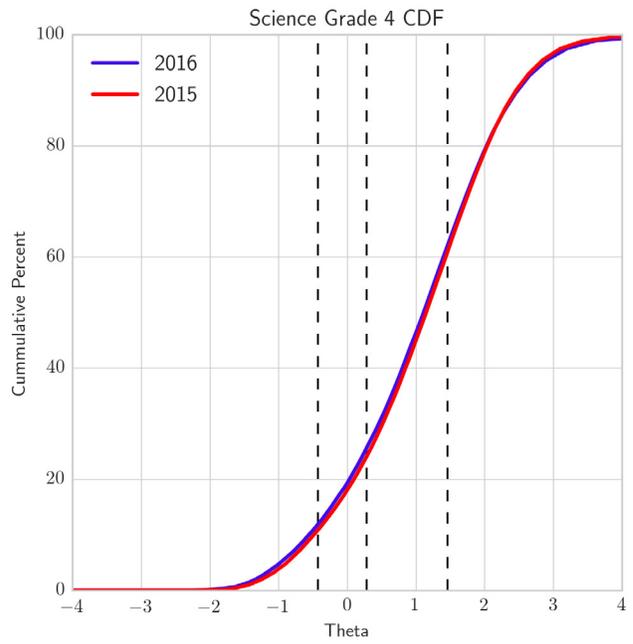
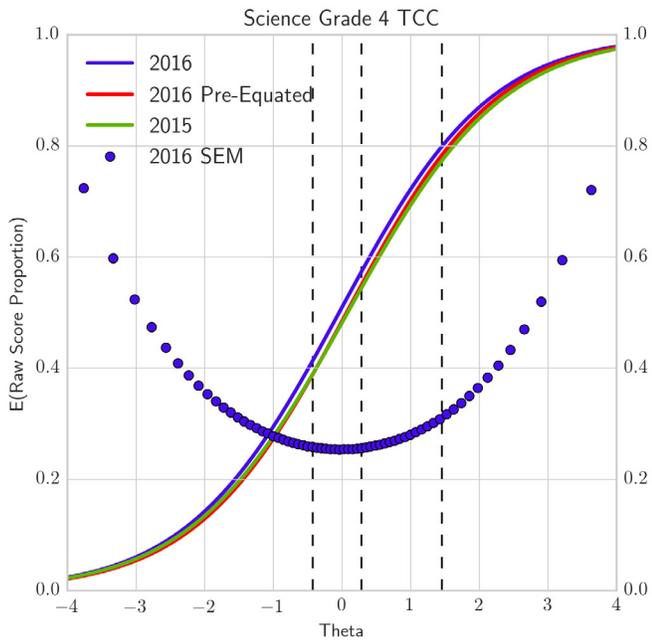
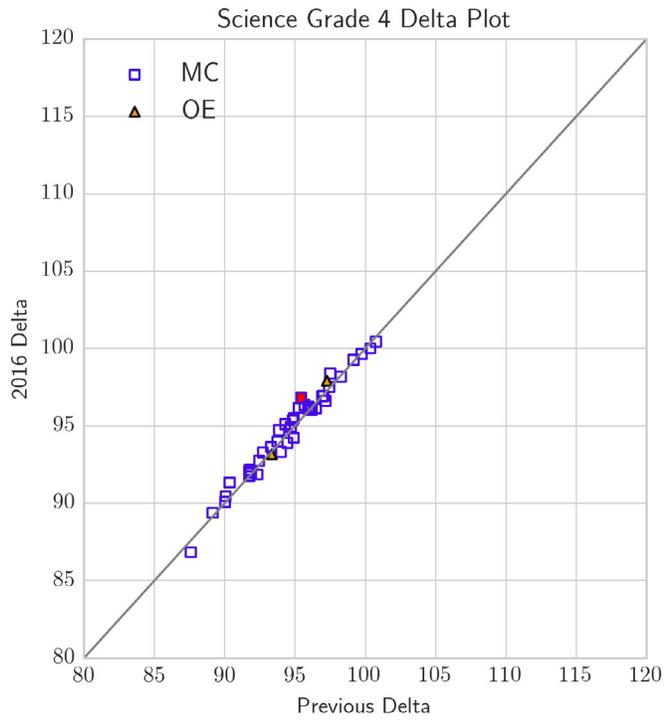
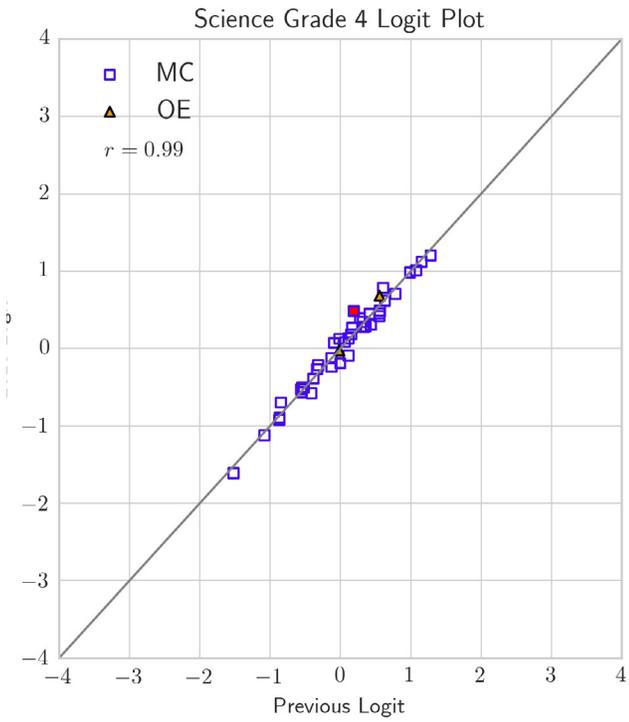


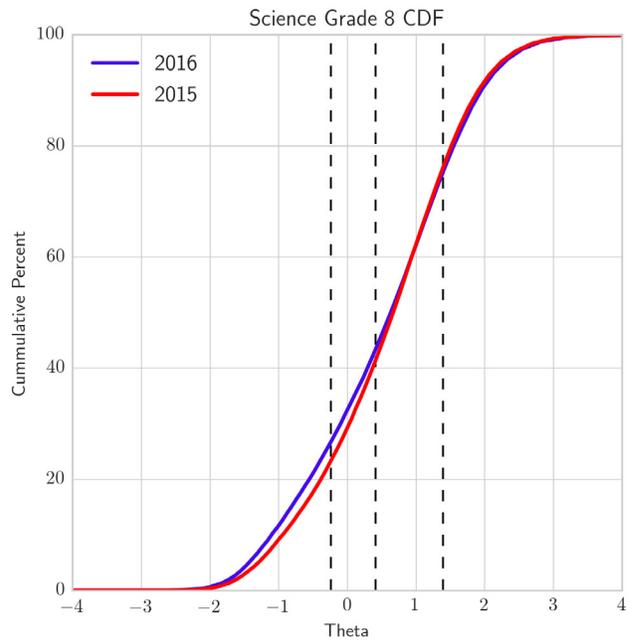
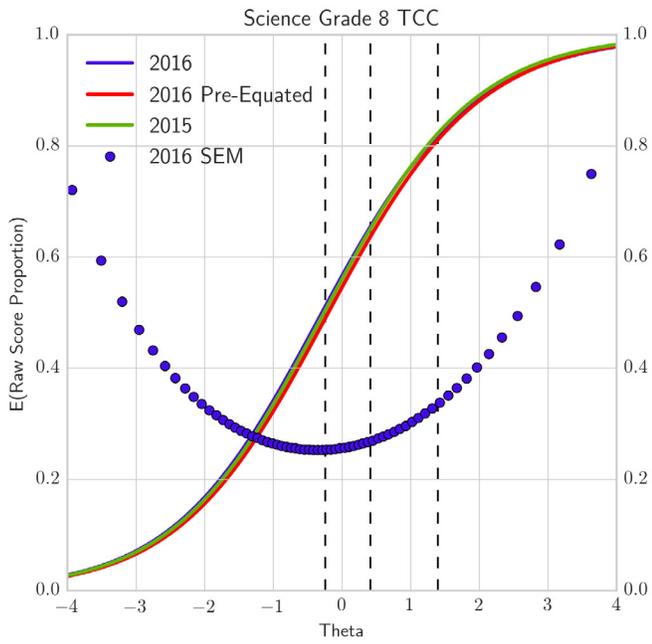
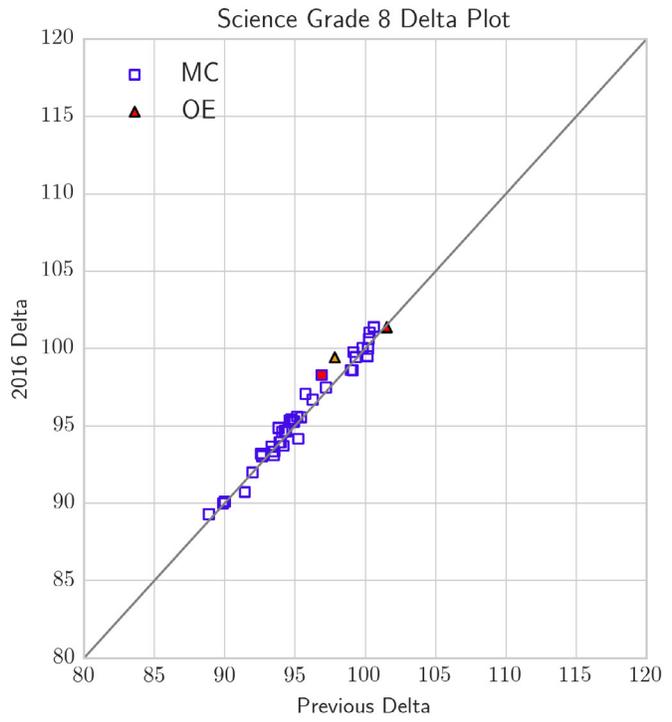
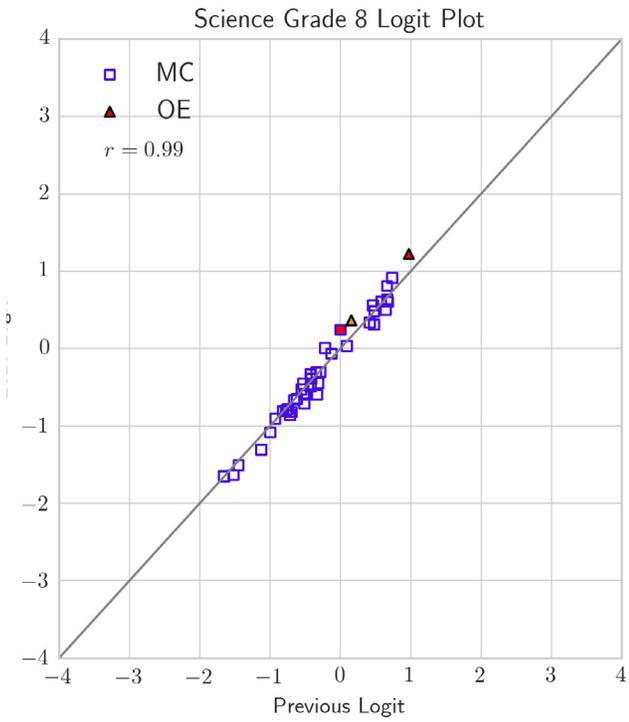












CHAPTER SIXTEEN: SCORES AND SCORE REPORTS

This chapter provides information about the scores provided for the PSSA (e.g., scaled scores, performance levels, and strand scores), how they are presented on score reports, and appropriate and inappropriate uses of the scores.

SCORING THE PSSA

PSSA items are composed of multiple-choice (MC) and open-ended (OE) items. Each correct response to an MC item receives a score of 1. Incorrect responses receive a score of zero. Scores on OE items range from zero to four, depending on the grade and subject area. Table 16–1 summarizes the types of items used on each subject-area test. More detailed information about the various item types is provided in Chapter Three.

Table 16–1. Item Types Used by Subject Area

Item Type	Mathematics	ELA	Science
Multiple-Choice	1 point	1 point	1 point
Open-Ended	4 points	N/A	2 points
Short Answer	N/A	3 points	N/A
Evidence Based Select Response	N/A	2 or 3 points	N/A
Text Dependent Analysis	N/A	4 points	N/A
Writing Prompt	N/A	4 points	N/A

Note. Text-dependent analysis item and writing prompt are weighted as described in Chapter Three.

DESCRIPTION OF TOTAL TEST SCORES

Different types of scores have been developed for PSSA reporting. Since the underlying properties of these scores are not necessarily the same, the particular scores used depend on the purposes for which the test has been given. The following types of scores are provided for reporting a student’s overall performance on each PSSA subject-area test:

- Raw scores
- Scaled scores
- Performance levels

RAW SCORES

A raw score is the number of points a student earned over the operational MC and OE items. By itself, the raw score has some limited utility. One limitation is that it can only be interpreted with reference to the total number of items on a subject-area test (e.g., a raw score of 15 on a 20-item test is different than a raw score of 15 on a 30-item test). In addition, raw scores depend on the difficulty of test items across test forms (e.g., a raw score of 15 on a test with 20 easy items is different than a raw score of 15 on a test with 20 difficult items). Because the difficulty of the items on a test can change from year to year, raw scores should not be compared across tests or administrations.

SCALED SCORES

Scaled scores are introduced in Chapter Fourteen. In the simplest sense, a scaled score is a transformed number-correct score. The specifics of the transformation processes for the PSSA are also discussed in Chapter Fourteen. When all students take the same items, as with the operational items on the PSSA, the more points the student earns, the higher the associated scaled score will be.

The value of using the methods described in Chapters 14 and 16 to produce a scaled score metric is that it produces more general, interpretable, and equitable results across year-to-year test scores. As noted above, a raw score of 30 is meaningless unless the maximum raw score is known. The difficulty of the test items was also mentioned as an additional challenge with interpreting raw scores. Number-correct scores are transformed to scaled scores to remove the effects of test length and item difficulty. (Strictly speaking, transformation of number-correct scores to percent-correct scores would also remove the effect of test length, but it would do nothing to adjust for the difficulty of the items to support year-to-year equivalence of scores.)

Another advantage of scaled scores is that they lend themselves to interpretations of what is referred to as an interval level, while raw scores do not. Interval-level scales allow an interpretation of a scaled score difference of 5 points to be the same whether the scores are 1095 vs. 1100 or 1245 vs. 1250. Raw score differences, in this context, cannot be interpreted in this manner and are thus neither generalizable nor equitable.

When test scores are properly linked across years, a scaled score of 1300—or any other value for a particular grade and content area test, should have the same absolute meaning in the current year as it had in previous years. More importantly, an increase in the scaled score for a test from last year to the current year means that student performance improved;¹ it does not say anything about whether this year’s test is easier or harder than last year’s test. To make these interpretations requires no information about the length or the difficulty of the test in either year, although these variables are essential for the process of deriving the scaled scores.

There is considerable auxiliary information presented in this report that might aid the reader in further contextualizing PSSA scaled scores. The reader is specifically referred to the following information:

- Chapter Fourteen provides information on the development of the PSSA scaled score system, including transformation formulas, rounding rules, and general scale characteristics (e.g., minimum values).
- Chapter Seventeen provides total test score statistics. In particular, Table 17–2 lists the scaled score means and standard deviations for this year’s test results.

PERFORMANCE LEVELS

PSSA results are also reported using four Performance Levels: Below Basic, Basic, Proficient, and Advanced. The cut scores on the scaled score metric (i.e., the lowest possible scaled score to enter the Basic, Proficient, and Advanced levels) were presented earlier in this report. However, the information is repeated below (Table 16–2) for convenience.

¹ This example is not an endorsement of conducting a trend analysis with only two years of results. Further, small differences may not be statistically or practically significant.

Table 16–2. PSSA Scaled Score Cuts for Each Performance Level by Grade and Subject Area

Subject	Grade	Min	BB/B ¹	B/P ¹	P/A ¹	Max ²
Mathematics	3	600	923	1000	1110	1564
Mathematics	4	600	908	1000	1107	1518
Mathematics	5	600	901	1000	1113	1548
Mathematics	6	600	897	1000	1105	1515
Mathematics	7	600	904	1000	1109	1541
Mathematics	8	600	906	1000	1108	1662
ELA	3	600	905	1000	1143	1628
ELA	4	600	887	1000	1107	1798
ELA	5	600	893	1000	1139	1728
ELA	6	600	875	1000	1115	1721
ELA	7	600	845	1000	1130	1720
ELA	8	600	886	1000	1130	1677
Science	4	1050	1150	1275	1483	2208
Science	8	925	1150	1275	1464	2278

Notes. ¹ BB = Below Basic; B = Basic; P = Proficient; and A = Advanced.

² Scaled Score Maximum Values are unique for the current year's test.

Performance levels descriptors (PLDs) are another way to attach meaning to the scaled score metric. PLDs associate precise quantitative ranges of scaled scores with verbal, qualitative descriptions of student status. While much less precise, the qualitative description of the levels is one way for parents and teachers to interpret the student scores. They are also useful in assessing the status of the school. The Pennsylvania General Performance Level Descriptors, as developed by PDE and teacher panels, are given below. These are also included on student score reports.

- **Advanced:** The Advanced Level reflects superior academic performance, and work at this level demonstrates a thorough command of, and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates advanced academic preparation for engaging successfully in further studies in this content area.
- **Proficient:** The Proficient Level reflects satisfactory academic performance, and work at this level demonstrates an adequate command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates academic preparation for engaging successfully in further studies in this content area.
- **Basic:** The Basic Level reflects marginal academic performance, and work at this level demonstrates a partial command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates additional academic support may be needed for engaging successfully in further studies in this content area.
- **Below Basic:** The Below Basic Level reflects inadequate academic performance, and work at this level demonstrates a minimal command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates extensive additional academic support may be needed for engaging successfully in further studies in this content area.

DESCRIPTION OF STRAND (REPORTING CATEGORY) SCORES

The following types of scores are provided for PSSA strand scores:

- Strand (Reporting Category) Scores
- Strength Profile

STRAND (REPORTING CATEGORY) SCORES

A strand (reporting category) score describes performance of a student, school, or district on a particular strand (content standard defined in the test). For the PSSA, strand scores are raw scores, indicating the points a student or a school/district earned for that strand. Attributes of raw scores are described earlier in this chapter and should be interpreted with caution. This is particularly true with respect to year-to-year comparisons where item difficulties may vary. Strand scores cannot be compared across years because they are not statistically linked nor are they interval scores. Also, it is not advisable to compare strand raw scores even within the same form because some strands may contain items that are easier or more difficult than other strands (the strength profile, discussed below, mitigates this problem to some degree). Another concern is the low reliability of many of these scores, especially for strand scores based on a small number of possible points. Chapter Eighteen provides more information about strand-score reliability.

When compared to other results from the same year, strand scores can be somewhat helpful in identifying a group's strengths and weaknesses as measured by the test. For example, it can be informative to compare average strand scores of a school against the scores of another reference group (e.g., the state average). Hence, strand scores can suggest group strengths and weaknesses relative to another reference group. (Challenges pertaining to interpreting results for individual students are discussed below.)

STRENGTH PROFILE

The strength profile provides another indication of a student's performance within each of the strands. This profile can be used to identify areas in which a student needs to improve and areas in which a student has performed more successfully. Unlike strand scores that are reported as raw scores, strength profile scores categorize students into one of three levels: Low, Medium, and High. These categories take into account the difficulty of the items and are based on the same scaling techniques used to derive the PSSA scaled scores (See Chapter Fourteen for a description of how strength profiles are produced). Scaled scores, however, are not printed on score reports. High, medium, and low designations are provided as an indication of performance within a strand, but as standards have been set at the test level only, performance level descriptions for the overall test should not be used as validated descriptions of strand performance.

APPROPRIATE SCORE USES

INDIVIDUAL STUDENTS

Scaled scores on the PSSA indicate a student's achievement of the PSSA Assessment Anchors and Eligible Content. Scaled scores are primarily used to determine student performance level classifications (i.e., a criterion-referenced inference). Scaled scores that are based on Item Response Theory (IRT) models are typically assumed to be of the interval type; so comparisons may be made on differences in scaled scores. If this assumption holds, then it would be safe to infer for Grade 4 ELA that the ability difference between 1110 and 1120 represents the same ability difference that separates 1250 and 1260. Scaled scores can also be used to compare the performance of an individual student to the performance of a similar demographic or subgroup at a school or district. However, when comparing performance of an individual student, test score standard errors (discussed in Chapter Eighteen) should be considered because scaled scores are estimate of students' achievement which comes with estimation error.

GROUPS OF STUDENTS

Test results can be used to evaluate performance over time. Mean scaled scores can be compared across administrations within the same grade and subject area to indicate whether student performance is improving across years. Generally, such trend analyses benefit from using mean results from as many test administration years as possible. Different cohorts of students are used (i.e., the same student or students are not tracked across grade levels). All scores can be analyzed within the same subject and grade for any single administration to determine which demographic or program group had, for example, the highest average performance or the highest percentage of students at or above the Proficient standard.

Strand scores can help evaluate academic areas for relative strengths or weaknesses. These category scores provide information to identify areas where further diagnosis is warranted. Generalizations from test results may be made to the specific content domain represented by the academic standards measured in the PSSA. However, all instruction and program evaluations should include as much information from other sources as possible to provide a more complete picture of performance.

CAUTIONS FOR SCORE USES

EXTREME ERROR FOR EXTREME SCORES

Student scores toward the minimum or maximum ends of the score range will have very large standard errors of measurement and, therefore, such scores should be viewed very cautiously. The maximum scaled score only provides a very rough estimate of a student's ability. For instance, if the maximum score for the PSSA Grade 6 mathematics test were 1550² and a student achieved this score, it could not be determined whether the student could have achieved an even higher scaled score. If the test were 10 items longer, a different estimate might have been obtained. Similarly, if the items in a new test were more difficult than the items on a previous administration, the maximum scaled score would likely be higher on the new test because it would take a greater level of achievement to answer the items correctly. In this manner, extreme scaled scores may vary from one administration to the next even if the number of test items does not change. The fluctuation of extreme scaled scores complicates the comparisons of students with scaled scores at the extreme ends of the score distribution. To minimize confusion and potential misinterpretation, the minimum scaled scores possible on the PSSA tests have been fixed (see Table 16–2) so they do not change between administrations. However, the maximum scaled score values have not been fixed. Therefore, caution must be taken when comparing scores at the maximum end of the scale.

EACH TEST HAS A UNIQUE SCALE

Scaling was conducted for each grade and subject area test separately. Therefore, PSSA scaled scores should be interpreted only within each grade and content area. PSSA scaled scores are not status indicators in the same sense as percentile ranks (or scales that are essentially transformations of percentile ranks) and, therefore, cannot be used to profile relative strengths and weaknesses across subject areas. As an example, student scaled scores of 1250 in Grade 4 ELA and 1200 in Grade 4 mathematics do not necessarily imply that the student performed better in ELA than in mathematics. Neither do the PSSA scaled scores represent a developmental or vertical scale. This means that, although the content is articulated across grades to reflect the grade-to-grade articulations in the Pennsylvania Standards, no across-grade statistical comparisons or growth statements for a student are appropriate. For example, a 1200 in Grade 4 ELA and a 1200 in Grade 5 ELA does not mean a student had no achievement growth in ELA from Grade 4 to Grade 5.

STRENGTH PROFILE CAVEATS

The category labels of Low, Medium, and High are deliberately used instead of the PSSA performance level names—Below Basic, Basic, Proficient, and Advanced—to acknowledge that the PSSA cut scores were established on the basis of the total test score and standards were set on this total test score. Therefore, the categories should not be interpreted in the same way as PSSA performance levels because they likely do not carry the same meaning.

While the strength profile might facilitate comparisons of a student's strengths and weaknesses across strands in

² It is not, at least for this year

some cases, several factors merit caution. As noted earlier, strand scores are often not fully reliable. The scaling underlying the strength profile does not mitigate this problem.

Additionally, the categories reflect more absolute comparisons. Relative comparisons are more difficult to make. As an example, if one scored High in both strand A and B, we know the student did very well in both strands compared to overall performance in the state (i.e., absolute status). However, we do not know whether the student's performance in strand A was better or worse relative to the performance in strand B (relative status).

Finally, some seemingly unusual results might occur that may be difficult for users to understand. As one example, it may be possible for a student to earn Medium in all strands but have an Advanced performance level. This can happen because the strand scores are correlated, meaning the distributional properties of the total score depends not only on the variances of the strand scores, but also on the covariances among the strand scores. (An analogy would be when a school track team places first overall in a competition although they did not win a single event.)

USING PSSA RESULTS FOR OTHER PURPOSES

Scaled scores and performance level classifications are used primarily to measure well students acquire the knowledge and skills described in the *Pennsylvania Assessment Anchor Content Standards (Assessment Anchors)* as defined by the Eligible Content for mathematics, ELA, and Science. They are also used to provide information on school and district accountability. These same results, plus strand scores and strength profiles are also appropriate for use in improving curricular and instructional practices. Evidence supporting the validity of such interpretations is framed in Chapter 19 and provided throughout this technical report.

Other uses or inferences based on PSSA results may or may not be valid as the validity evidence and arguments provided in Chapter Nineteen may not necessarily support other score uses and interpretations. According to the *AERA/APA/NCME Standards (2014)* (i.e., Standard 1.4), if a test is used in a way that has not been validated, it is incumbent on the user to justify the new use, collecting new evidence if necessary. Finally, a universal caveat for any test's result is that it not be used for placement and educational planning alone. Instead, other information about the student (e.g., other test performance data) should be considered.

REPORTS

The following score reports are provided to students, parents, schools, and districts for the PSSA tests in mathematics, ELA, and science:

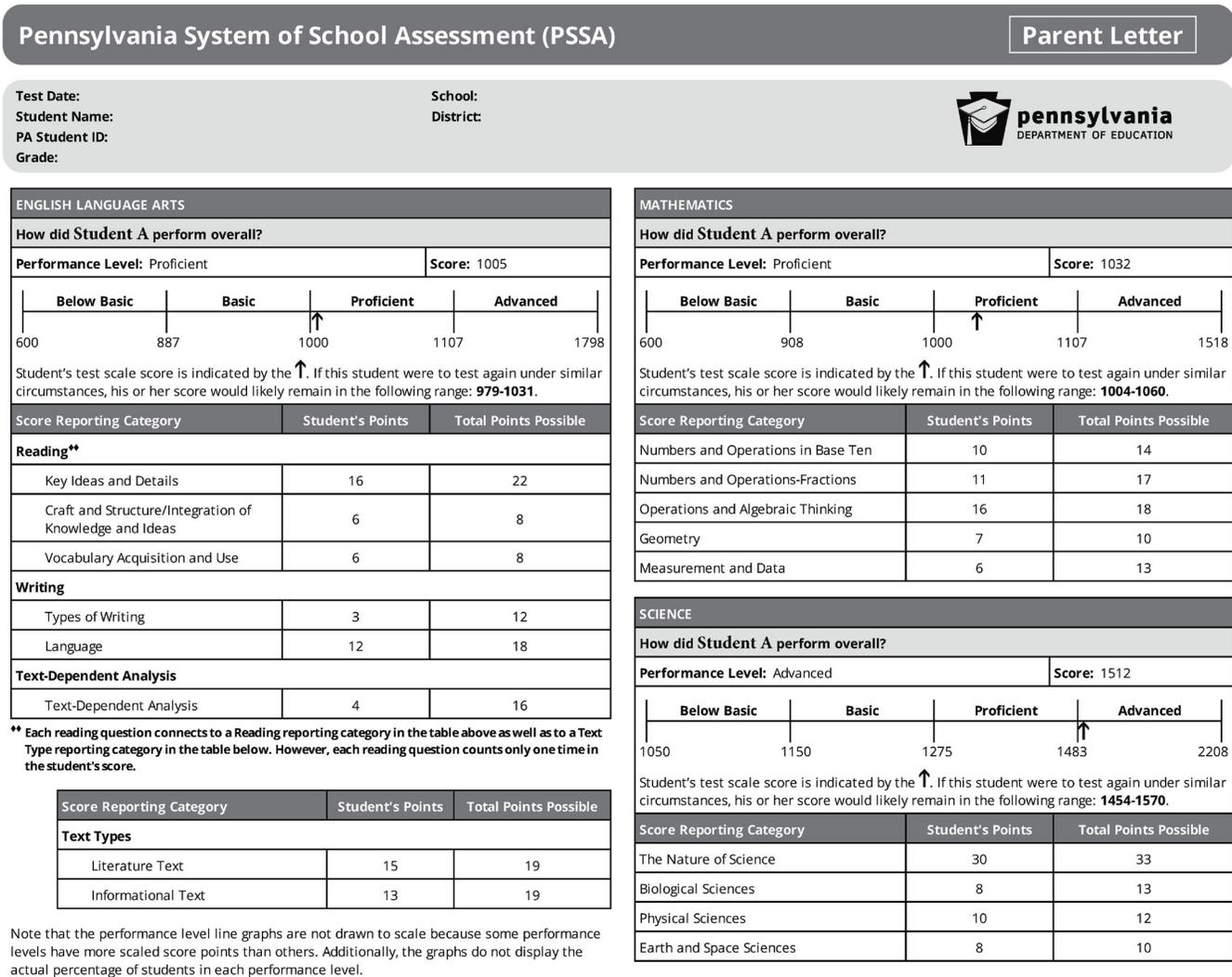
- Individual Student Report
- School Summary Report
- District Summary Report
- Interpretive Guide

PARENT LETTER

Parent letters were delivered to Pennsylvania districts on July 5, 2016. This score report

provided parents and students with their first glimpse of performance on the spring 2016 PSSA tests. This report provides results at the student level. A sample of the report is provided in Figure 16–1.

Figure 16–1. Parent Letter



INDIVIDUAL STUDENT REPORT

An individual student report is provided for all students who took the PSSA. This report was delivered to Pennsylvania school districts in September 2016. Districts are responsible for sending the reports home to individual students. This report is a four-page color document that provides the types of scores explained earlier in this chapter. Appendix R contains detailed information about the development of the 2016 Individual Student Reports. Screen shots of the four pages from a sample individual student report are provided in Figures 16–2.

Figure 16–2A. Page 1 of the Individual Student Report

PENNSYLVANIA

System of School Assessment (PSSA)

Student Report

Student Name:

PA Student ID:

School:

District:

Test Date:

Grade:

What Is the Pennsylvania System of School Assessment (PSSA)?

- The PSSA is an assessment system used to measure a student's progression toward mastery of the
 - Pennsylvania Core Standards in Mathematics and English Language Arts
 - Pennsylvania Academic Content Standards in Science
- For additional information, visit the Pennsylvania Department of Education's website at www.education.state.pa.us.

What Is Included in This Report?

- This report provides information about the student's recent performances on the
 - Mathematics, English Language Arts, and Science PSSA assessments
- It is not intended to summarize all aspects of student learning.

For Additional Information

- For more information about a student's performance, consult the school or the classroom teacher.
- A Report Interpretation Guide is available at www.education.state.pa.us. Type "student report guide" in the search field or consult the local school district or school.

Student's Results				
Performance Level				
	Goal Range*			
	Below Basic	Basic	Proficient	Advanced
English Language Arts				✓
Mathematics			✓	
Science			✓	

* **Goal Range:** The goal range is for all students in the Commonwealth of Pennsylvania to score proficient or above.

^ **See inside for details**

Performance Levels

The Below Basic Level reflects inadequate academic performance, and work at this level demonstrates a minimal command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates extensive additional academic support may be needed for engaging successfully in further studies in this content area.

The Basic Level reflects marginal academic performance, and work at this level demonstrates a partial command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates additional academic support may be needed for engaging successfully in further studies in this content area.

The Proficient Level reflects satisfactory academic performance, and work at this level demonstrates an adequate command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates academic preparation for engaging successfully in further studies in this content area.

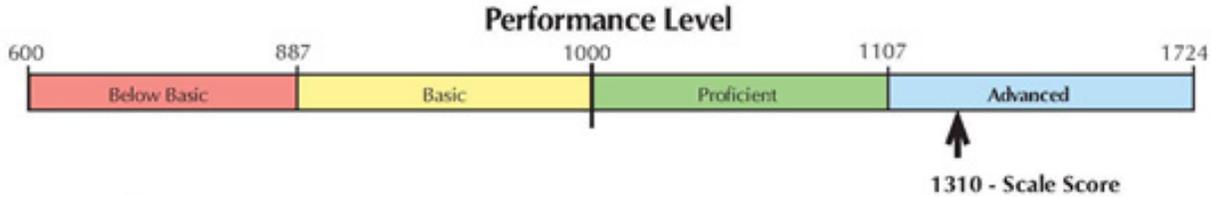
The Advanced Level reflects superior academic performance, and work at this level demonstrates a thorough command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates advanced academic preparation for engaging successfully in further studies in this content area.



www.education.pa.gov Page 1 |

Figure 16–2B. Page 2 of the Individual Student Report

English Language Arts



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1266–1354**.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile*
Reading**			
Key Ideas and Details	16	17	High
Craft and Structure/Integration of Knowledge and Ideas	9	12	Medium
Vocabulary Acquisition and Use	7	9	Medium
Writing			
Types of Writing	8	12	Medium
Language	14	18	Medium
Text-Dependent Analysis			
Text-Dependent Analysis	16	16	High

**Each reading question connects to a Reading reporting category in the table above as well as to a Text Type reporting category in the table below. However, each reading question counts only one time in the student's score.

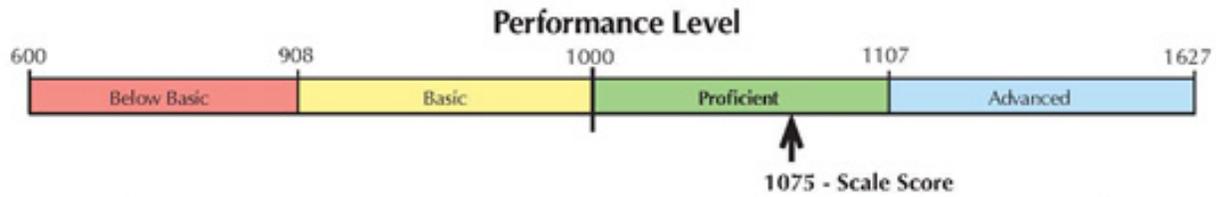
Score Reporting Category	Student's Points	Total Points Possible	Strength Profile*
Text Types			
Literature Text	14	19	Medium
Informational Text	18	19	High

To learn more about the Score Reporting Categories, see page 4.

* **The Strength Profile (Low, Medium, High):** The strength profile provides an indication of this student's performance within each of the reporting categories. The Strength Profile takes into account the difficulty of the assessment questions and can be used to help identify the student's strengths and/or areas of need.

Figure 16–2C. Page 3 of the Individual Student Report

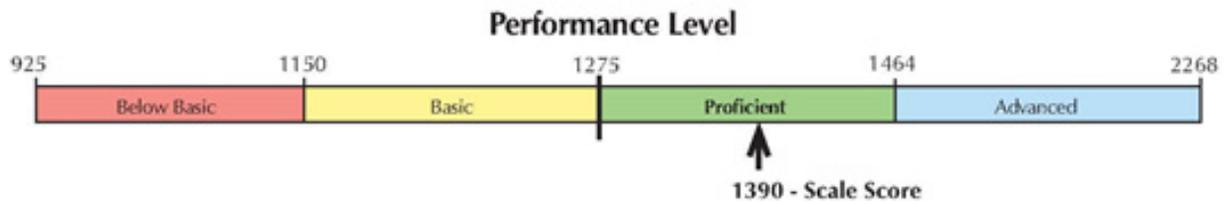
Mathematics



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1048–1102**.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile*
Numbers and Operations in Base Ten	5	14	Low
Numbers and Operations—Fractions	10	15	Medium
Operations and Algebraic Thinking	16	19	High
Geometry	10	11	High
Measurement and Data	9	13	Medium

Science



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1341–1439**.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile*
The Nature of Science	25	34	Medium
Biological Sciences	9	12	Medium
Physical Sciences	4	10	Low
Earth and Space Sciences	8	12	Medium

Figure 16–2D. Page 4 of the Individual Student Report

Score Reporting Category Descriptions

English Language Arts

- **Key Ideas and Details**
Students refer to key ideas and details in passages to summarize important ideas/events, determine a theme or main idea, and draw on evidence from text to support overall inferences and understanding.
- **Craft and Structure/Integration of Knowledge and Ideas**
Students demonstrate understanding of passages by comparing points of view and first-hand/second-hand accounts of similar events; making connections within and between texts; referring to text features to support information; and analyzing use of evidence to support overall integration of ideas/key aspects of text.
- **Vocabulary Acquisition and Use**
Students demonstrate understanding of vocabulary and figurative language in literature and informational texts.

- **Types of Writing**
Students write opinion, informative, or narrative essays demonstrating effective techniques as appropriate for type and purpose.
- **Language**
Students demonstrate command of the conventions of standard English grammar and usage, capitalization, punctuation, and spelling and use knowledge of language and its conventions for effect.

- **Text-Dependent Analysis**
Students write a response to literature or informational passages, drawing on the evidence presented in the text to support analysis, reflection, and/or research.

- **Literature Text**
Students read and respond to literature passages, focusing on narrative, poetic, and/or dramatic techniques and drawing on evidence in the text to support comprehension and understanding.
- **Informational Text**
Students read and respond to informational passages, focusing on the information and evidence presented on topics, ideas, or procedures and drawing on evidence in the text to support comprehension and interpretation.

Mathematics

- **Numbers and Operations in Base Ten**
Students develop number skills by understanding place value, relative sizes of numbers in each place, and properties of operations. They practice estimating, doing mental calculations, and developing fluency in multiplying whole numbers.
- **Numbers and Operations—Fractions**
Students learn the meaning of fractions by exploring relationships between fractions and division, creating fractions by counting and partitioning, and using unit fractions to represent whole numbers.
- **Operations and Algebraic Thinking**
Students solve problems using all four arithmetic operations with whole numbers. They use drawings, equations, and symbols to represent quantities and analyze patterns. They also learn how factors and multiples relate to multiplication and division.
- **Geometry**
Students compare and classify two-dimensional shapes to better understand two-dimensional objects. They explore problems involving symmetry, visual and spatial reasoning, and how to select tools to answer questions about size and relationships.
- **Measurement and Data**
Students use arithmetic operations to solve problems involving measurements and conversions with customary and metric units. They represent and interpret data using line plots, and they use fractions to interpret and calculate intervals.

Science

- **The Nature of Science**
Students use reasoning skills to develop possible solutions for everyday problems. They plan and conduct fair and valid scientific investigations. They identify patterns and use models to help explain natural and human-made systems.
- **Biological Sciences**
Students evaluate structures and functions of organisms, describe ecological behaviors within living systems, and recognize the interdependencies between humans and the natural world.
- **Physical Sciences**
Students demonstrate understanding of physical properties of matter and basic energy types and sources. They describe how energy can change form and apply the scientific principles of force and motion.
- **Earth and Space Sciences**
Students identify and describe Earth features and processes that change the environment. They recognize processes and changes associated with weather, climate, the atmosphere, and the Earth-Moon-Sun system.

SCHOOL AND DISTRICT SUMMARY REPORTS

Summary reports are provided at the school and district level. These reports contain summary information about the percentage of students in each of the four performance levels. Raw scores are also provided by assessment anchor to allow schools or districts to identify strengths or weaknesses at the content strand level.

INTERPRETATIVE GUIDE

An interpretative guide is provided to help parents and other PSSA stakeholders better understand test result information presented in the individual student report. The interpretative guide can be found on the PDE website.

CHAPTER SEVENTEEN: OPERATIONAL TEST STATISTICS

This chapter presents various summary statistics for the PSSA total test scores based on the final data file described in Chapter Nine. Related information covered elsewhere in this report includes the item-level statistics presented in Chapter Eleven (classical item statistics) and Chapter Twelve (Rasch item statistics). These chapters provide additional consideration as item difficulty distributions can affect total score distributions.

PERFORMANCE LEVEL STATISTICS

Table 17–1 presents performance level percentages by grade and content. Appendix Q provides performance level percentages for prior years.

Table 17–1. Performance Level Percentages for 2016 PSSA

Subject	Grade	Below Basic	Basic	Proficient	Advanced
Mathematics	3	24.6	21.0	28.1	26.3
ELA	3	13.6	25.5	45.7	15.2
Mathematics	4	27.6	25.9	26.7	19.8
ELA	4	12.2	29.1	34.0	24.6
Science	4	11.7	12.2	36.7	39.5
Mathematics	5	28.0	27.6	25.9	18.5
ELA	5	14.1	24.5	45.3	16.2
Mathematics	6	30.1	28.8	24.1	16.9
ELA	6	8.6	29.8	38.9	22.7
Mathematics	7	34.9	28.1	23.7	13.3
ELA	7	5.0	33.5	43.3	18.1
Mathematics	8	40.2	28.6	20.7	10.5
ELA	8	11.3	30.4	40.9	17.5
Science	8	25.6	16.8	30.3	27.3

SCALED SCORES

SUMMARY STATISTICS

Table 17–2 provides the scaled score means and standard deviations. See the section Every Test has a Unique Scale in Chapter Sixteen for caveats regarding interpretation of scale scores.

Table 17–2. Means and Standard Deviations for the 2016 PSSA Scaled Scores

Subject	Grade	Mean	SD
Mathematics	3	1018.06	131.53
Mathematics	4	994.08	127.67
Mathematics	5	993.26	124.47
Mathematics	6	977.76	129.93
Mathematics	7	968.11	120.36
Mathematics	8	949.08	123.04
ELA	3	1031.49	111.52
ELA	4	1025.31	116.76
ELA	5	1028.93	116.55
ELA	6	1031.13	113.61
ELA	7	1028.73	110.42
ELA	8	1026.00	116.22
Science	4	1424.59	206.34
Science	8	1310.37	219.22

SCALED-SCORE DISTRIBUTIONS

Scaled scores are based on a linear transformation of the Rasch ability estimates. Distributions of the Rasch abilities are provided at the end of Chapter Twelve.

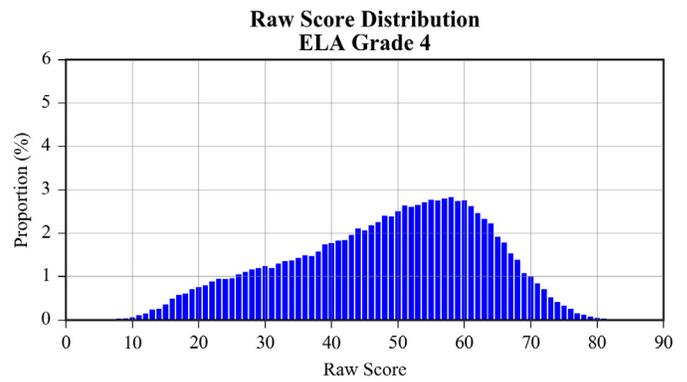
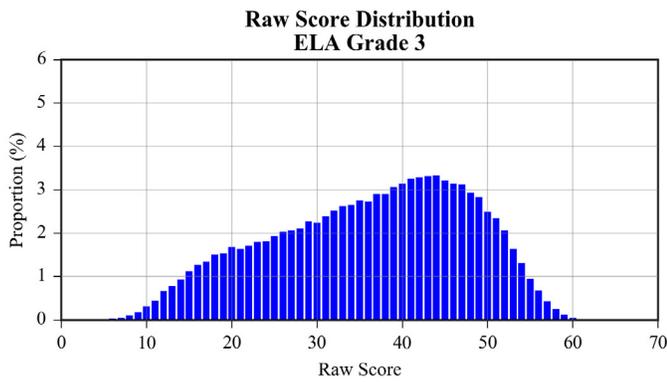
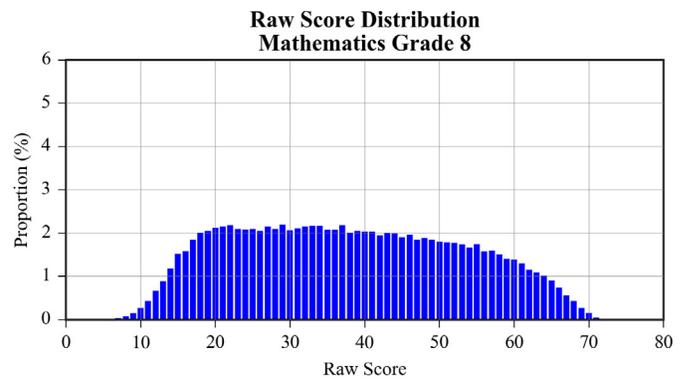
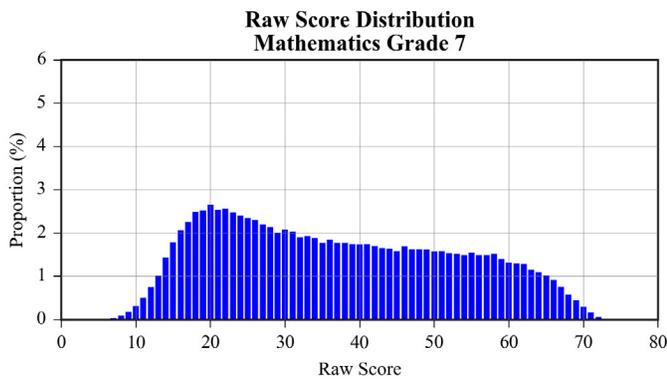
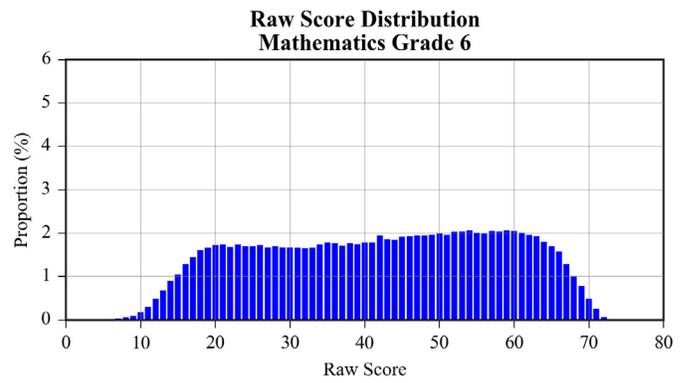
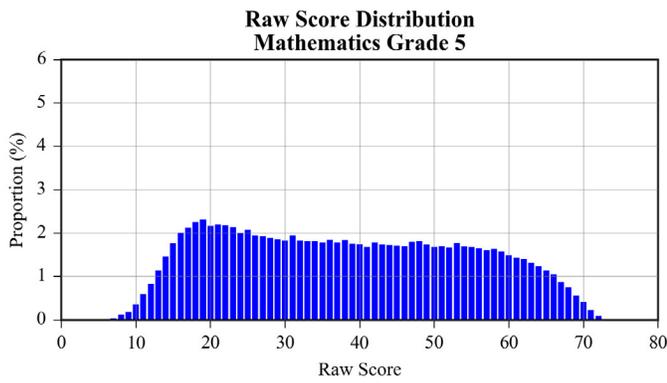
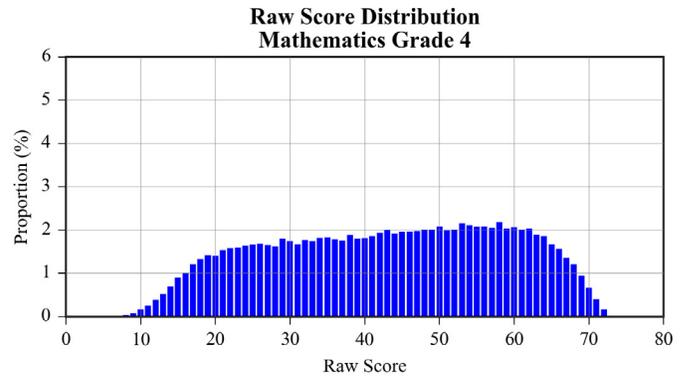
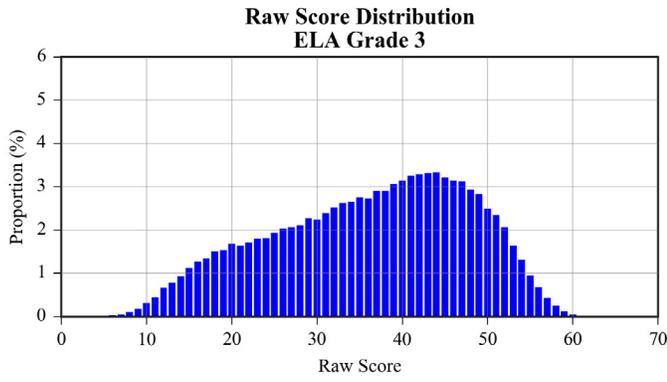
RAW SCORES**SUMMARY STATISTICS**

Appendix P provides summary statistics for the operational raw scores. The statistics reported include the number of points possible (Pts.), number of items (Len.), number of students tested (N), mean number of score points received (Mean), standard deviation of test scores (SD), reliability (r), traditional standard error of measurement (SEM), and item types (Items) used to determine each score. These statistics are based on the total test using both MC and OE items for the operational sections of each form. For ELA, OE items are further disaggregated by short-answer (grade 3 only), EBSR, text dependent analysis (TDA, grade 4 and higher) and writing prompt (WP). (For information disaggregated by item type, Chapter Eleven provides breakout statistics for MC and OE items.)

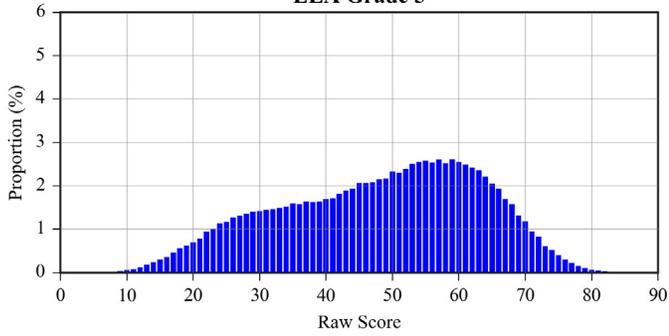
SCORE DISTRIBUTIONS

Raw score relative-frequency (rf) distributions are provided in Figure 17–1. Most distributions in ELA and science are negatively skewed and unimodal. Mathematics distributions are noticeably flatter than ELA and science, indicating mathematics was generally more challenging.

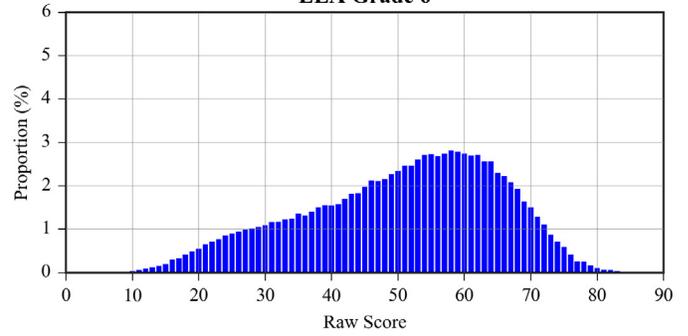
Figure 17–1. 2016 PSSA Raw Score Distributions



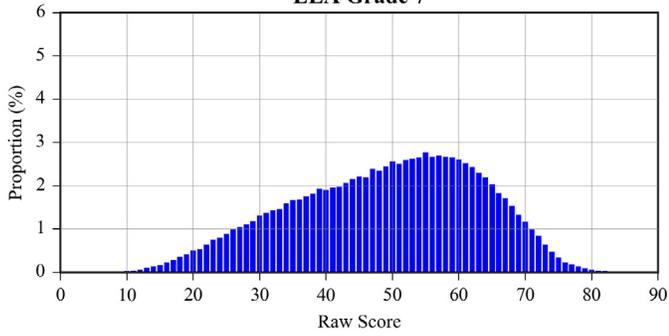
**Raw Score Distribution
ELA Grade 5**



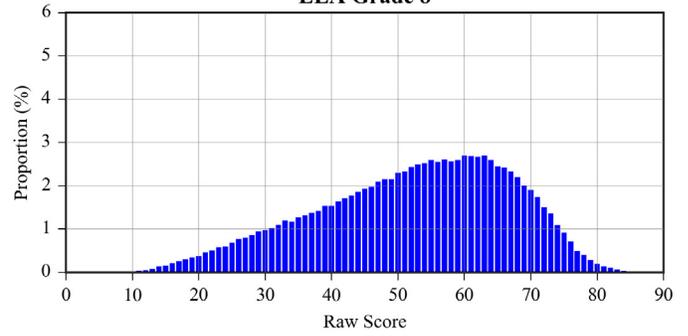
**Raw Score Distribution
ELA Grade 6**



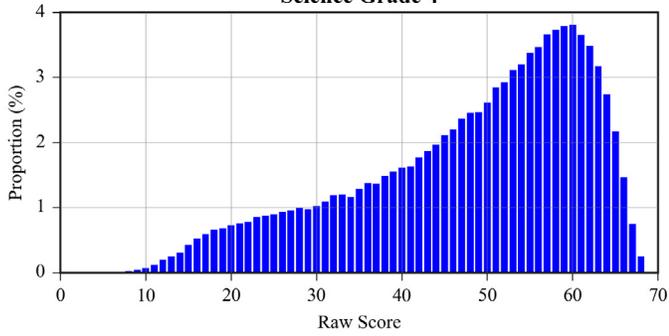
**Raw Score Distribution
ELA Grade 7**



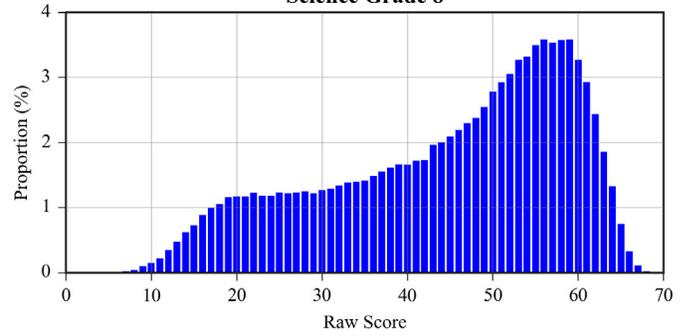
**Raw Score Distribution
ELA Grade 8**



**Raw Score Distribution
Science Grade 4**



**Raw Score Distribution
Science Grade 8**



CHAPTER EIGHTEEN: RELIABILITY

This chapter addresses the reliability of PSSA test scores. According to the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014), the general notion of reliability/precision refers to:

the consistency of scores across replications of a testing procedure, regardless of how this consistency is estimated or reported (p.33).

This chapter will use the term reliability.

Frisbie (2005) highlighted several elements of reliability. First, reliability is a property of test scores, not a test itself. Many may appreciate this distinction, but in casual usage, individuals frequently make reference to a reliable test. While reliability concerns test scores (and not the test specifically), it is important to appreciate the fact that test scores can be affected by characteristics of the instrument. For example, all other things being equal, tests with more items/points tend to be more reliable than tests with fewer items/points. Second, reliability coefficients are group specific. Reliabilities tend to be higher in populations that are more heterogeneous and lower in populations that are more homogeneous. Consequently, both test length and population heterogeneity should be considered when evaluating reliability.

There is a reliability consideration that may be less evident from the *Standard's* definition, yet still important for test users to understand. While freedom from measurement error is very important, reliability is specifically concerned with random sources of error. Indeed, the degree of inconsistency due to random error sources is what determines reliability: less consistency is associated with lower reliability and more consistency is associated with higher reliability. Of course, systematic error sources also exist. These can artificially increase reliability and decrease validity. (Validity is further discussed in Chapter Nineteen.)

Another noteworthy issue is that multiple sources of error exist (e.g., the day of testing, the items used, the raters who score the items). However, most widely used reliability indices only reflect a single type of error. Consequently, it is important for test users to understand what specific type of error is being considered in a reliability study, and equally, if not more important, what types are not.

Understanding the distinction between relative error and absolute error is also important as many reliability indices only reflect relative error. Relative error is of interest whenever the relative ordering of individuals respective to their test performance is of interest. Understanding examinee rank-order stability is important; however, such stability might be well achieved even when the specific score values are considerably different. When specific score values are considered important (e.g., if cuts cores are used), then absolute error is too. Generally, there is more error variance when considering the absolute scores of examinees, which in turn suggests lower reliability.

As suggested, reliability is a complex, nonunitary notion that cannot be adequately represented by a single number. There are several reliability indices available, and these may not provide the same results (Frisbie, 2005). The remainder of this chapter covers the following:

- Reliability coefficients and their interpretation
- Unconditional and conditional standard errors of measurement (SEMs and CSEMs)
- Decision consistency
- Rater agreement

RELIABILITY INDICES

As shown below, the reliability coefficient expresses the consistency of test scores as the ratio of true score variance to total score variance. The total variance contains two components: 1) the variance in true scores and 2) the variance due to the imperfections in the measurement process. Put differently, total variance equals true score variance plus error variance.¹

$$\rho_x^2 = \frac{\sigma_T^2}{\sigma_X^2} = \frac{\sigma_T^2}{\sigma_T^2 + \sigma_E^2}$$

Reliability coefficients indicate the degree to which differences in test scores reflect true differences in the attribute being tested rather than random fluctuations. Total test score variance (i.e., individual differences) is partly due to real differences in the attribute (true variance) and partly due to random error in the measurement process (error variance).

Reliability coefficients range from 0.0 to 1.0. If all test score variances were true, the index would equal 1.0. The index will be 0.0 if none of the test score variances were true. Such scores would be pure random noise (i.e., all measurement error). If the index achieved a value of 1.0, scores would be perfectly consistent (i.e., contain no measurement error). Although values of 1.0 are never achieved in practice, it is clear that larger coefficients are more desirable because they indicate that test scores are less influenced by random error. (How big is big enough and how small is too small are issues considered in a later section.)

As noted in the introduction, there are several different indices that can be used to estimate this ratio. One approach is referred to as internal consistency, which is derived from analyzing the performance consistency of individuals over the items within a test. As discussed below, these internal consistency indices do not take into account other sources of error, for example, variations due to random errors associated with the linking process, day-to-day variations (student health, testing environment, etc.), and rater inconsistency.

COEFFICIENT ALPHA

Although a number of reliability indices exist, perhaps the one most frequently reported for achievement tests is Coefficient Alpha. Consequently, this index is the one reported for the PSSA. Alpha indicates the internal consistency over the responses to a set of items measuring an underlying trait, in this case, academic achievement in subject areas such as mathematics, ELA, and science.

Alpha is an internal consistency index. It can be conceptualized as the extent to which an exchangeable set of items from the same domain would result in a similar rank ordering of students. Note that relative error is reflected in this index. Variation in student performance from one sample of items to the next should be of particular concern for any achievement test user. Consider two hypothetical vocabulary tests intended for the same group of students. Each test contains different sets of unique words that are believed to be randomly equivalent, perhaps like the ones shown below.

Table 18–1. Two Hypothetical Vocabulary Tests

Test One	Test Two
Abase	Abate
Boon	Bilk
Capricious	Circuitous
Deface	Debase
....
Zealous	Zenith

¹ A covariance term is not required as true scores and error are assumed to be uncorrelated in classical test theory.

If a representative group of students could take both of these tests, and the correlation between the scores could be obtained, then that result would represent the parallel forms reliability of the test scores. However, such data-collection designs are impractical in large-scale settings and experimental confounds like fatigue and practice effects are likely to affect the results. Internal-consistency reliability indices arose in part to provide reliability measures using the data from just a single test administration. So, if students only took Test One and the Coefficient Alpha index for those test scores was high, then this would suggest that Test Two would provide a very similar rank ordering of the students if they had taken it instead. If Coefficient Alpha were low, dissimilar rank orderings would likely be observed—again, relative-error variance is reflected in Alpha. (It should also be noted that Coefficient Alpha is algebraically identical to a *Person × Item* design under Generalizability Theory when relative error variance is assumed.)

FORMULA

Consider the data matrix in Table 18-2 representing the scores of persons (*p*) in rows, and items (*i*) in columns. Each cell is the score of person “*p*” on item *i*, and *Y* represents each item raw score for each person.

Table 18–2. Person × Item Score (X_{pi}) Infinite (Population-Universe) Matrix

Person	Item 1	Item 2	Item <i>i</i>
1	Y_{11}	Y_{12}	... Y_{1i}
2...	Y_{21}	Y_{22}	... Y_{2i}
<i>p</i>	Y_{p1}	Y_{p2}	... Y_{pi}

The general computational formula for Alpha is as follows:

$$\alpha = \frac{N}{N-1} \left(1 - \frac{\sum_{i=1}^N \sigma_{Y_i}^2}{\sigma_X^2} \right),$$

where *N* is the number of parts (items or testlets), *Y*, as noted, is the item score, σ_X^2 is the total test score, is the variance of the observed total test scores, and $\sigma_{Y_i}^2$ is the variance of part *i*.

FURTHER INTERPRETATIONS

RULES OF THUMB

What reliability value is considered high enough? What values are considered too low? Although frequently asked for, any rules of thumb for interpreting the magnitude of reliability indices are mostly arbitrary. Another approach is to research the reliabilities from similar testing instruments to see what values are commonly observed. For the PSSA, comparisons to tests of similar lengths that were administered to similar student populations from other large-scale assessment programs would be relevant. For many other state assessment programs, reliabilities in the low 0.90s are usually the highest ever observed and reliabilities in the high 0.80s are very common.

The lower a given reliability coefficient, the greater the potential for over-interpretation of the associated results. As suggested above, there is no firm guideline regarding how low is too low. However, as an informative point of reference, a reliability coefficient of 0.50 would suggest that there is as much error variance as true-score variance in the scores.

IS ALPHA A LOWER LIMIT TO RELIABILITY?

According to Brennan (1998), “the conventional wisdom that Coefficient Alpha is a lower limit to reliability is based largely on a misunderstanding.” In reflecting on the 50th anniversary of his seminal 1951 article, Cronbach—in Cronbach and Shavelson (2004)—expressed similar misgivings about this conventional wisdom:

one could argue that alpha was almost an unbiased estimate of the desired reliability....the almost in the preceding sentence refers to a small mathematical detail that causes the alpha coefficient to run a trifle lower than the desired value. This detail is of no consequence and does not support the statement made frequently

in textbooks or in articles that alpha is a lower value to the reliability coefficient. That statement is justified by reasoning that starts with the definition of the desired coefficient as the expected consistency among measurements that had a higher degree of parallelism than the random parallel concept implied.

The assumptions for three common parallelism models are presented in Table 18–3. Alpha’s assumptions come from the Essentially-Tau Equivalent model, which does not require equal means or equal variances across test parts. Based on this, Brennan (1998) asserts that the lower-limit issue, as conceptualized by many, provides an answer to a question that is of minimal importance. Reframed differently, the goal of selecting a reliability coefficient is not to find the one that provides the highest coefficient, but the one that most accurately reflects the test data under study.

It is important to note that there are factors encountered in practice that may legitimately make Coefficient Alpha an underestimate of reliability. However, there are also factors that might make Coefficient Alpha an overestimate of reliability. Both possibilities are discussed further below and generally arise when the Essentially-Tau Equivalent assumptions are strained.

Table 18–3. Summary of Expectations/Observable Relationships for Different Parallelism Models

Relationship	Classically Parallel	Essentially-Tau Equivalent	Congeneric
Content Similarity	Yes	Yes	Yes
Equal Means across Parts	Yes	No	No
Equal Variances across Parts	Yes	No	No
Equal Covariances across Parts	Yes	Yes	No
Equal Covariances with Other Variables	Yes	Yes	No

* Other models exist, but are not considered here due to their limited application in practice.

BIASES THAT MIGHT MAKE ALPHA AN UNDERESTIMATE OF RELIABILITY

There are factors that might negatively bias Coefficient Alpha, making the apparent reliability lower than it may actually be. Two situations frequently encountered in practice that might cause this include tests that are composed of mixed item types (e.g., multiple-choice (MC) and open-ended (OE) items) and tests that include a planned stratification of the test items according to topics or subdomains.

Although both situations strictly violate the assumptions on which Coefficient Alpha is derived (i.e., the tests are not based on equal part lengths in the former case and are not randomly parallel in the latter case), neither necessarily guarantees that the reliability will be markedly lower. In the latter case, reliability will be underestimated only when strand items are homogeneous enough for the average covariance within strata to exceed the average covariance between strata. Although both are potential influences for the PSSAs, most of the total test score reliabilities reported in Appendix P are all close to or above 0.90, indicating highly consistent test scores for these instruments.

BIASES THAT MIGHT MAKE ALPHA AN OVERESTIMATE OF RELIABILITY

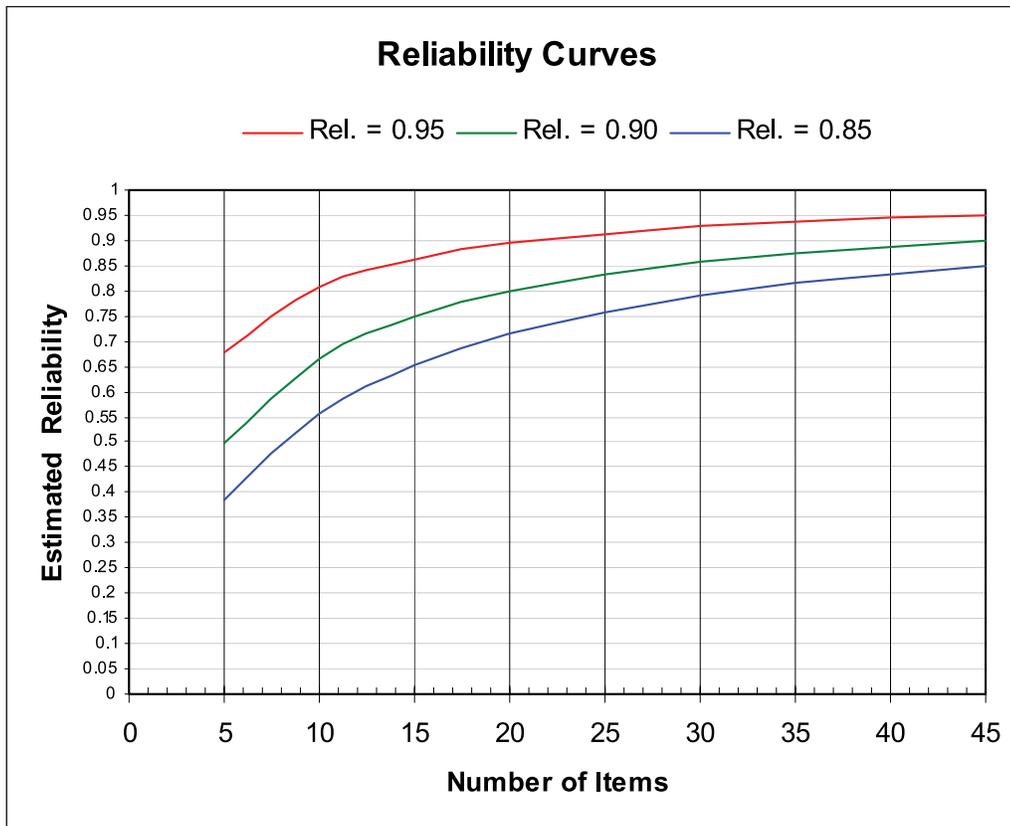
As emphasized in earlier sections, Coefficient Alpha only takes into account measurement error that arises from the selection of items used on a particular test form. There are other sources of random inaccuracy. One is due to the occasion of testing. Other various random conditions that might affect students on any particular testing occasions include illness, fatigue, and anxiety. Also, when a test includes OE items, as the PSSA does, another source that can cause random fluctuation is the OE item scorers. In a sense, Alpha may be positively biased because it does not take into account these other important sources of random error. Any internal consistency reliability index could understate the overall problem of measurement error because it ignores such sources or random error.

Another positive bias can occur when items are associated (clustered) with a common stimulus. Item bundles and testlets are other frequently used terms for this situation. One concrete example is when multiple reading comprehension items are associated with a common passage selection. Again, such a situation does not guarantee that the reliability estimate will be markedly affected, but the potential exists.

STRAND SCORES

As noted in the introduction, reliabilities tend to go up in value with an increase in test length and go down in value with a decrease in test length. Figure 18–1 illustrates this relationship for a hypothetical 45-point test with three total score reliabilities: 0.95, 0.90, and 0.85. As an example, the curve for reliability equal to 0.90 suggests that a 10-item strand would be expected to have a score reliability of just over 0.65. The use of the Spearman-Brown prophecy formula assumes all items are exchangeable, which in practice they may not be. While such a chart may not perfectly model actual strand correlations, the intent is only to illustrate the substantial impact that limited numbers of strand items can have on strand-score reliability. One should not be surprised that strand scores with more points tend to show higher reliability coefficients and those with fewer points tend to show lower reliability coefficients. Further, what is most important for PSSA users to note is that some strand score reliabilities may be too low to warrant interpretation at the individual student level.

Figure 18–1. Example of the Relationship between Test Length and Reliability



Note. Tabled values derived using the Spearman-Brown formula.

INDIVIDUAL-LEVEL VERSUS GROUP-LEVEL SCORES

The results presented in this chapter pertain to the reliability of individual scores. Group results (e.g., at state and district levels) are also provided on PSSA score reports, but the reliability of those scores is not specifically calculated here. However, as a general rule, the reliabilities of group mean scores are almost always higher (sometimes substantially) than the corresponding reliabilities for individual scores. This is especially important to remember for strand scores because those scores can be quite reliable at the group level, even though their individual reliabilities may be too low. Because the reliability of group mean scores (e.g., school or district means) tends to be higher than that of individual scores, the interpretation of strand scores at these aggregate levels is likely very reasonable in most instances. Even though the reliability for means scores based on only a few items might be adequate, the validity of those same scores might be suspect because use of only a few items may not adequately cover the construct of interest. Validity is further discussed in Chapter Nineteen.

RELIABILITY OF WRITING SCORES

An extension of Coefficient Alpha that was derived to specifically fit stratified parallel tests (sometimes called stratified alpha; Cronbach, Schonemann, & McKie, 1965) was used to compute the PSSA ELA score reliabilities. This approach is often used when it is believed that Alpha may be yielding a lower coefficient than it should for the reasons noted above. Although originally developed for content-stratified tests, Qualls (1995) demonstrated its utility for mixed-format tests as well when the stratification is based on item type. It may be computed as

$$\rho_{xx'}^{strata} = 1 - \frac{\sum \sigma^2 x_h (1 - \rho_{x_h x_{h'}})}{\sigma^2 x}$$

where h indexes the individual strata.

The reliability of ELA assessments (and many other performance-based tests) with mixed-format tends to be lower than reliabilities for other tests. Part of the reason for this is that there tends to be large student-by-task interactions on such assessments. In the case of ELA, individual student performance may fluctuate significantly across writing prompt (WP), text-dependent analysis (TDA) and evidence-based selected response (EBSR) item types on the same test. In principle, adding more prompts and items can improve reliability to a more acceptable level. However, this is challenging in practice because of costs, testing time, and student fatigue. In sum, the large student-by-task interaction combined with the limited number of tasks often results in a relatively low reliability for ELA assessments.

STANDARD ERROR OF MEASUREMENT

The reliability coefficient is a unit-free indicator that reflects the degree to which scores are free of measurement error. It always ranges between 0.0 and 1.0 regardless of the test's scale. Reliability coefficients best reflect the extent to which measurement inconsistencies may be present or absent in a group. However, they are not that useful for helping users interpret test scores. The standard error of measurement (SEM) is another indicator of degree of consistency for the scores obtained by individual examinees. A relatively large SEM indicates relatively low reliability. The conditional SEMs (CSEM) discussed further below is SEM at that score level.

TRADITIONAL STANDARD ERROR OF MEASUREMENT

A precise, theoretical interpretation of the SEM is somewhat unwieldy. A beginning point for understanding the concept is as follows. If everyone being tested had the same true score,² there would still be some variation in observed scores due to imperfections in the measurement process, such as random differences in attention during instruction or concentration during testing and the sampling of test items. The standard error is defined as the standard deviation³ of the distribution of observed scores for students with identical true scores. Because the SEM is an index of the random variability in test scores in actual score units, it represents very important information for test score users.

The SEM formula is provided below.

$$SEM = SD\sqrt{1 - \text{reliability}}$$

This formula indicates the value of the SEM depends on both the reliability coefficient and the standard deviation of test scores. If the reliability were equal to 0.00 (the lowest possible value) the SEM would be equal to the standard deviation of the test scores. If test reliability were equal to 1.00 (the highest possible value) the SEM would be 0.0. In other words, a perfectly reliable test has no measurement error (Harvill, 1991). Additionally, the value of the SEM takes the group variation (i.e., score standard deviation) into account. Consider that an SEM of 3 on a 10point test would be very different than an SEM of 3 on a 100-point test.

² True score is the score the person would receive if the measurement process were perfect.

³ The standard deviation of a distribution is a measure of the dispersion of the observations. For the normal distribution, about 16 percent of the observations are more than one standard deviation above the mean.

TRADITIONAL STANDARD ERROR OF MEASUREMENT CONFIDENCE INTERVALS

The SEM is an index of the random variability in test scores in actual score units, which is why it has such great utility for test score users. SEMs allow statements regarding the precision of individual test scores. SEMs help place ‘reasonable limits’ (Gulliksen, 1950) around observed scores through construction of an approximate score band. Often referred to as confidence intervals, these bands are constructed by taking the observed scores, X , and adding and subtracting a multiplicative factor of the SEM. As an example, students with a given true score will have observed scores that fall between ± 1 SEM about two-thirds of the time.⁴ For ± 2 SEM confidence intervals, this increases to about 95 percent.

FURTHER INTERPRETATIONS

ONE STANDARD ERROR OF MEASUREMENT FOR ALL TEST SCORES

The SEM approach described above only provides a single numerical estimate for constructing the confidence intervals for examinees regardless of their score level. In reality however, such confidence intervals vary according to a student’s score. Consequently, care should be taken using the SEM for students with extreme scores. (In the next sections, an alternate approach is described that conditions the SEM on a student’s score estimate.)

GROUP SPECIFIC

As noted in the introduction, reliabilities are group specific. The same is true for SEMs because both score reliabilities and score standard deviations vary across groups.

RAW-SCORE METRIC

The SEM approach is calculated using raw scores, and as such, the resulting confidence interval bands are on the raw score metric. Error bands on the scaled score metric are considered in the next section.

TYPE OF ERROR REFLECTED

The interpretation of the SEM should be driven by the type of score reliability that underpins it. So, the PSSA SEMs involve the same source of error relevant to internal consistency indices. As noted earlier, a precise technical explanation of the SEM (and resulting confidence intervals) can be unwieldy. Because of this, score users are often provided less complex interpretations.

One simpler description is that a confidence interval represents the possible score range one would observe if a student could be tested twice with the same instrument. Taking the same test on a different day implies the only source of random error being considered is related to the occasion of testing, such as a student might be sleepier one day than another, or may be sick, or did not get a good breakfast. There is a reliability index that captures this source of random error, and it is referred to as the test-retest reliability coefficient. This is not the type of reliability computed for the PSSAs. When internal consistency reliability estimates are used, such an explanation blurs the fact that random error based on the occasion of testing is not considered.

When SEMs are derived from internal consistency reliability estimates, a better approach is to describe the confidence interval as providing reasonable bounds for the range of scores that a student might receive if he or she took an equivalent version of the test; that is, the student took a test that covered exactly the same content but included a different set of items (if an infinite number of tests with equivalent content were taken, the student’s true score will lie within the constructed confidence intervals 68 percent of the time). As an example, if the PSSA score was 1150 and the SEM band was 1100 to 1200, then a student would be likely to receive a score somewhere between 1100 and 1200 if a different version of the test had been taken.

⁴ Some prefer the following interpretation: if a student were tested an infinite number of times, the ± 1 SEM confidence intervals constructed for each score would capture the student’s true score 68 percent of the time.

RESULTS AND OBSERVATIONS

Coefficient Alpha results and associated (traditional) SEMs for various PSSA scores are documented in Table 18–4 and Appendix P. Values were derived using the PSSA final data file (see Chapter Nine). The results are organized by subject area and grade. Each table in Appendix P also breaks out the various reporting strands and groups of interest (i.e., the total student population, gender and ethnic groups, English language learners (ELL), students with individualized education plan (IEP), and the economically disadvantaged (ED)). The statistics reported in Appendix P include number of points possible (Pts.), number of items (Len.), number of students tested (N), mean number of score points received (Mean), standard deviation of test scores (SD), reliability (r), traditional standard error of measurement (SEM), and item types (Items) used to determine each score.

Table 18–4. Reliabilities and Standard Errors of Measurement

Subject	Grade	Reliability	SEM
Mathematics	3	0.94	3.52
Mathematics	4	0.94	3.79
Mathematics	5	0.94	3.78
Mathematics	6	0.94	3.75
Mathematics	7	0.94	3.78
Mathematics	8	0.94	3.61
ELA	3	0.92	3.33
ELA	4	0.93	3.95
ELA	5	0.93	4.05
ELA	6	0.92	4.11
ELA	7	0.91	4.15
ELA	8	0.92	4.17
Science	4	0.94	3.37
Science	8	0.94	3.42

Note: Raw scores are not weighted

Note that these tables in Appendix P report the standard deviations of observed scores. Assuming normally distributed scores, one would expect about two-thirds of the observations to be within one standard deviation of the mean. An estimate of the standard deviation of the true scores can be computed as

$$\hat{\sigma}_T = \sqrt{\hat{\sigma}_x^2 - \hat{\sigma}_x^2(1 - \hat{\rho}_{xx})}$$

The results are historically consistent with past PSSA reliability results. The overall test score reliability values are excellent, with all in mid 0.90s, for mathematics and science, and low 0.90s for ELA. It was also generally noted that reliabilities tend to go up in value with an increase in test length and population heterogeneity and go down in value with a decrease in test length and more homogeneous populations. Across the grades and subjects tabled in Appendix P, reliabilities for the sub-strands tended to follow these same trends. That is, strands with more items tended to show higher reliability coefficients. Also, groups exhibiting more variability in test scores tended to have higher reliability coefficients. Perhaps the most significant result pertains to an earlier caution (i.e., that some strand score reliabilities may be too low to warrant interpretation at the individual student level). Once again, there is no firm guideline regarding how low is too low. The lower a given reliability coefficient, the greater the potential for over-interpretation. As a point of reference, a reliability coefficient of 0.50 would suggest that there is as much error variance as true-score variance in the scores. It should be noted that the reliability of group mean scores (e.g., school or district means) tends to be higher than that of individual scores, suggesting interpretation of strand scores at these aggregate levels is likely reasonable.

RASCH CONDITIONAL STANDARD ERROR OF MEASUREMENT

The CSEM also indicates the degree of measurement error but does so in scaled-score units and varies as a function of a student's actual scaled score. Therefore, the CSEM may be especially useful in characterizing measurement precision in the neighborhood of a score level used for decision-making—such as cut scores for identifying students who meet a performance standard.

Technically, when a Rasch model is applied, the CSEM at any given point on the ability continuum is defined as the reciprocal of the square root of the test information function derived from the Rasch scaling model.

$$CSEM(\hat{\theta}) = \frac{1}{\sqrt{I(\hat{\theta})}}$$

where $CSEM(\hat{\theta})$ is the conditional standard error of measurement and $I(\hat{\theta})$ is the test information function. Test information depends on the sum of the corresponding information functions for the test items. Item information depends on each item's difficulty and conditional item score variance. The formula above utilizes the Rasch ability (θ) metric. The conditional standard error on the scaled score (SS) metric is determined by simply multiplying the $CSEM(\hat{\theta})$ by the slope (multiplicative constant, m) of the linear transformation equation used to convert the Rasch ability estimates to scaled scores.

$$CSEM(SS) = CSEM(\hat{\theta}) * m$$

Chapter Fourteen provides the linear transformation formulas for each PSSA test.

RASCH CONDITIONAL STANDARD ERROR OF MEASUREMENT CONFIDENCE INTERVALS

CSEMs also allow statements regarding the precision of individual tests scores. And like SEMs, they help place reasonable limits around observed scaled scores through construction of an approximate score band. The confidence intervals are constructed by adding and subtracting a multiplicative factor of the CSEM and may be interpreted as described in the earlier section.

FURTHER INTERPRETATIONS

DIFFERENT CONDITIONAL STANDARD ERROR OF MEASUREMENT FOR DIFFERENT TEST SCORES

The CSEM approach provides different numerical estimates for constructing the confidence intervals for examinees depending on their specific score level. The magnitude of the CSEM values is U-shaped with larger CSEM values associated with lower and higher scores.

GROUP SPECIFIC

Assuming reasonable model-data fit—as explored in Chapter Twelve—the Rasch based CSEMs (conditioned on score level) should not vary across groups.

SCALED-SCORE METRIC

The CSEM and associated confidence interval bands are on the scaled score metric.

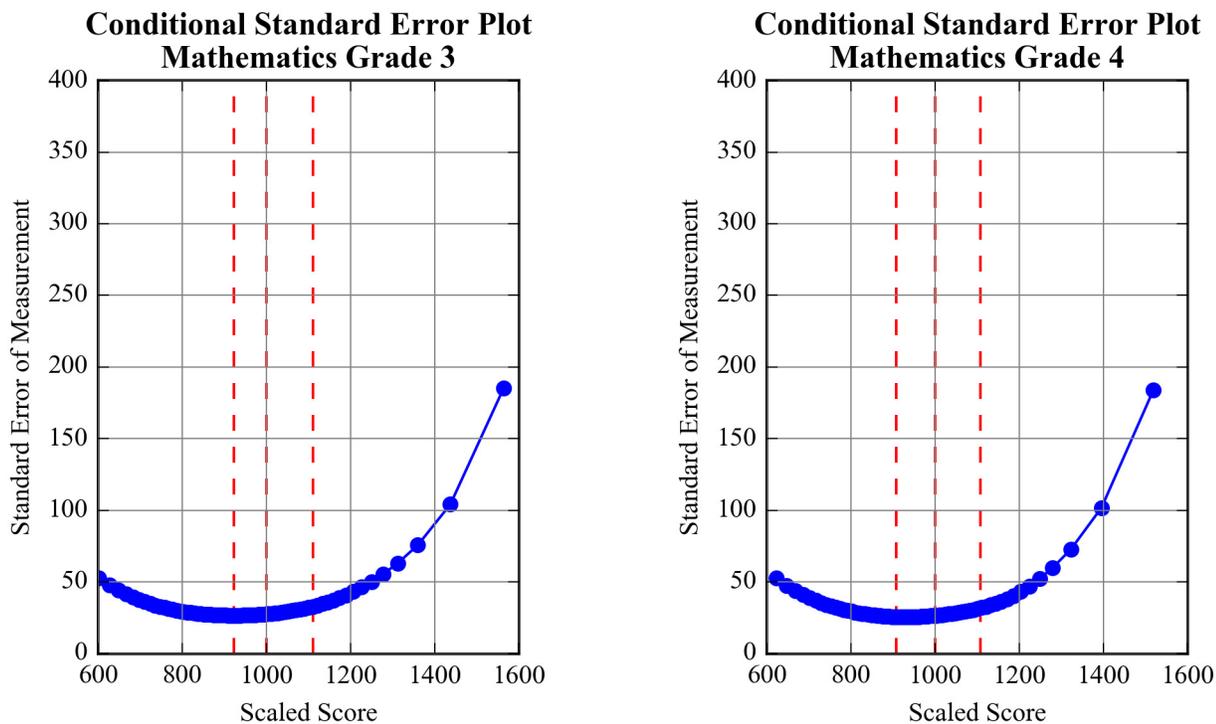
TYPE OF ERROR REFLECTED

The SEMs documented on the PSSA score reports are the Rasch-based conditional standard errors of measurement described above. These are provided by the WINSTEPS scaling program described in Chapter Twelve. As noted earlier, these CSEMs are based on the concept of statistical information. For the purpose of providing a simpler explanation of SEMs to test score users, the earlier description of SEMs framed using the idea of internal consistency reliability was provided in the PSSA score report interpretive documents.⁵ Score report content is considered in greater detail in Chapter Sixteen.

RESULTS AND OBSERVATIONS

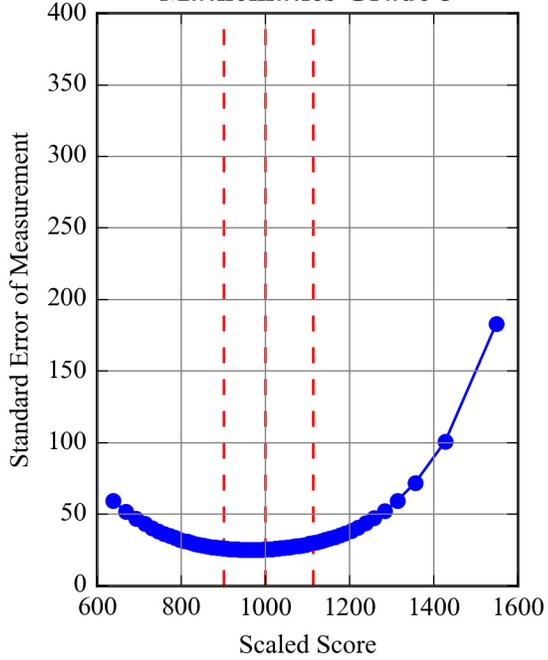
Figure 18–2 shows the Rasch CSEMs associated with each scaled score level. (This information is also provided in tabular form in Appendix N.) Values were derived using the calibration data file described in Chapter Nine. The values are fairly consistent across a noticeably large range of the scaled scores, as demonstrated by the relatively flat bottoms of most plots. The values increase at both extremes (i.e., at smaller and larger scaled scores) giving these figures their typical U-shaped pattern. (Only the SEMs for scores greater than the lowest observable scaled scores [LOSS] are shown in the figures; consequently, the complete U-shape does not appear in most plots.) The three red-dashed lines represent the Basic, Proficient, and Advanced scaled score cuts, respectively, moving from lower to higher scaled score values. CSEM values at the cut score lines were generally associated with smaller CSEM values, indicating more precise measurement occurs at these cuts.

Figure 18–2. Conditional Standard Error Plots for Each Grade and Subject

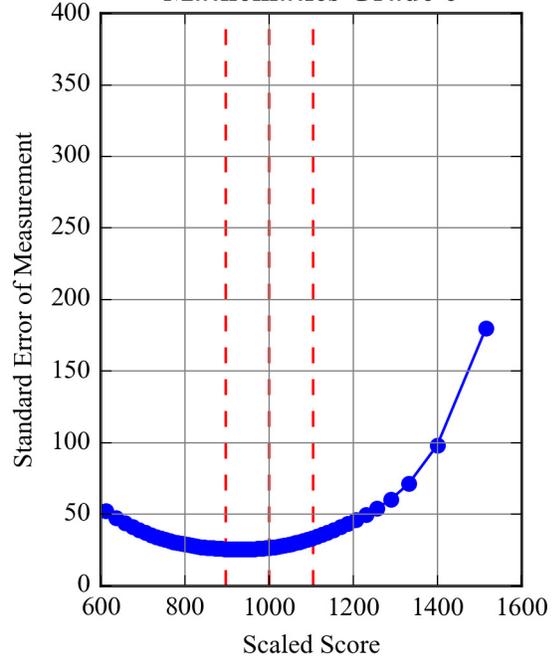


⁵ Because IRT CSEMs are based on statistical information, it is questionable whether they account for error variance due to items. However, it seems difficult to construct a simple explanation of IRT CSEMs for the general public.

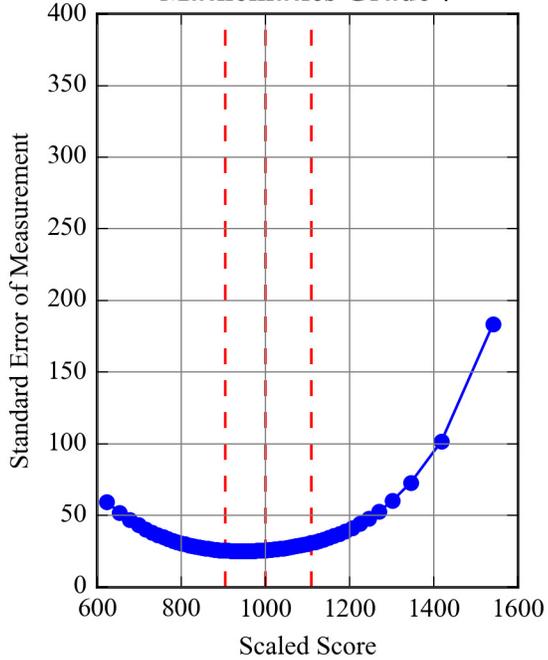
**Conditional Standard Error Plot
Mathematics Grade 5**



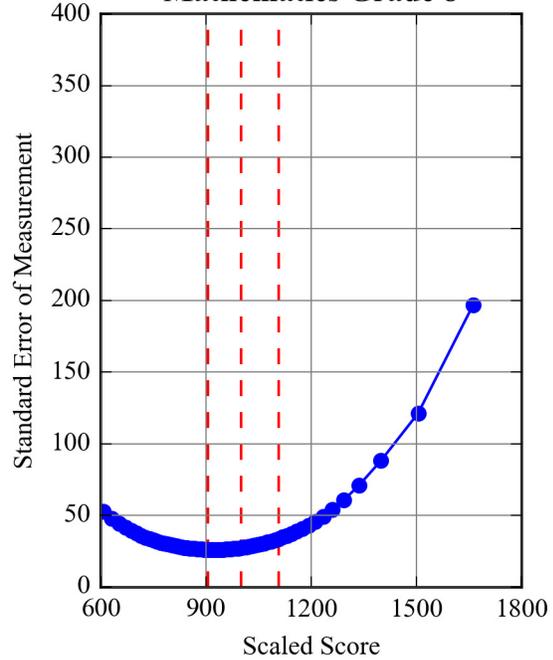
**Conditional Standard Error Plot
Mathematics Grade 6**



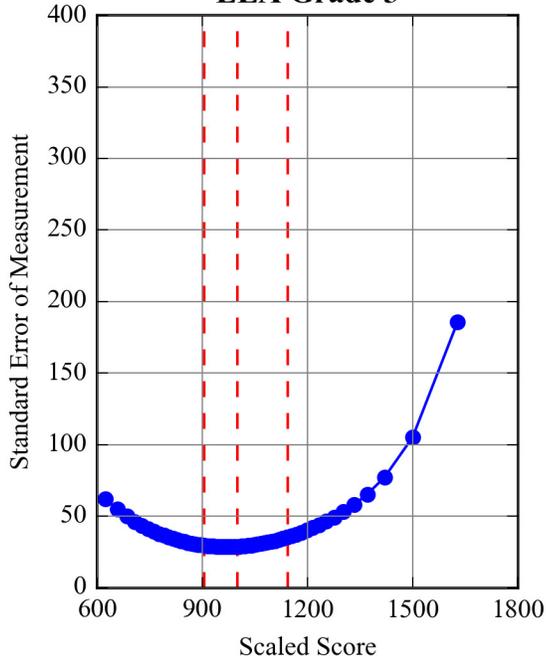
**Conditional Standard Error Plot
Mathematics Grade 7**



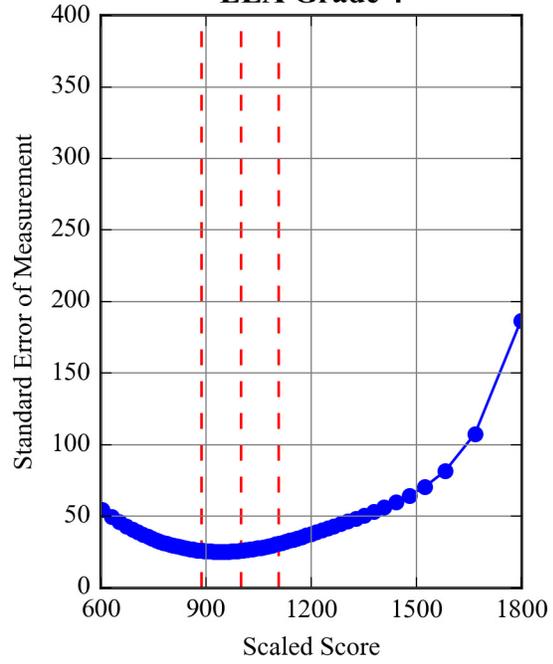
**Conditional Standard Error Plot
Mathematics Grade 8**



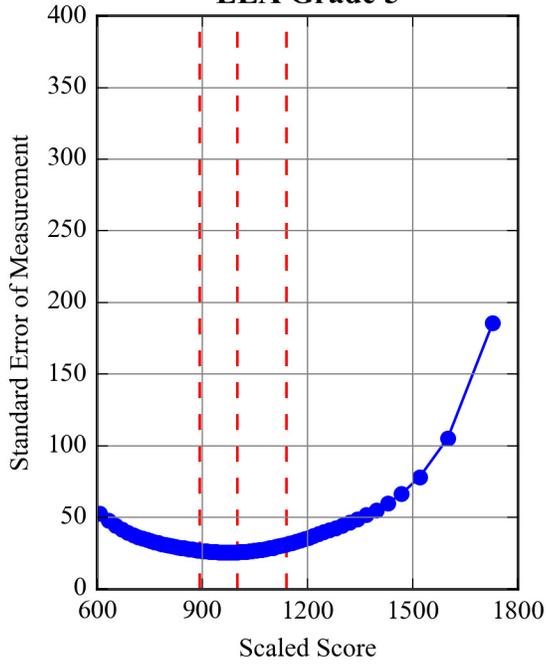
**Conditional Standard Error Plot
ELA Grade 3**



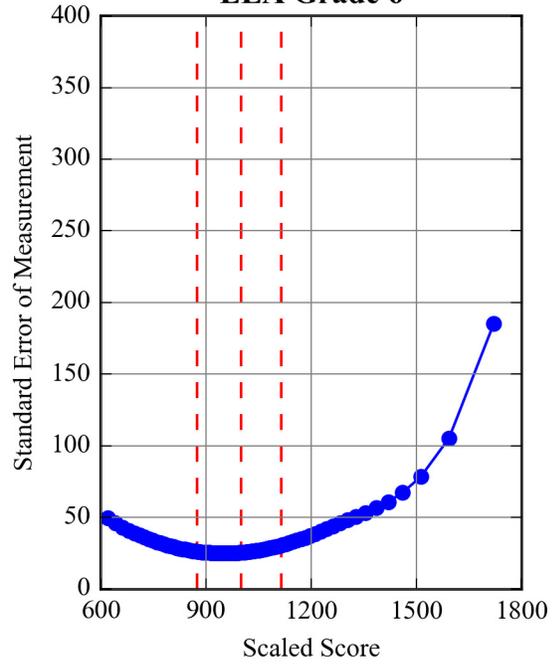
**Conditional Standard Error Plot
ELA Grade 4**



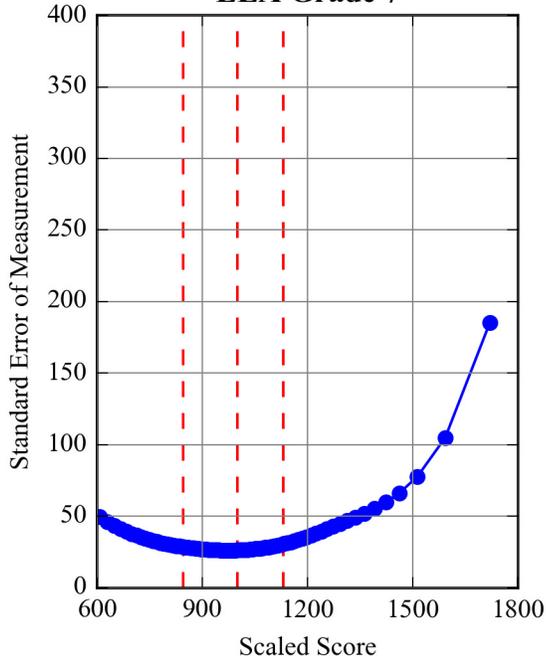
**Conditional Standard Error Plot
ELA Grade 5**



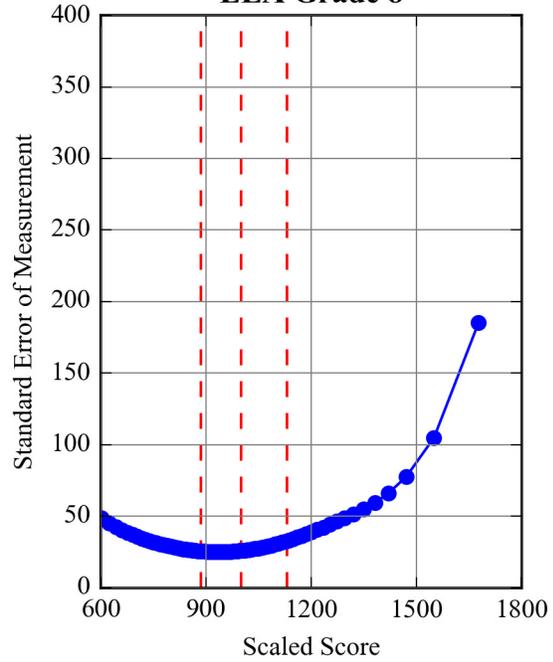
**Conditional Standard Error Plot
ELA Grade 6**



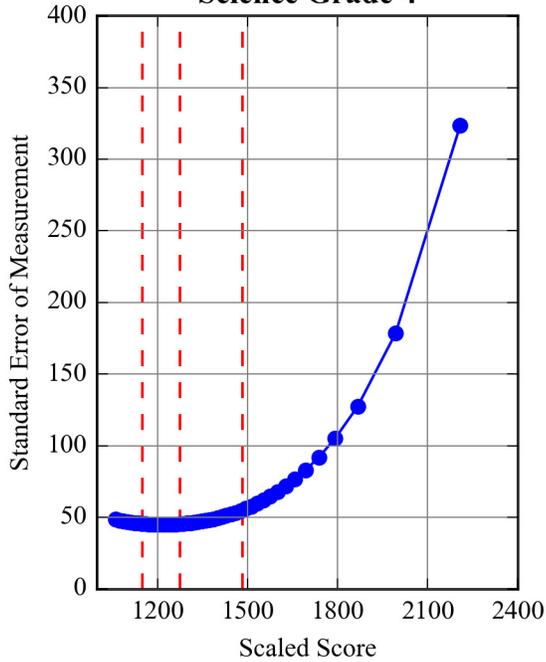
**Conditional Standard Error Plot
ELA Grade 7**



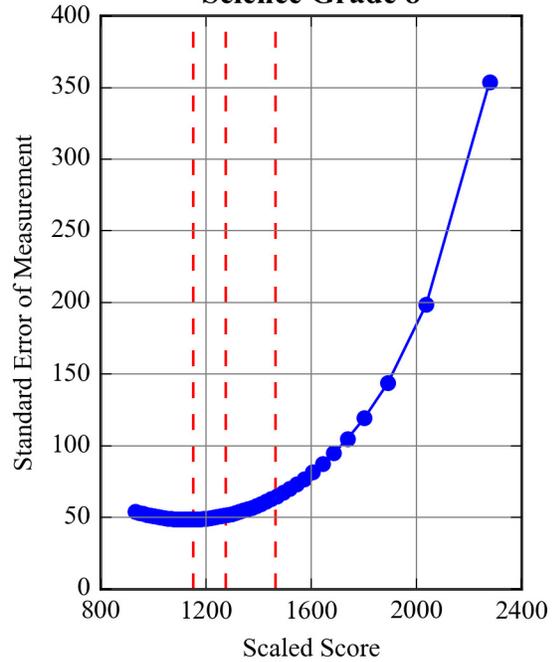
**Conditional Standard Error Plot
ELA Grade 8**



**Conditional Standard Error Plot
Science Grade 4**



**Conditional Standard Error Plot
Science Grade 8**



DECISION CONSISTENCY AND ACCURACY

In a standards-based testing program there should be great interest in knowing how accurately students are classified into performance categories. In contrast to Coefficient Alpha that is concerned with the relative rank-ordering of students, it is the absolute values of student scores that are important in decision consistency and accuracy.

Classification consistency refers to the degree to which the achievement level for each student can be replicated upon retesting using an equivalent form (Huynh, 1976). Decision consistency answers the question: What is the agreement between the classifications based on two non-overlapping, equally difficult forms of the test. If two parallel forms of the test were given to the same students, the consistency of the measure would be reflected by the extent that the classification decisions made from the first set of test scores matched the decisions based on the second set of test scores. Consider Tables 18–5 and 18–6 below.

Table 18–5. Pseudo-Decision Table for Two Hypothetical Categories

Tests One And Two	Test One Level I	Test One Level II	Test One Marginal
Test Two Level I	ϕ_{11}	ϕ_{12}	$\phi_{1\bullet}$
Test Two Level II	ϕ_{21}	ϕ_{22}	$\phi_{2\bullet}$
Test Two Marginal	$\phi_{\bullet 1}$	$\phi_{\bullet 2}$	1

Table 18–6. Pseudo-Decision Table for Four Hypothetical Categories

Tests One And Two	Test One Level I	Test One Level II	Test One Level III	Test One Level IV	Test One Marginal
Test Two Level I	ϕ_{11}	ϕ_{12}	ϕ_{13}	ϕ_{14}	$\phi_{1\bullet}$
Test Two Level II	ϕ_{21}	ϕ_{22}	ϕ_{23}	ϕ_{24}	$\phi_{2\bullet}$
Test Two Level III	ϕ_{31}	ϕ_{32}	ϕ_{33}	ϕ_{34}	$\phi_{3\bullet}$
Test Two Level IV	ϕ_{41}	ϕ_{42}	ϕ_{43}	ϕ_{44}	$\phi_{4\bullet}$
Test Two Marginal	$\phi_{\bullet 1}$	$\phi_{\bullet 2}$	$\phi_{\bullet 3}$	$\phi_{\bullet 4}$	1

If a student is classified as being in one category based on Test One’s score, how probable would it be that the student would be reclassified as being in the same category if he or she took Test Two (a non-overlapping, equally difficult form of the test)?

The proportions of correct decisions, ϕ , for two and four categories are computed by the following two formulas, respectively:

$$\phi = \phi_{11} + \phi_{22}$$

$$\phi = \phi_{11} + \phi_{22} + \phi_{33} + \phi_{44}$$

It is the sum of the diagonal entries—that is, the proportion of students classified by the two forms into exactly the same achievement level—that signifies the overall consistency.

Classification accuracy refers to the agreement of the observed classifications of students with the classifications made on the basis of their true scores. An observed score contains measurement error while a true score is free of measurement error. A student’s observed score can be formulated by the sum of his or her true score plus measurement error, or $X = T + E$. Decision accuracy is an index to determine the extent to which measurement error causes a classification different than expected from the true score.

Since true scores are unobserved and since it is not feasible to repeat PSSA testing in order to estimate the proportion of students who would be reclassified in the same performance levels, a statistical model needs to be imposed on the data to estimate the true scores and to project the consistency and accuracy of classifications solely using data from the available administration (Hambleton & Novick, 1973). Although a number of procedures are available, one well-known method was developed by Livingston and Lewis (1995) utilizing a specific True Score

Model. This approach is fairly complex, and the cited source contains details regarding the statistical model used to calculate decision consistency and accuracy from the single PSSA administration.

FURTHER INTERPRETATIONS

Several factors might affect decision consistency and accuracy. One important factor is the reliability of the scores. All other things being equal, more reliable test scores tend to result in more similar reclassifications and less measurement error. Another factor is the location of the cut score in the score distribution. More consistent and accurate classifications are observed when the cut scores are located away from the mass of the score distribution. For example, when scores are close to being normally distributed, the mass is concentrated in the middle of the distribution, and, thus classifications tend to become more consistent when cut scores go up from 70 percent to 80 percent to 90 percent or, alternatively, go down from 30 percent to 20 percent to 10 percent. The number of performance levels is also a consideration. Consistency and accuracy indices for four performance levels should be lower than those based on two categories. This is not surprising since classification and accuracy using four levels would allow more opportunity to change achievement levels. Hence, there would be more classification errors and less accuracy with four achievement levels, resulting in lower consistency indices.

RESULTS AND OBSERVATIONS

The results for the overall consistency across all four performance levels as well as for the dichotomies created by the three cut scores are presented in Table 18–7. The tabled values, derived using the program *BB-Class* (Brennan, 2004) using the Livingston and Lewis method. Across all subject areas, the overall decision consistency ranged from the 0.71 to 0.77 while the decision accuracy ranged from 0.79 to 0.84. It should be noted that consistency and accuracy indices for the four performance levels should be lower than those based on two categories (discussed above).

Dichotomous decisions between each adjacent pair of performance level classifications have consistency values that range from 0.88 to 0.95 and accuracy values that range from 0.91 to 0.97.

Table 18–7. Decision Consistency and Accuracy Results

Subject	Grade	Statistic	Overall	BBas/Bas	Bas/Prof	Prof/Adv
ELA	3	accuracy	0.80	0.95	0.92	0.93
ELA	3	consistency	0.72	0.93	0.89	0.90
ELA	4	accuracy	0.79	0.96	0.92	0.92
ELA	4	consistency	0.71	0.94	0.88	0.88
ELA	5	accuracy	0.81	0.95	0.92	0.93
ELA	5	consistency	0.73	0.93	0.89	0.90
ELA	6	accuracy	0.81	0.97	0.92	0.92
ELA	6	consistency	0.73	0.95	0.89	0.89
ELA	7	accuracy	0.82	0.97	0.91	0.93
ELA	7	consistency	0.74	0.96	0.88	0.90
ELA	8	accuracy	0.79	0.96	0.91	0.93
ELA	8	consistency	0.71	0.94	0.88	0.90
Mathematics	3	accuracy	0.81	0.94	0.93	0.94
Mathematics	3	consistency	0.74	0.92	0.91	0.91
Mathematics	4	accuracy	0.82	0.94	0.94	0.95
Mathematics	4	consistency	0.75	0.91	0.91	0.92
Mathematics	5	accuracy	0.83	0.93	0.94	0.95
Mathematics	5	consistency	0.76	0.91	0.92	0.94
Mathematics	6	accuracy	0.83	0.94	0.94	0.95
Mathematics	6	consistency	0.76	0.92	0.91	0.93
Mathematics	7	accuracy	0.84	0.93	0.94	0.96
Mathematics	7	consistency	0.77	0.90	0.92	0.95
Mathematics	8	accuracy	0.84	0.93	0.94	0.96
Mathematics	8	consistency	0.77	0.90	0.92	0.95
SCIENCE	4	accuracy	0.84	0.97	0.95	0.92
SCIENCE	4	consistency	0.77	0.95	0.93	0.89
SCIENCE	8	accuracy	0.80	0.95	0.94	0.91
SCIENCE	8	consistency	0.72	0.93	0.91	0.88

Note. Results derived using PSSA final data file (see Chapter Nine).

RATER AGREEMENT

Because open-ended items are included on the PSSAs, another source of random error is related to the scorers of those items. Frisbie (2005) noted that “test score reliability differs from scorer reliability” and that “the need for one kind of estimate cannot be satisfied by the other.” Additionally, the data most easily obtainable that captures this information comes from the “10 percent read behinds” collected during the scoring process (see Chapter Eight for a description). Partly because of the way that this data is obtained and reported (i.e., it is not a ratio of true score variance over observed score variance), the term rater agreement is used here, not rater reliability or inter-rater reliability as these terms are somewhat misleading as explained above.

FURTHER INTERPRETATIONS

For the PSSAs, both within-year and across-year rater consistency are available. As noted earlier, the linking process adjusts for across-year changes (see Chapter Sixteen). As part of the data collected for that process, additional across-year rater consistency data is available for consideration.

RESULTS AND OBSERVATIONS

Within-year rater agreement information is provided in Chapter Eight. This information is reformatted in Tables 18–8 through 18–10 for PSSA mathematics, ELA, and science OE items, respectively. In addition, the percentages awarded to each score point are also presented in these tables. As seen from these tables, the inter-rater exact agreement percentages range from 80 percent to 95 percent for mathematics, 77 percent to 89 percent for ELA, and 76 percent to 93 percent for science. Mathematics had validity ranging from 84 percent to 98 percent; ELA had validity ranging from 70 percent to 87 percent; and science had validity ranging from 83 percent to 98 percent. (Validity is discussed further in Chapter Eight.)

Across-year data are presented in Table 18–11 for science. Note that data are only available for the designated OE core anchor items. The number of responses (N), the 2015 and 2016 means, and the Pearson correlations r are tabled. Mathematics correlations range from 0.92 to 0.96. The year-to-year correlation for the one grade 3 item used in linking was 0.68. Science correlations range from the 0.72 to 0.90. The correlation ranges are similar to prior results for the PSSAs.

Table 18–8a. Inter-Rater Agreement for OE Items—Mathematics

Grade	Item	Percent Exact	Percent Adjacent	Validity
3	1	93	7	95
3	2	80	20	87
3	3	83	17	84
4	1	94	6	95
4	2	95	5	98
4	3	87	13	90
5	1	88	12	87
5	2	93	7	90
5	3	84	16	85
6	1	88	12	90
6	2	88	12	92
6	3	87	13	94
7	1	90	10	95
7	2	88	12	89
7	3	86	14	91
8	1	89	11	93
8	2	86	14	87
8	3	89	11	90

Note. For more information regarding validity, see the section on Handscoring Validity Process in Chapter Eight.

Table 18–8b. Percentage Awarded for Each Score Point for OE Items—Mathematics

Grade	Item	0	1	2	3	4	Blank or non-scoreable
3	1	23	42	16	13	4	2
3	2	7	41	20	21	8	3
3	3	11	29	29	22	6	3
4	1	60	17	8	8	4	3
4	2	7	12	19	30	25	8
4	3	24	25	14	20	13	3
5	1	35	28	11	15	6	4
5	2	24	29	26	8	3	9
5	3	14	22	45	5	11	2
6	1	33	34	25	4	2	3
6	2	32	13	17	18	9	11
6	3	42	19	17	11	9	3
7	1	38	35	13	8	3	4
7	2	5	19	27	28	12	9
7	3	27	39	17	9	3	4
8	1	26	52	11	5	2	5
8	2	15	42	24	10	0	8
8	3	11	37	24	20	4	4

Table 18–9a. Inter-Rater Agreement for OE Items—ELA

Grade	Item	Item Type	Exact	Adjacent	Validity
3	1	WP	81	19	75
3	2	SA	77	23	70
3	3	SA	78	22	77
4	1	WP	76	24	82
4	2	TDA	89	11	76
5	1	WP	77	23	83
5	2	TDA	84	16	85
6	1	WP	79	21	77
6	2	TDA	81	19	86
7	1	WP	83	17	87
7	2	TDA	86	14	75
8	1	WP	77	23	85
8	2	TDA	81	19	83

Note. EBSR items are machine scored because they are two-part MC like items and not shown in this table. For more information regarding validity, see the section on Handscoring Validity Process in Chapter Eight.

Table 18–9b. Percentage Awarded for Each Score Point for OE Items—ELA

Grade	Item	Item Type	0	1	2	3	4	Blank or non-scoreable
3	1	WP	-	31	43	16	3	6
3	2	SA	11	41	37	5	-	5
3	3	SA	18	38	36	3	-	5
4	1	WP	-	20	54	19	3	3
4	2	TDA	-	46	31	5	0	17
5	1	WP	-	7	45	36	8	3
5	2	TDA	-	44	38	7	1	9
6	1	WP	-	14	45	34	3	4
6	2	TDA	-	29	45	18	1	6
7	1	WP	-	9	44	40	4	2
7	2	TDA	-	35	39	14	1	11
8	1	WP	-	8	37	45	6	3
8	2	TDA	-	30	36	21	3	10

Note. EBSR items are machine scored because they are two-part MC like items and not shown in this table.

Table 18–10a. Inter-Rater Agreement for OE Items—Science

Grade	Item	Exact	Adjacent	Validity
4	1	93	7	94
4	2	91	9	97
4	3	93	7	98
4	4	90	10	92
4	5	92	8	97
8	1	87	13	96
8	2	86	13	93
8	3	93	7	94
8	4	82	18	85
8	5	76	24	83

Note. For more information regarding validity, see the section on Handscoring Validity Process in Chapter Eight.

Table 18–10b. Percentage Awarded for Each Score Point for OE Items—Science

Grade	Item	0	1	2	Blank or non-scoreable
4	1	17	28	51	2
4	2	8	20	69	3
4	3	34	29	34	4
4	4	15	17	65	2
4	5	18	41	36	5
8	1	12	35	49	4
8	2	42	34	17	7
8	3	15	69	10	6
8	4	27	52	17	5
8	5	22	42	29	7

Table 18–11. Science Mean Scores and Correlations

Content	Grade	Item ID	N	2015 Mean	2016 Mean	r
Mathematics	3	194218	1000	1.74	1.76	0.92
Mathematics	3	967694	1000	1.44	1.42	0.96
Mathematics	4	238586	999	1.07	1.07	0.95
Mathematics	4	140906	999	1.76	1.73	0.95
Mathematics	5	660007	999	1.32	1.33	0.96
Mathematics	5	197479	998	1.45	1.42	0.95
Mathematics	6	489550	999	1.43	1.31	0.91
Mathematics	6	904232	998	1.43	1.48	0.93
Mathematics	7	340884	997	2.16	2.15	0.93
Mathematics	7	776330	999	1.28	1.27	0.95
Mathematics	8	411558	1000	1.85	1.80	0.92
Mathematics	8	108674	1000	1.42	1.36	0.93
ELA	3	467571	998	1.49	1.42	0.68
Science	4	339077	985	1.21	1.24	0.90
Science	4	225224	997	1.50	1.53	0.86
Science	8	893140	999	0.89	0.99	0.72
Science	8	283103	999	1.17	1.13	0.61

CHAPTER NINETEEN: VALIDITY

As defined in the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014), validity refers to “the degree to which evidence and theory support the interpretation of test scores entailed by proposed uses of tests” (p. 11). The *Standards* provides a framework for describing the sources of evidence that should be considered when evaluating validity. These sources include evidence based on 1) test content, 2) response processes, 3) the internal structure of the test, 4) the relationships between test scores and other variables, and 5) the consequences of testing. In addition, when Item Response Theory (IRT) models are used to analyze assessment data, validity considerations related to those processes should also be explored.

The validity process involves the collection of a variety of evidence to support the proposed test score interpretations and uses. This technical report describes throughout, the technical aspects of the PSSA tests in support of their score interpretations and uses. Each of the previous chapters contributes important evidence components that pertain to score validation: test development, test administration, test scoring, item analysis, Rasch calibration, scaling, linking, score reporting, and reliability. This chapter summarizes and synthesizes the evidence based on the *Standards’* framework. The purposes and intended uses of PSSA test scores are reviewed first, then each type of validity evidence is addressed in turn.

PURPOSES AND INTENDED USES OF THE PSSA

The *Standards* emphasize that validity pertains to how test scores are used. To help contextualize the evidence that will be presented below, the purposes of the PSSA will be reviewed first. As stated in Chapter One, the purpose of the PSSA is to measure how well students acquire the knowledge and skills described in the *Pennsylvania Assessment Anchor Content Standards* (Assessment Anchors) as defined by the Eligible Content for mathematics, ELA, and Science. The intended uses of the PSSA are to:

1. Provide information for use in school and district accountability systems
2. Improve curricular and instructional practices in order to help students reach proficiency in the Pennsylvania Core Standards (ELA and Mathematics) or the Pennsylvania Academic Standards (Science)

EVIDENCE BASED ON TEST CONTENT

Test content validity evidence for the PSSA rests greatly on establishing a link between each component of the assessment (i.e., the items) and what the students should know and be able to do as required by the Assessment Anchors, Eligible Content, and/or the Academic Content Standards (refer to Chapter Two for a description of each of these elements). The PSSA tests are intended to measure students’ knowledge and skills described in the Assessment Anchors as defined by the Eligible Content for mathematics, ELA, and science. Thus the evidence supporting the alignment among the PSSA tasks, the Assessment Anchors as defined by the Eligible Content and the Academic Content Standards should be provided.

Lane (1999) suggests taking the following steps to support the content validity of the PSSA:

- Evaluate the degree to which the PSSA test specifications represent and align with the knowledge and skills described in the Assessment Anchors as defined by the Eligible Content for mathematics, ELA, and science.
- Evaluate the alignment between the PSSA items and test specifications to ensure representativeness.
- Evaluate the extent to which the curriculum aligns with the Assessment Anchors. If some contents are not included in the curriculum, then low scores on PSSA should not be interpreted as meaning that instruction was ineffective.
- Conduct content reviews of the PSSA items using a panel of content experts to see whether they measure the intended construct or are the sources of construct-irrelevant variance.

- Conduct fairness reviews of the items to avoid issues related to a specific subpopulation.
- Evaluate procedures for administration and scoring, such as the appropriateness of instructions to examinees, time limit for the assessment, and training of raters.
- Submit operational tests to third-party, independent reviews.

Chapters Two through Eight of this report present evidence related to test content. As described in these chapters, all PSSA test blueprints (specifications) and items were developed and aligned with the PSSA Assessment Anchors and Eligible Content for mathematics, ELA, and science following well-established procedures. After the items were developed, they underwent multiple rounds of content and bias reviews. After they were field tested, they were reviewed with respect to their statistical properties. Items selected for the operational assessment had to pass content, psychometric, and PDE reviews. Tests were administered according to standardized procedures with allowable accommodations. The following summarizes the efforts described in greater detail in Chapters Two through Eight:

- DRC used Webb’s (1999) Depth of Knowledge (DOK) model to ensure the PSSA items aligned with the Assessment Anchors as defined by the Eligible Content and the Academic Content Standards in terms of both content and cognitive levels.
- DRC established detailed test and item/passage development specifications and ensured the items were sufficient in number and adequately distributed across content and levels of cognitive complexity and difficulty.
- DRC and WestEd selected qualified item writers and provided training to help ensure they wrote high-quality items.
- Each newly-developed item was first reviewed by content specialists and editors at DRC and/or WestEd to make sure that all items measured the intended Assessment Anchors, as defined by the Eligible Content for Mathematics, ELA, and Science. Appropriateness for the intended grade was also considered, as well as depth of knowledge, graphics, grammar/punctuation, language demand, and distractor reasonableness.
- Before field testing, the test items were submitted to content committees (composed of Pennsylvania educators) for review using, but not limited to, the following categories:
 - Overall quality and clarity
 - Anchor, eligible content, and/or standard alignment
 - Grade-level appropriateness
 - Difficulty level
 - Depth of knowledge
 - Appropriate sources of challenge (e.g., unintended content and skills)
 - Correct answer
 - Quality of distractors
 - Graphics
 - Appropriate language demand
 - Freedom from bias
- The items were also submitted to a Bias, Fairness, and Sensitivity Committee for review. This committee reviewed items for issues related to diversity, gender, and other pertinent factors.
- Items passing all the prior hurdles were tried out in a field test event. Several statistical analyses were conducted on the field test data, including classical item analyses, distractor analyses, and differential item functioning (DIF). Items were once again carefully reviewed by DRC staff and a committee of Pennsylvania teachers with respect to their statistical characteristics. DIF was used to detect test items that might bias test scores for particular groups. Empirical investigation of DIF strengthens the validity evidence related to score interpretations for students in particular groups by eliminating potential

sources of construct-irrelevant variance as such, DIF results might be better considered as internal structure validity evidence.

- The PSSA tests were administered according to standardized procedures with allowable accommodations. Students were given ample time to complete the tests (i.e., there were no speededness issues).
- As shown in Chapter Eight, the raters for open-ended (OE) items were carefully recruited and well trained. Their scoring was monitored throughout the scoring session to ensure that an acceptable level of scoring accuracy was maintained.

In addition to the foundational and routine procedures described above and in Chapters Two through Five, two external studies were conducted to assess the alignment of the PSSA tests to the PSSA Assessment Anchors and Eligible Content. Achieve, Inc., Washington, D.C., conducted a preliminary review of the science Assessment Anchors in 2003 to evaluate the alignment with the Academic Standards and produced a follow-up report on the anchors in 2005.

EVIDENCE BASED ON RESPONSE PROCESSES

Response-process evidence is used to examine the extent to which the cognitive skills and processes employed by students match that identified in the test developer's defined construct domains for all students and for each subgroup. Think-aloud procedures or cognitive labs can be used to collect this type of evidence. In addition, when an assessment includes OE items, an examination of the extent to which the raters interpret and apply the scoring criteria accurately when assigning scores to students' responses on OE items also provides validity of the response-processes evidence.

For the PSSA science tests, DRC conducted a science cognitive lab study to gather relative information about the thinking processes students used to solve science scenario items. The use of the cognitive lab helped ensure that the intended response processes were employed by students.

For all the PSSA tests, well-organized scorer training and subsequent monitoring of rating accuracy helped ensure that raters strictly followed the scoring criteria to minimize rater biases that may significantly affected their scoring. Refer to Chapter Eight for a detailed description of all hand-scoring procedures, and to Chapter Eighteen for statistical information regarding inter-rater reliability.

EVIDENCE BASED ON INTERNAL STRUCTURE

As described in the *Standards* (2014), internal-structure evidence refers to the degree to which the relationships between test items and test components conform to the construct on which the proposed test interpretations are based. For each PSSA test, one total test score as well as strand scores are reported (see Chapter Sixteen for more information about PSSA scores). Additionally, principle component and parallel analyses were conducted and provide strong internal-structure evidence of the unidimensionality of the PSSAs.

ITEM DIFFICULTY RANGES AND DISCRIMINATION

Multiple sources of evidence are provided that address the appropriateness of the range of difficulty and discrimination of the items on the PSSA tests. Plots of item p-values by point biserial correlations are provided in Chapter 11

ITEM RESPONSE THEORY DIMENSIONALITY

Results from principle component and parallel analyses were presented in Chapter Twelve. The PSSA mathematics, ELA and science tests were essentially unidimensional, providing evidence supporting interpretations based on the total scores for the respective PSSA tests.

TEST RELIABILITY, ERRORS OF MEASUREMENT, AND DECISION CONSISTENCY AND ACCURACY

Reliability estimates, SEM, and Decision Consistency and Accuracy results are presented in Chapter Eighteen and provide important evidence that the PSSA tests have strong internal consistency, expected measurement errors, and that examinees are being appropriately classified into performance levels based on the test scores and standards set on those scores.

STRAND CORRELATIONS

Correlations and disattenuated correlations between strand scores within each subject area are presented below. Values were derived from the PSSA final data file (see Chapter Nine). This data can also provide information on score dimensionality that is part of internal-structure validity evidence. As noted in Chapter Three, the PSSA mathematics tests have four strands (denoted by M.A, M.B, M.C, and M.D). The PSSA ELA tests have five strands (denoted by E.A, E.B, E.C, E.D, and E.E), except grade 3 which has four strands (E.A, E.B, E.C and E.D). The PSSA science tests have four strands (denoted by S.A, S.B, S.C, and S.D).

For each grade, Pearson's correlation coefficients between these strands are reported in Tables 19–1a through 19–1f. The inter-correlations between the strands within the content areas are positive and generally range from moderate to high in value.

Table 19–1a. Correlations between Mathematics and ELA Strands for Grade 3

	E.A	E.B	E.C	E.D	M.A	M.B	M.C	M.D
E.A	-							
E.B	0.77	-						
E.C	0.50	0.51	-					
E.D	0.73	0.71	0.50	-				
M.A	0.71	0.67	0.47	0.69	-			
M.B	0.71	0.68	0.47	0.69	0.81	-		
M.C	0.61	0.59	0.42	0.62	0.69	0.67	-	
M.D	0.71	0.67	0.47	0.69	0.82	0.81	0.69	-

Table 19–1b. Correlations between Mathematics, ELA, and Science Strands for Grade 4

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D	S.A	S.B	S.C	S.D
E.A	1												
E.B	0.79	-											
E.C	0.47	0.47	-										
E.D	0.73	0.73	0.49	-									
E.E	0.49	0.49	0.47	0.48	-								
M.A	0.70	0.71	0.47	0.71	0.46	-							
M.B	0.69	0.70	0.44	0.70	0.44	0.84	-						
M.C	0.58	0.60	0.39	0.62	0.38	0.71	0.67	-					
M.D	0.62	0.65	0.43	0.67	0.42	0.81	0.78	0.68	-				
S.A	0.78	0.77	0.46	0.74	0.47	0.78	0.76	0.65	0.71	-			
S.B	0.70	0.68	0.41	0.65	0.43	0.66	0.65	0.56	0.59	0.80	-		
S.C	0.68	0.66	0.39	0.64	0.40	0.68	0.67	0.58	0.62	0.79	0.71	-	
S.D	0.66	0.65	0.37	0.63	0.38	0.68	0.66	0.58	0.62	0.78	0.69	0.70	-

Table 19–1c. Correlations between Mathematics and ELA Strands for Grade 5

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D
E.A	-								
E.B	0.77	-							
E.C	0.54	0.51	-						
E.D	0.76	0.72	0.56	-					
E.E	0.53	0.51	0.49	0.53	-				
M.A	0.73	0.69	0.51	0.73	0.52	-			
M.B	0.66	0.62	0.48	0.66	0.48	0.77	-		
M.C	0.66	0.62	0.45	0.65	0.45	0.75	0.66	-	
M.D	0.69	0.64	0.48	0.69	0.49	0.85	0.72	0.70	-

Table 19–1d. Correlations between Mathematics and ELA Strands for Grade 6

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D
E.A	-								
E.B	0.74	-							
E.C	0.49	0.54	-						
E.D	0.71	0.73	0.54	-					
E.E	0.51	0.54	0.57	0.54	-				
M.A	0.71	0.72	0.53	0.72	0.54	-			
M.B	0.70	0.72	0.54	0.73	0.55	0.86	-		
M.C	0.60	0.61	0.47	0.62	0.47	0.77	0.76	-	
M.D	0.62	0.65	0.51	0.65	0.51	0.78	0.77	0.71	-

Table 19–1e. Correlations between Mathematics and ELA Strands for Grade 7

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D
E.A	-								
E.B	0.72	-							
E.C	0.47	0.49	-						
E.D	0.70	0.73	0.52	-					
E.E	0.55	0.57	0.58	0.58	-				
M.A	0.69	0.69	0.50	0.71	0.58	-			
M.B	0.65	0.64	0.46	0.66	0.54	0.83	-		
M.C	0.61	0.59	0.43	0.62	0.50	0.79	0.75	-	
M.D	0.65	0.65	0.47	0.66	0.54	0.79	0.75	0.70	-

Table 19–1f. Correlations between Mathematics, ELA, and Science Strands for Grade 8

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D	S.A	S.B	S.C	S.D
E.A	-												
E.B	0.71	-											
E.C	0.51	0.48	-										
E.D	0.73	0.70	0.54	-									
E.E	0.59	0.56	0.54	0.59	-								
M.A	0.62	0.61	0.47	0.65	0.55	-							
M.B	0.68	0.70	0.49	0.72	0.60	0.79	-						
M.C	0.57	0.59	0.41	0.60	0.50	0.70	0.79	-					
M.D	0.62	0.63	0.44	0.65	0.53	0.70	0.79	0.70	-				
S.A	0.75	0.73	0.50	0.75	0.59	0.70	0.79	0.67	0.72	-			
S.B	0.69	0.67	0.46	0.69	0.54	0.62	0.70	0.60	0.64	0.82	-		
S.C	0.60	0.59	0.38	0.61	0.47	0.57	0.65	0.56	0.59	0.75	0.68	-	
S.D	0.65	0.64	0.42	0.65	0.50	0.60	0.69	0.60	0.64	0.79	0.75	0.67	-

The correlations in Tables 19–1a through 19–1f are based on the observed strand scores. These observed-score correlations are weakened by existing measurement error, contained within each strand. As a result, disattenuating the observed correlations can provide an estimate of the relationships between strands if there were no measurement error. (An important caveat is provided further below.) The disattenuated correlation coefficients (R_{xy}) can be computed by using the formula (Spearman 1904, 1910) below:

$$R_{xy} = \frac{r_{xy}}{\sqrt{r_{xx}r_{yy}}}$$

where r_{xy} is the observed correlation, and r_{xx} and r_{yy} are the reliabilities for strand X and strand Y. Disattenuated correlations very near 1.00 might suggest that the same or very similar constructs are being measured. Values somewhat less than 1.00 might suggest that different strands are measuring slightly different aspects of the same construct. Values markedly less than 1.00 might suggest the strands reflect different constructs.

Tables 19–2a through 19–2f show the corresponding disattenuated correlations for the 2016 PSSA tests for each grade. Note that with ELA, text dependent analysis (TDA) and writing prompt (WP) items belongs to separate strands and they are the only item for the strand. Given that these strands (E.C and E.E) have only one item, reliability cannot be computed. Therefore, disattenuated correlation cannot be computed for any correlation with these strands. Where reliability can be computed, the disattenuated strand correlations are higher than their observed score counterparts, given that none of the strands has perfect reliabilities (see Chapter Eighteen).

Some within-subject correlations are very high (e.g., above 0.95), suggesting that the within-subject strands might be measuring essentially the same construct. This, in turn, suggests that some strand scores might not provide unique information about the strengths or weaknesses of students.

On the other hand, some within-subject strand correlations are somewhat lower than 1.00. For such strands, partial evidence is provided regarding the multidimensional structure of some tests and further supporting the validity of those specific strand scores.

On a fairly consistent basis, the correlations between the strands within each subject area were higher than the correlations between strands across different subject areas. In general, within-subject strand disattenuated correlations are higher than across-subject strand disattenuated correlations. As a specific example, Grade 3 disattenuated correlations for the M.A, M.B, M.C, and M.D strands range from 0.88to 1.04 and the correlations between E.A, E.B, and E.D range from 0.92 to 1.00. In contrast, the disattenuated correlations between mathematics and ELA strands range from 0.76 to 0.92. Such a pattern is expected since the two subject-area tests were designed to measure different constructs. Similar patterns are also observed at other grade levels.

Table 19–2a. Disattenuated Strand Correlations for Mathematics and ELA: Grade 3

	E.A	E.B	E.C	E.D	M.A	M.B	M.C	M.D
E.A	-							
E.B	1.00	-						
E.C								
E.D	0.93	0.94		-				
M.A	0.86	0.85		0.86	-			
M.B	0.86	0.85		0.85	0.96	-		
M.C	0.83	0.83		0.85	0.91	0.88	-	
M.D	0.88	0.87		0.88	1.00	0.97	0.93	-

Table 19–2b. Disattenuated Strand Correlations for Mathematics and ELA: Grade 4

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D	S.A	S.B	S.C	S.D
E.A	-												
E.B	0.98	-											
E.C													
E.D	0.92	0.95		-									
E.E													
M.A	0.83	0.86		0.87		-							
M.B	0.84	0.88		0.88		0.99	-						
M.C	0.78	0.84		0.86		0.92	0.90	-					
M.D	0.81	0.87		0.89		1.02	1.01	0.97	-				
S.A	0.92	0.93		0.89		0.89	0.90	0.85	0.89	-			
S.B	0.91	0.90		0.86		0.83	0.84	0.80	0.81	1.00	-		
S.C	0.89	0.90		0.87		0.87	0.88	0.85	0.87	1.00	0.99	-	
S.D	0.86	0.87		0.84		0.86	0.86	0.84	0.86	0.98	0.95	0.99	-

Table 19–2c. Disattenuated Strand Correlations for Mathematics and ELA: Grade 5

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D
E.A	-								
E.B	1.00	-							
E.C									
E.D	0.94	0.94		-					
E.E									
M.A	0.85	0.85		0.85		-			
M.B	0.89	0.89		0.90		0.99	-		
M.C	0.88	0.87		0.87		0.94	0.97	-	
M.D	0.88	0.88		0.88		1.02	1.01	0.97	-

Table 19–2d. Disattenuated Strand Correlations for Mathematics and ELA: Grade 6

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D
E.A	-								
E.B	0.97	-							
E.C									
E.D	0.92	0.94		-					
E.E									
M.A	0.87	0.89		0.87		-			
M.B	0.88	0.90		0.89		1.01	-		
M.C	0.80	0.80		0.81		0.95	0.96	-	
M.D	0.83	0.86		0.84		0.97	0.98	0.95	-

Table 19–2e. Disattenuated Strand Correlations for Mathematics and ELA: Grade 7

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D
E.A	-								
E.B	0.97	-							
E.C									
E.D	0.92	0.96		-					
E.E									
M.A	0.85	0.85		0.85		-			
M.B	0.85	0.84		0.84		1.00	-		
M.C	0.80	0.79		0.80		0.96	0.97	-	
M.D	0.92	0.93		0.92		1.02	1.04	0.98	-

Table 19–2f. Disattenuated Strand Correlations for Mathematics, ELA, and Science: Grade 8

	E.A	E.B	E.C	E.D	E.E	M.A	M.B	M.C	M.D	S.A	S.B	S.C	S.D
E.A	-												
E.B	0.96	-											
E.C													
E.D	0.93	0.92		-									
E.E													
M.A	0.83	0.86		0.85		-							
M.B	0.83	0.87		0.84		0.99	-						
M.C	0.74	0.80		0.76		0.94	0.95	-					
M.D	0.87	0.90		0.88		1.01	1.02	0.97	-				
S.A	0.90	0.91		0.88		0.87	0.88	0.80	0.92	-			
S.B	0.91	0.91		0.87		0.84	0.85	0.78	0.90	0.99	-		
S.C	0.87	0.88		0.85		0.85	0.86	0.79	0.90	1.00	0.98	-	
S.D	0.86	0.88		0.83		0.83	0.85	0.79	0.90	0.97	1.00	0.98	-

Some caution is needed in interpreting the disattenuated results because the reliabilities used to calculate the disattenuated correlations are subject to both upward and downward biases. (These are discussed in some detail in Chapter Eighteen.) Consequently, some of the values tabled above may be higher or lower than they should be, depending on which bias prevails for any given pair of strand scores. When the reliabilities are lower than they should be, the disattenuated correlations will be inflated (and in some instances can appear larger than the theoretical correlation maximum value of 1.00).

EVIDENCE BASED ON RELATIONSHIPS WITH OTHER VARIABLES

As described in the *Standards* (2014), “Evidence based on relationships with other variables provides evidence about the degree to which relationships are consistent with the construct underlying the proposed test score interpretations” (p. 16). This category of evidence is classified by three types—convergent, discriminant, and criterion-related evidence. Convergent evidence is provided by relationships between students’ performance on different assessments intended to measure a similar construct. Discriminant evidence is provided by relationships between students’ performance on different tests intended to measure different constructs. Criterion-related evidence, either predictive or concurrent, is provided by relationships between students’ test scores and their performance on a criterion measure (Cronbach, 1971; Messick, 1989).

Evidence of the relationship of the PSSA with other variables for the previous PSSA mathematics and reading tests has been examined by HumRRO in a series of independent studies using 2001–2003 PSSA data (Koger, Thacker & Dickinson, 2004; Sinclair & Thacker, 2005; Thacker, Dickinson, & Koger, 2004).

Since 2015 was the first year of new PSSA mathematics and ELA, additional correlational studies have been conducted and an additional special study on the relationship between the PSSA and classroom performance is underway. As useful studies of convergent, discriminant, and predictive validity rely heavily on the technical quality of the criteria measures, the Pennsylvania CDTs, which are well documented high quality assessment aligned to the same Assessment Anchors and Eligible Content as the PSSA tests, were used to assess convergent and discriminant validity. Table 19-5 shows the correlations between the PSSA and CDT assessments. Correlations range between 0.75 to 0.84.

Table 19–3. Correlations among Students’ Performance Between PSSA and CDT Tests

PSSA	CDT	Grade	N	<i>r</i>
ELA	Reading Literature	6	31607	0.81
ELA	Reading Literature	7	33000	0.80
ELA	Reading Literature	8	32151	0.78
ELA	Reading Lower Grades	3	23381	0.80
ELA	Reading Lower Grades	4	25180	0.81
ELA	Reading Lower Grades	5	26057	0.83
ELA	Writing English Composition	6	7061	0.79
ELA	Writing English Composition	7	7535	0.78
ELA	Writing English Composition	8	7713	0.75
ELA	Writing Lower Grades	3	3727	0.79
ELA	Writing Lower Grades	4	4031	0.79
ELA	Writing Lower Grades	5	4100	0.79
Math	Mathematics	6	32675	0.84
Math	Mathematics	7	32557	0.83
Math	Mathematics	8	26795	0.81
Math	Mathematics Lower Grades	3	26490	0.80
Math	Mathematics Lower Grades	4	28700	0.82
Math	Mathematics Lower Grades	5	30542	0.82
Science	Science	8	25068	0.78
Science	Science Lower Grades	4	8969	0.80

To assess discriminant validity for the 2016 PSSA tests, the correlations between students’ test scores on different PSSA tests, including mathematics, ELA, and science are shown in Table 19–5 in order to provide some discriminant validity evidence. In this table, both the observed and disattenuated correlations are reported.

Table 19–4. Correlations among Students’ Performance on All PSSA Tests

Grade	Mathematics/ELA	Mathematics/Science	ELA/Science
3	0.81 (0.87)	-	-
4	0.78 (0.85)	0.81 (0.87)	0.80 (0.86)
5	0.81 (0.86)	-	-
6	0.81 (0.87)	-	-
7	0.79 (0.86)	-	-
8	0.79 (0.86)	0.82 (0.87)	0.81 (0.87)

Note. Numbers in the parenthesis are disattenuated correlations. The PSSA final data file was used for these calculations (see Chapter Nine). Case-wise elimination of missing data was used.

Each PSSA assessment measures a different construct, so the correlations between them were not expected to be extremely high. The values in this table are consistent with this expectation. As can be seen, the correlations between the PSSA tests range from 0.78 to 0.82.

EVIDENCE BASED ON CONSEQUENCES OF TESTING

Based on the *Standards* (2014), evidence of the consequences of implementing an assessment program is an additional source of validity information. Both positive and negative (intended and unintended) consequences of score-based inferences must be investigated to fully evaluate the pool of validity evidence. It is important to note that the consequences of the assessment program themselves do not serve as indicators of validity. That is, the investigation and evaluation of the consequences provides a richer context for establishing the validity of an assessment program.

As reported in Chapter Five and Appendix F, review and consideration of differential item functioning results with respect to gender and ethnicity offers some evidence that construct-irrelevant variance affecting these groups differentially is not present. The presence of construct-irrelevant variance is generally considered to be a serious threat to the validity of inferences made from test scores, where those differences are due to content that is unrelated to the intended construct for one or more groups. As noted in that chapter, field test items are screened and reviewed for DIF. Only items approved by teacher committees are eligible for operational use.

Additionally, analyses were conducted to assess the comparability of scores across paper-based and computer-based modes of assessment (PBT and CBT) by evaluating differences in person fit. Results of these analyses indicate that the PSSA tests are functioning similarly across mode and mode by subgroups. Refer to Appendix S for a detailed discussion of the analyses and findings.

A comprehensive independent study of the invariance of scores across accommodations was also conducted by Sireci and Wells (2016) with results that support claims of measurement invariance across the PSSA tests for accommodated groups with sufficient cases for analysis.

As evidence of consequential validity is related to its uses, as well as to statistical measures of invariance, it is difficult to directly measure all aspects of consequential validity. Test data provide important evidence of the validity of PSSA scores for their intended uses. With respect to the PSSA tests, the results of the several statistical analyses discussed provide evidence that PSSA scores have the same meaning for all examinees, regardless of conditions of gender, ethnicity, test mode, and accommodations used.

Regarding the use of test scores, Chapter Sixteen includes several different types of scores and score reports used for the PSSA. This chapter also provides accurate and clear test score and report information to help users avoid unintended uses and interpretations of the PSSA results. The extent to which various groups of users (e.g., students, teachers, and parents) interpret these scores and reports appropriately affects the validity of subsequent uses of these results. PDE continues to gather evidence to improve or guide decisions pertaining to all aspects of intended and unintended consequences of the PSSA program.

EVIDENCE RELATED TO THE USE OF THE RASCH MODEL

Since the Rasch model is the basis of all calibration, scaling, and linking analyses associated with the PSSA, the validity of the inferences from these results depends on the degree to which the assumptions of the model are met as well as the fit between the model and test data. As discussed at length in Chapter Twelve, the underlying assumptions of Rasch models were essentially met for all the PSSA data, indicating the appropriateness of using the Rasch models to analyze the PSSA data.

In addition, the Rasch model was also used to link science operational PSSA tests across years. The accuracy of the linking also affects the accuracy of student scores and the validity of score uses. As described in Chapter Fifteen, DRC Psychometric Services staff follow linking procedures previously vetted by the Pennsylvania National TAC. Moreover, DRC internal replication and TAC review ensured the accuracy of the linking results.

VALIDITY EVIDENCE SUMMARY

Validity evidence related to test content was reviewed earlier in this chapter. On the whole, the early chapters of this technical report show that a strong link can be established between each PSSA item and its associated eligible content. Details regarding how the PSSA operational assessments were assembled to reflect the state content standards and detailed information regarding educator reviews (including content, bias, and sensitivity reviews) are presented in Chapter Three.

Evidence of the validity of score interpretations is also provided as it relates to response processes. Cognitive labs for Science scenario-based items showed that examinees were responding as intended and routine hand-scoring processes describe in Chapter Eight provide evidence that ratings show reasonable consistency and that rigorous scoring processes are in place to reduce rater bias and increase consistency.

Evidence of the validity related to internal test structure is provided through multiple analysis results including high test score reliabilities, expected SEM and CSEM results, good decision consistency and accuracy, strongly unidimensional constructs, and selection of items that have appropriate difficulty ranges, and discriminate performance well.

Strand score intercorrelations are also presented in this chapter. In general, within-subject-area strands (e.g., mathematics) correlate more highly with themselves than they do with other subject-area strands (e.g., ELA). Consequently, this provides some favorable evidence regarding the internal and external relationships between the tests' components.

A study of the relationship of PSSA scores with CDT scores shows a strong relationship between similar content areas providing useful convergent validity evidence as the PSSA and CDT are aligned to the same Assessment Anchors and Eligible Content. Additional opportunities to correlate PSSA scores with other high quality assessments intended to measure the same or similar constructs are being investigated at the time of this report's publication.

Last, evidence that PSSA test scores are largely invariant across multiple subgroups of student is also provided through the results of DIF analyses and subsequent item selection processes, a multi-method study on the invariance of accommodated test scores, and a person fit analysis to investigate the comparability of scores from different modes of administration for different populations of students.

APPENDIX A: GENERAL SCORING GUIDELINES

General Description of Scoring Guidelines for Reading Short-Answer Questions

GENERAL DESCRIPTION OF SCORING GUIDELINES FOR READING SHORT-ANSWER QUESTIONS

3 Points

- The response provides a complete answer to the task (e.g., a statement that offers a correct answer as well as text-based support).
- The response provides specific, appropriate, and accurate details (e.g., naming, describing, explaining, or comparing) or examples.

2 Points

- The response provides a partial answer to the task (e.g., indicates some awareness of the task and at least one text-based detail).
- The response attempts to provide sufficient, appropriate details (e.g., naming, describing, explaining, or comparing) or examples; may contain minor inaccuracies.

1 Point

- The response provides an incomplete answer to the task (e.g., indicating either a misunderstanding of the task or no text-based details).
- The response provides insufficient or inappropriate details or examples that have a major effect on accuracy.
- The response consists entirely of relevant copied text.

0 Points

- The response provides insufficient material for scoring.
- The response is inaccurate in all aspects.

Categories within zero reported separately:

BLK (blank)No response or written refusal to respond or too brief to determine response

OTOff task/topic

LOE.....Response in a language other than English

IL.....Illegible

Text-Dependent Analysis Scoring Guidelines

Score	Description
4	<ul style="list-style-type: none"> • Effectively addresses all parts of the task demonstrating in-depth analytic understanding of the text(s) • Effective introduction, development, and conclusion identifying an opinion, topic, or controlling idea related to the text(s) • Strong organizational structure that effectively supports the focus and ideas • Thorough analysis of explicit and implicit meanings from text(s) to effectively support claims, opinions, ideas, and inferences • Substantial, accurate, and direct reference to the text(s) using relevant key details, examples, quotes, facts, and/or definitions • Substantial reference to the main idea(s) and relevant key details of the text(s) to support the writer’s purpose • Skillful use of transitions to link ideas • Effective use of precise language and domain-specific vocabulary drawn from the text(s) to explain the topic and/or to convey experiences/events • Few errors, if any, are present in sentence formation, grammar, usage, spelling, capitalization, and punctuation; errors present do not interfere with meaning
3	<ul style="list-style-type: none"> • Adequately addresses all parts of the task demonstrating sufficient analytic understanding of the text(s) • Clear introduction, development, and conclusion identifying an opinion, topic, or controlling idea related to the text(s) • Appropriate organizational structure that adequately supports the focus and ideas • Clear analysis of explicit and implicit meanings from text(s) to support claims, opinions, ideas, and inferences • Sufficient, accurate, and direct reference to the text(s) using relevant details, examples, quotes, facts, and/or definitions • Sufficient reference to the main idea(s) and relevant key details of the text(s) to support the writer’s purpose • Appropriate use of transitions to link ideas • Appropriate use of precise language and domain-specific vocabulary drawn from the text(s) to explain the topic and/or to convey experiences/events • Some errors may be present in sentence formation, grammar, usage, spelling, capitalization, and punctuation; errors present seldom interfere with meaning

Score	Description
2	<ul style="list-style-type: none"> • Inconsistently addresses some parts of the task demonstrating partial analytic understanding of the text(s) • Weak introduction, development, and/or conclusion identifying an opinion, topic, or controlling idea somewhat related to the text(s) • Weak organizational structure that inconsistently supports the focus and ideas • Weak or inconsistent analysis of explicit and/or implicit meanings from text(s) that somewhat supports claims, opinions, ideas, and inferences • Vague reference to the text(s) using some details, examples, quotes, facts, and/or definitions • Weak reference to the main idea(s) and relevant details of the text(s) to support the writer's purpose • Inconsistent use of transitions to link ideas • Inconsistent use of precise language and domain-specific vocabulary drawn from the text(s) to explain the topic and/or to convey experiences/events • Errors may be present in sentence formation, grammar, usage, spelling, capitalization, and punctuation; errors present may interfere with meaning
1	<ul style="list-style-type: none"> • Minimally addresses part(s) of the task demonstrating inadequate analytic understanding of the text(s) • Minimal evidence of an introduction, development, and/or conclusion • Minimal evidence of an organizational structure • Insufficient or no analysis of the text(s); may or may not support claims, opinions, ideas, and inferences • Insufficient reference to the text(s) using few details, examples, quotes, facts, and/or definitions • Minimal reference to the main idea(s) and/or relevant details of the text(s) • Few, if any, transitions to link ideas • Little or no use of precise language or domain-specific vocabulary drawn from the text(s) • Many errors may be present in sentence formation, grammar, usage, spelling, capitalization, and punctuation; errors present often interfere with meaning

**GENERAL DESCRIPTION OF SCORING GUIDELINES
FOR MATHEMATICS OPEN-ENDED QUESTIONS**

4 – The response demonstrates a *thorough* understanding of the mathematical concepts and procedures required by the task.

The response provides correct answer(s) with clear and complete mathematical procedures shown and a correct explanation, as required by the task. Response may contain a minor “blemish” or omission in work or explanation that does not detract from demonstrating a *thorough* understanding.

3 – The response demonstrates a *general* understanding of the mathematical concepts and procedures required by the task.

The response and explanation (as required by the task) are mostly complete and correct. The response may have minor errors or omissions that do not detract from demonstrating a *general* understanding.

2 – The response demonstrates a *partial* understanding of the mathematical concepts and procedures required by the task.

The response is somewhat correct with *partial* understanding of the required mathematical concepts and/or procedures demonstrated and/or explained. The response may contain some work that is incomplete or unclear.

1 – The response demonstrates a *minimal* understanding of the mathematical concepts and procedures required by the task.

0 – The response has no correct answer and *insufficient* evidence to demonstrate any understanding of the mathematical concepts and procedures required by the task for that grade level.

Response may show only information copied from the question.

Special Categories within zero reported separately:

BLK (blank).....Blank, entirely erased, or written refusal to respond

OT.....Off task

LOE.....Response in a language other than English

IL.....Illegible

General Description of Scoring Guidelines for Science Open-Ended Questions

GENERAL 2-POINT SCORING GUIDELINES FOR SCIENCE

2 – The response demonstrates a *thorough* understanding of the scientific content, concepts, and procedures required by the task(s).

The response provides a clear, complete, and correct response as required by the task(s). The response may contain a minor blemish or omission in work or explanation that does not detract from demonstrating a *thorough* understanding.

1 – The response demonstrates a *partial* understanding of the scientific content, concepts, and procedures required by the task(s).

The response is somewhat correct with *partial* understanding of the required scientific content, concepts, and/or procedures demonstrated and/or explained. The response may contain some work that is incomplete or unclear.

0 – The response provides *insufficient* evidence to demonstrate any understanding of the scientific content, concepts, and procedures as required by the task(s) for that grade level.

The response may show only information copied or rephrased from the question or *insufficient* correct information to receive a score of 1.

Special categories within zero reported separately:

BLK (blank) – No response or written refusal to respond or too brief to determine response

OT – Off task/topic

LOE – Response in a language other than English

IL – Illegible

APPENDIX B: TALLY SHEETS

Grade 03

English Language Arts

Reporting Category	Assessment Anchor	DesOEIptor (Sub-anchor)	Eligible Content	Focus	Points										Items									
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items			
					(Core Points)			(EB)			(Core & EB)				Core			EB			(Core & EB)			
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total
A: Literature Text	A-K	1	1	1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	2		3	2			4		3	7	2	1	2			4		1	5
		1	1	2	Recount poems, dramas, or stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.							3			3			1						1
		1	1	3	Describe characters in a story and explain how their actions contribute to the sequence of events.	1	3		2			3	3		6	1	1	2			3	1		4
	Total For Assessment Anchor A-K.1 Key Ideas and Details					3	6	3	4			7	6	3	16	3	2	1	4		7	2	1	10
	A-C	2	1	1	Explain the point of view from which a story is narrated, including the difference between first- and third-person narrations.	2						2			2	2					2			2
	Total For Assessment Anchor A-C.2 OEaft and Structure					2						2			2	2					2			2
	A-C	3	1	1	Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters.																			
	Total For Assessment Anchor A-C.3 Integration of Knowledge and Ideas																							
	A-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.	3						3			3	3					3			3
		4	1	2	Demonstrate understanding of word relationships and nuances in word meanings.	2			2			4			4	2		2			4			4
Total For Assessment Anchor A-V.4 Vocabulary Acquisition and Use					5			2			7			7	5		2			7			7	
Total For Reporting Category A					10	6	3	6			16	6	3	25	10	2	1	6		16	2	1	19	

Reporting Category	Assessment Anchor	DesOEIptor (Sub-anchor)	Eligible Content	Focus	Points										Items										
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items				
					(Core Points)						(Core & EB)				Core			EB			(Core & EB)				
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	
B: Informational Text	B-K	1	1	1	Answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	1	4					1	4		5	1	2				1	2		3	
		1	1	2	Determine the main idea of a text; recount the key details and explain how they support the main idea.																				
		1	1	3	Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.			3				2	2			1							1	1	
	Total For Assessment Anchor B-K.1 Key Ideas and Details					1	4	3				1	4	2	7	1	2	1				1	2	1	4
	B-C	2	1	1	Explain the point of view from which a text is written.	1						1			1	1						1			1
		2	1	2	Use text features and search tools to efficiently locate information relevant to a given topic.	1						1			1	1						1			1
	Total For Assessment Anchor B-C.2 OEaft and Structure					2						2			2	2						2			2
	B-C	3	1	1	Describe the logical connection between particular sentences and paragraphs to support specific points in a text.	1						1			1	1						1			1
		3	1	2	Compare and contrast the most important points and key details presented in two texts on the same topic.	1						1			1	1						1			1
		3	1	3	Use information gained from illustrations, maps, photographs, and the words in a text to demonstrate understanding of the text.	1						1			1	1						1			1
	Total For Assessment Anchor B-C.3 Integration of Knowledge and Ideas					3						3			3	3						3			3
	B-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.	2						2			2	2						2			2
		4	1	2	Demonstrate understanding of word relationships and nuances in word meanings.	2						2			2	2						2			2
Total For Assessment Anchor B-V.4 Vocabulary Acquisition and Use					4						4			4	4						4			4	
Total For Reporting Category B					10	4	3				10	4	2	16	10	2	1				10	2	1	13	

Grade 03

English Language Arts

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points										Items											
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items					
					(Core Points)			(EB)			(Core & EB)				Core			EB			(Core & EB)					
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total		
D: Language	D	1	1	1	Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences.	2			1			3			3	2			1			3			3	
		1	1	2	Form and use regular and irregular plural nouns.	1					1			1	1							1			1	
		1	1	3	Use abstract nouns.	1					1			1	1							1			1	
		1	1	4	Form and use regular and irregular verbs.	1			1		2			2	1			1				2			2	
		1	1	5	Form and use the simple verb tenses.	1			2		3			3	1			2				3			3	
		1	1	6	Ensure subject-verb and pronoun-antecedent agreement.	1			2		3			3	1			2				3			3	
		1	1	7	Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.	1			1		2			2	1			1				2			2	
		1	1	8	Use coordinating and subordinating conjunctions.				1		1			1				1				1			1	
		1	1	9	Produce simple, compound, and complex sentences.																					
		1	2	1	Capitalize appropriate words in titles.	2			1		3			3	2			1				3			3	
		1	2	2	Use commas in addresses.																					
		1	2	3	Use commas and quotation marks in dialogue.	2					2			2	2							2			2	
		1	2	4	Form and use possessives.	2					2			2	2							2			2	
		1	2	5	Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words.	1					1			1	1							1			1	
		1	2	6	Use spelling patterns and generalizations in writing words.	1					1			1	1							1			1	
		Total For Assessment Anchor D.1 Conventions of Standard English					16			9			25			25	16			9			25			25
		2	1	1	Choose words and phrases for effect.	2					2			2	2							2			2	
		Total For Assessment Anchor D.2 Knowledge of Language					2						2		2							2			2	
Total For Reporting Category D					18			9			27			27	18			9			27			27		

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points										Items										
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items				
					(Core Points)			(EB)			(Core & EB)				Core			EB			(Core & EB)				
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	
A: Literature Text	A-K	1	1	1	Refer to details and examples in a text when explaining what the text explicitly says and when drawing inferences from the text.	2	0	0	2	0	0	4	0	0	4	2	0	0	2	0	0	4	0	0	4
		1	1	2	Determine a theme of a story, drama, or poem from details in the text; summarize the text.	2	0	0	2	0	0	4	0	0	4	2	0	0	2	0	0	4	0	0	4
		1	1	3	Describe in depth a character, setting, or event in a story, drama, or poem, drawing on specific details in the text.	4	2	0	0	0	0	4	2	0	6	4	1	0	0	0	0	4	1	0	5
	Total For Assessment Anchor A-K.1 Key Ideas and Details					8	2	0	4	0	0	12	2	0	14	8	1	0	4	0	0	12	1	0	13
	A-C	2	1	1	Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	1
		Total For Assessment Anchor A-C.2 Craft and Structure					1	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	1
		3	1	1	Compare and contrast the treatment of similar themes and topics and patterns of events in stories, myths, and traditional literature from different cultures.	0	3	0	0	0	0	0	3	0	3	0	1	0	0	0	0	0	1	0	1
		Total For Assessment Anchor A-C.3 Integration of Knowledge and Ideas					0	3	0	0	0	0	3	0	3	0	1	0	0	0	0	0	1	0	1
	A-V	4	1	1	Determine or clarify the meaning of unknown multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	1	0	2
		4	1	2	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	2	2	0	2	0	0	4	2	0	6	2	1	0	2	0	0	4	1	0	5
		Total For Assessment Anchor A-V.4 Vocabulary Acquisition and Use					3	2	0	2	0	0	5	2	0	7	3	1	0	2	0	0	5	2	0
	Total For Reporting Category A					12	7	0	6	0	0	18	7	0	25	12	3	0	6	0	0	18	4	0	22

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points										Items											
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items					
					(Core Points)						(Core & EB)				Core			EB			(Core & EB)					
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total		
B: Informational Text	B-K	1	1	1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	1	2	0	0	0	0	1	2	0	3	1	1	0	0	0	0	1	1	0	2	
		1	1	2	Determine the main idea of a text and explain how it is supported by key details; summarize the text.	1	6	0	0	0	0	1	6	0	7	1	2	0	0	0	0	1	2	0	3	
		1	1	3	Explain events, procedures, ideas, steps, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	2	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	2	0	0	2	
	Total For Assessment Anchor B-K.1 Key Ideas and Details					4	8	0	0	0	0	4	8	0	12	4	3	0	0	0	0	4	3	0	7	
	B-C	2	1	1	Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		2	1	2	Describe the overall structure of events, ideas, concepts, or information and text features in a text or part of a text.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1	0	0	1
	Total For Assessment Anchor B-C.2 Craft and Structure					1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1	0	0	1
	B-C	3	1	1	Explain how an author uses reasons and evidence to support particular points in a text.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1		0	1
		3	1	2	Integrate information from two texts on the same topic in order to demonstrate subject knowledge.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
		3	1	3	Interpret text features and/or make connections between text and the content of text features.	2	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	2		0	2
	Total For Assessment Anchor B-C.3 Integration of Knowledge and Ideas					3	0	0	0	0	0	3	0	0	3	3	0	0	0	0	0	0	3	0	0	3
	B-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.	2	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	2		0	2
		4	1	2	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1		0	1
	Total For Assessment Anchor B-V.4 Vocabulary Acquisition and Use					3	0	0	0	0	0	3	0	0	3	3	0	0	0	0	0	0	3	0	0	3
Total For Reporting Category B					11	8	0	0	0	0	11	8	0	19	11	3	0	0	0	0	0	11	3	0	14	

Grade 04

English Language Arts

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points										Items									
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items			
					(Core Points)			(EB)			(Core & EB)				Core			EB			(Core & EB)			
					MC	ESR	WP	MC	ESR	WP	MC	ESR	WP	Total	MC	ESR	WP	MC	ESR	WP	MC	ESR	WP	Total
C: Writing	C	1	1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.	0	0	4	0	0	0	0	0	4	4	0	0	1	0	0	0	0	0	1	1
		1	2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	3	Write narratives to develop real or imagined experiences or events using effective techniques, descriptive details, and clear event sequences.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total For Assessment Anchor C.1 Text Types and Purposes				0	0	4	0	0	0	0	0	4	4	0	0	1	0	0	0	0	0	1	1
Total For Reporting Category C					0	0	4	0	0	0	0	0	4	4	0	0	1	0	0	0	0	0	1	1

Grade 04

English Language Arts

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points										Items										
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items				
					(Core Points)			(EB)			(Core & EB)				Core			EB			(Core & EB)				
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	
D: Language	D	1	1	1	Use relative pronouns and relative adverbs.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	1
		1	1	2	Form and use the progressive verb tenses.	1	0	0	1	0	0	2	0	0	2	1	0	0	1	0	0	2	0	0	2
		1	1	3	Use modal auxiliaries to convey various conditions.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	1
		1	1	4	Order adjectives within sentences according to conventional patterns.	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	1	0	0	1
		1	1	5	Form and use prepositional phrases.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	1
		1	1	6	Produce complete sentences, recognizing and correcting inappropriate fragments and run-on sentences.	1	0	0	1	0	0	2	0	0	2	1	0	0	1	0	0	2	0	0	2
		1	1	7	Correctly use frequently confused words.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	1	8	Ensure subject-verb and pronoun-antecedent agreement.	1	0	0	1	0	0	2	0	0	2	1	0	0	1	0	0	2	0	0	2
		1	2	1	Use correct capitalization.	3	0	0	1	0	0	4	0	0	4	3	0	0	1	0	0	4	0	0	4
		1	2	2	Use commas and quotation marks to mark direct speech and quotations from a text.	1	0	0	1	0	0	2	0	0	2	1	0	0	1	0	0	2	0	0	2
	1	2	3	Use a comma before a coordinating conjunction in a compound sentence.	1	0	0	2	0	0	3	0	0	3	1	0	0	2	0	0	3	0	0	3	
	1	2	4	Spell grade-appropriate words correctly.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	1	
	Total For Assessment Anchor D.1 Conventions of Standard English				12	0	0	8	0	0	20	0	0	20	12	0	0	8	0	0	20	0	0	20	
D	2	1	1	Choose words and phrases to convey ideas precisely.	2	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	2	0	0	2	
	2	1	2	Choose punctuation for effect.	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	1	
	2	1	3	Choose words and phrases for effect.	3	0	0	1	0	0	4	0	0	4	3	0	0	1	0	0	4	0	0	4	
Total For Assessment Anchor D.2 Knowledge of Language				6	0	0	1	0	0	7	0	0	7	6	0	0	1	0	0	7	0	0	7		
Total For Reporting Category D					18	0	0	9	0	0	27	0	0	27	18	0	0	9	0	0	27	0	0	27	

Grade 04

English Language Arts

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points										Items											
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items					
					(Core Points)			(EB)			(Core & EB)				Core			EB			(Core & EB)					
					MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total	MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total		
E: Text-Dependent Analysis	E	1	1	Draw evidence from literary or informational texts to support analysis, reflection, and/or research.	0	0	4	0	0	0	0	0	0	4	4	0	0	1	0	0	0	0	0	0	1	1
	Total For Assessment Anchor E.1 Evidence-based Analysis of Text				0	0	4	0	0	0	0	0	4	4	0	0	1	0	0	0	0	0	0	0	1	1
	Total For Reporting Category E				0	0	4	0	0	0	0	0	4	4	0	0	1	0	0	0	0	0	0	0	0	1

Reporting Category	Assessment Anchor	Descriptior (Sub-anchor)	Eligible Content	Focus	Points										Items											
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items					
					(Core Points)			(EB)			(Core & EB)				Core			EB			(Core & EB)					
					MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total	MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total		
A: Literature Text	A-K	1	1	1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences and/or making generalizations from the text.	2						2					2					2				
		1	1	2	Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.	2						2					2					2				
		1	1	3	Compare and contrast two or more characters, settings, or events in a story, drama, or poem, drawing on specific details in the text.	1	3					1	3				4	1	1				1	1		2
	Total For Assessment Anchor A-K.1 Key Ideas and Details					5	3					5	3				8	5	1				5	1		6
	A-C	2	1	1	Describe how a narrator's or speaker's point of view influences how events are described; describe an author's purpose and explain how it is conveyed in the text.	3						3					3					1				1
		Total For Assessment Anchor A-C.2 OEaft and Structure					3						3					3					1			1
	A-C	3	1	1	Compare and contrast stories in the same genre on their approaches to similar themes and topics.	1						1					1								1	1
		Total For Assessment Anchor A-C.3 Integration of Knowledge and Ideas					1						1					1								1
	A-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.	3						3					3								3	3
		4	1	2	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	4	2					4	2				6	4	1						4	1
Total For Assessment Anchor A-V.4 Vocabulary Acquisition and Use					7	2					7	2				9	7	1						7	1	8
Total For Reporting Category A					13	8					13	8				21	13	3						13	3	16

Reporting Category	Assessment Anchor	DesOE/Item (Sub-anchor)	Eligible Content	Focus	Points										Items																				
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items														
					(Core Points)						(Core & EB)				Core			EB			(Core & EB)														
					MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total	MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total											
B: Informational Text	B-K	1	1	1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences and/or making generalizations from the text.		7				1				1	7				8					3		1			1	3			4	
		1	1	2	Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.		2					2									2												2		
		1	1	3	Explain the relationships or interactions between two or more individuals, events, ideas, steps, or concepts in a historical, scientific, or technical text based on specific information in the text.		1					1									1												1		
	Total For Assessment Anchor B-K.1 Key Ideas and Details					3	7				1				4	7				11		3	3		1					4	3			7	
	B-C	2	1	1	Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.																														
		2	1	2	Compare and contrast the overall structure of events, ideas, concepts, or information and text features in two or more texts.																														
	Total For Assessment Anchor B-C.2 OEaft and Structure																																		
	B-C	3	1	1	Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).		1					1				2					2					1					2			2	
		3	1	2	Integrate information from several texts on the same topic in order to demonstrate subject knowledge.																														
		3	1	3	Interpret text features and/or make connections between text and the content of text features.		2					1				3					3					2		1			3			3	
	Total For Assessment Anchor B-C.3 Integration of Knowledge and Ideas					3					2				5						5		3			2					5				5
	B-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.		2					2				4					4					2				2			4	4	
		4	1	2	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.		2					1				3					3					2		1			3			3	
	Total For Assessment Anchor B-V.4 Vocabulary Acquisition and Use					4					3				7					7		4			3					7				7	
Total For Reporting Category B					10	7				6				16	7					23		10	3		6					16	3			19	

Reporting Category	Assessment Anchor	DesOEIptor (Sub-anchor)	Eligible Content	Focus	Points												Items									
					Student Scores			Equating Block (EB)			Total Points			Number of Items						Total Number of Items						
					(Core Points)			(EB)			(Core & EB)			Core			EB			(Core & EB)						
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total		
A: Literature Text	A-K	1	1	1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences and/or generalizations drawn from the text.	1	2					1	2		3	1	1					1	1		2	
		1	1	2	Determine a theme or central idea of a text and how it is conveyed through relevant details; provide a summary of the text distinct from personal opinions or judgments.		2						2		2		1							1		1
		1	1	3	Describe how the plot of a particular story, drama, or poem unfolds; as well as how the characters respond or change as the plot moves toward a resolution.		3						3		3		1							1		1
	Total For Assessment Anchor A-K.1 Key Ideas and Details					1	7					1	7		8	1	3						1	3		4
	A-C	2	1	1	Determine an author's purpose in a text and explain how it is conveyed in the text; explain how an author develops the point of view of the narrator or speaker in a text; describe the effectiveness of the point of view used by the author.	1						1		1	1								1			1
		2	1	2	Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.	2						2		2	2								2			2
		2	1	3	Determine how the author uses the meaning of words or phrases, including figurative and connotative meanings, in a text; analyze the impact of a specific word choice on meaning and tone.	1						1		1	1								1			1
	Total For Assessment Anchor A-C.2 Craft and Structure					4						4		4	4								4			4
		3	1	1	Compare and contrast texts in different forms or genres in terms of their approaches to similar themes and topics.																					
	Total For Assessment Anchor A-C.3 Integration of Knowledge and Ideas																									
	A-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.	3						3		3	3								3			3
		4	1	2	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	3						3		3	3								3			3
	Total For Assessment Anchor A-V.4 Vocabulary Acquisition and Use					6						6		6	6								6			6
	Total For Reporting Category A					11	7					11	7		18	11	3							11	3	

Grade 06

English Language Arts

Reporting Category	Assessment Anchor	Des/OI/ptor (Sub-anchor)	Eligible Content	Focus	Points												Items									
					Student Scores			Equating Block (EB)			Total Points			Number of Items				Total Number of Items								
					(Core Points)			(Core & EB)			(Core & EB)			Core		EB		(Core & EB)								
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total		
B: Informational Text	B-K	1	1	1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences and/or generalizations drawn from the text.	1	2		1			2	2		4	1	1		1			2	1		3	
		1	1	2	Determine a central idea of a text and how it is conveyed through relevant details; provide a summary of the text distinct from personal opinions or judgments.	1			1			2			2	1			1			2			2	
		1	1	3	Analyze in detail how a key individual, event, or idea is introduced, illustrated, or elaborated in a text.		3		1			1	3		4		1		1			1	1		2	
		Total For Assessment Anchor B-K.1 Key Ideas and Details					2	5		3			5	5		10	2	2		3			5	2		7
	B-C	2	1	1	Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.	1					1				1	1						1			1	
		2	1	2	Analyze how a particular sentence, paragraph, chapter, section, or text feature fits into the overall development of the ideas.	1					1				1	1						1			1	
		2	1	3	Determine how the author uses the meaning of words or phrases, including figurative, connotative, or technical meanings, in a text.	1			1			2			2	1			1			2			2	
		Total For Assessment Anchor B-C.2 OEaft and Structure					3			1			4			4	3			1			4			4
		3	1	1	Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	2	3		1			3	3		6	2	1		1			3	1		4	
		3	1	2	Compare and contrast one author's presentation of events with that of another.	1						1			1	1						1			1	
Total For Assessment Anchor B-C.3 Integration of Knowledge and Ideas					3	3		1			4	3		7	3	1		1			4	1		5		
B-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.	2					2			2	2							2			2		
	4	1	2	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	2			1			3			3	2			1			3			3		
	Total For Assessment Anchor B-V.4 Vocabulary Acquisition and Use					4			1			5			5	4			1			5			5	
Total For Reporting Category B					12	8		6			18	8		26	12	3		6			18	3		21		

Reporting Category	Assessment Anchor	DesOEiptor (Sub-anchor)	Eligible Content	Focus	Points												Items											
					Student Scores			Equating Block (EB)			Total Points						Number of Items						Total Number of Items					
					(Core Points)						(Core & EB)						Core			EB			(Core & EB)					
					MC	ESR	WP	MC	ESR	WP	MC	ESR	WP	Total	MC	ESR	WP	MC	ESR	WP	MC	ESR	WP	Total				
C: Writing	C	1	1	Write arguments to support claims with clear reasons and relevant evidence.			4						4	4			1						1	1				
		1	2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.																								
		1	3	Write narratives to develop real or imagined experiences or events using effective techniques, relevant desOEiptive details, and well-structured event sequences.																								
		Total For Assessment Anchor C.1 Text Types and Purposes						4						4	4			1						1	1			
Total For Reporting Category C							4						4	4			1						1	1				

Grade 06

English Language Arts

Reporting Category	Assessment Anchor	DesOEIptor (Sub-anchor)	Eligible Content	Focus	Points										Items												
					Student Scores (Core Points)			Equating Block (EB)			Total Points (Core & EB)				Number of Items						Total Number of Items (Core & EB)						
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	Core			EB			Total						
															MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total
D: Language	D	1	1	1	Ensure that pronouns are in the proper case.	1			1			2			2	1			1			2			2		
		1	1	2	Use intensive pronouns.				1			1			1				1			1			1		
		1	1	3	Recognize and correct inappropriate shifts in pronoun number and person.	1						1			1	1									1		1
		1	1	4	Recognize and correct vague pronouns.				1			1			1				1						1		1
		1	1	5	Recognize and correct inappropriate shifts in verb tense.	1			1			2			2	1			1						2		2
		1	1	6	Produce complete sentences, recognizing and correcting inappropriate fragments and run-on sentences.	1						1			1	1									1		1
		1	1	7	Correctly use frequently confused words.	1						1			1	1									1		1
		1	1	8	Ensure subject-verb and pronoun-antecedent agreement.	1			1			2			2	1			1						2		2
		1	2	1	Use punctuation to set of nonrestrictive/parenthetical elements.	3			1			4			4	3			1						4		4
		1	2	2	Spell correctly.	1			1			2			2	1			1						2		2
		1	2	3	Use punctuation to separate items in a series.	2			1			3			3	2			1						3		3
		Total For Assessment Anchor D.1 Conventions of Standard English					12			8			20			20	12			8					20		20
	2	1	1	Vary sentence patterns for meaning, reader/listener interest, and style.	2						2			2	2									2		2	
	2	1	2	Maintain consistency in style and tone.	2						2			2	2									2		2	
	2	1	3	Choose words and phrases to convey ideas precisely.	1			1			2			2	1			1						2		2	
	2	1	4	Choose punctuation for effect.																							
	2	1	5	Choose words and phrases for effect.	1						1			1	1									1		1	
	Total For Assessment Anchor D.2 Knowledge of Language					6			1			7			7	6			1					7		7	
	Total For Reporting Category D					18			9			27			27	18			9					27		27	

Grade 06

English Language Arts

Reporting Category	Assessment Anchor	DesOEptor (Sub-anchor)	Eligible Content	Focus	Points										Items													
					Student Scores (Core Points)			Equating Block (EB)			Total Points (Core & EB)				Number of Items Core			Number of Items EB			Total Number of Items (Core & EB)							
					MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total	MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total				
E: Text-Dependent Analysis	E	1	1		Draw evidence from literary or informational texts to support analysis, reflection, and/or research.						4						4	4			1						1	1
	Total For Assessment Anchor E.1 Evidence-based Analysis of Text						4						4	4			1						1	1				
Total For Reporting Category E							4						4	4			1						1	1				

Grade 07

English Language Arts

Reporting Category	Assessment Anchor	DesOEIptor (Sub-anchor)	Eligible Content	Focus	Points										Items																		
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items												
					(Core Points)						(Core & EB)				Core			EB			(Core & EB)												
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total									
A: Literature Text	A-K	1	1	1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences, conclusions, and/or generalizations drawn from the text.	2					2				4				4	2				2				4				4	
		1	1	2	Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.	1									1					1	1							1				1	
		1	1	3	Analyze how particular elements of a story, drama, or poem interact.	1	5								1	5				6	1	2						1	2			3	
	Total For Assessment Anchor A-K.1 Key Ideas and Details					4	5								6	5				11	4	2				2			6	2			8
	A-C	2	1	1	Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.	1	3								2	3				5	1	1						2	1			3	
		2	1	2	Analyze how a drama's or poem's form or structure contributes to its meaning.																												
		2	1	3	Determine how the author uses the meaning of words or phrases, including figurative and connotative meanings, in a text; analyze the impact of rhymes and other repetitions of sounds on a specific verse or stanza of a poem or section of a story or drama.	2										3				3	2							3				3	
	Total For Assessment Anchor A-C.2 OEaft and Structure					3	3								5	3				8	3	1						5	1			6	
	A-C	3	1	1	Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.																												
	Total For Assessment Anchor A-C.3 Integration of Knowledge and Ideas																																
	A-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 7 reading and content, choosing flexibly from a range of strategies.	3										4				4	3							4				4	
		4	1	2	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	2										3				3	2							3				3	
	Total For Assessment Anchor A-V.4 Vocabulary Acquisition and Use					5									7					7	5							7				7	
	Total For Reporting Category A					12	8								18	8				26	12	3					6			18	3		

Grade 07

English Language Arts

Reporting Category	Assessment Anchor	DesOEIptor (Sub-anchor)	Eligible Content	Focus	Points										Items										
					Student Scores			Equating Block			Total Points				Number of Items						Total Number of Items				
					(Core Points)			(EB)			(Core & EB)				Core			EB			(Core & EB)				
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	
D: Language	D	1	1	1	Explain the function of phrases and clauses in general and their function in specific sentences.				2			2			2				2			2			2
		1	1	2	Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.	1			1			2			2	1			1			2			2
		1	1	3	Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.	1			1			2			2	1			1			2			2
		1	1	4	Recognize and correct inappropriate shifts in pronoun number and person.	1						1			1	1						1			1
		1	1	5	Recognize and correct vague pronouns.	1						1			1	1						1			1
		1	1	6	Recognize and correct inappropriate shifts in verb tense.	1			1			2			2	1			1			2			2
		1	1	7	Produce complete sentences, recognizing and correcting inappropriate fragments and run-on sentences.				1			1			1				1			1			1
		1	1	8	Correctly use frequently confused words.																				
		1	1	9	Ensure subject-verb and pronoun-antecedent agreement.	1						1			1	1						1			1
		1	2	1	Use a comma to separate coordinate adjectives.	2						2			2	2						2			2
		1	2	2	Spell correctly.	1						1			1	1						1			1
		1	2	3	Use punctuation to set of nonrestrictive/parenthetical elements.	2						2			2	2						2			2
		1	2	4	Use punctuation to separate items in a series.	1						1			1	1						1			1
	Total For Assessment Anchor D.1 Conventions of Standard English					12			6			18			18	12			6			18			18
		2	1	1	Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.	2			1			3			3	2			1			3			3
		2	1	2	Vary sentence patterns for meaning, reader/listener interest, and style.	1			1			2			2	1			1			2			2
		2	1	3	Maintain consistency in style and tone.	1			1			2			2	1			1			2			2
		2	1	4	Choose punctuation for effect.																				
		2	1	5	Choose words and phrases for effect.	2						2			2	2						2			2
	Total For Assessment Anchor D.2 Knowledge of Language					6			3			9			9	6			3			9			9
Total For Reporting Category D					18			9			27			27	18			9			27			27	

Grade 07

English Language Arts

Reporting Category	Assessment Anchor	DesOEIptor (Sub-anchor)	Eligible Content	Focus	Points										Items											
					Student Scores			Equating Block			Total Points				Number of Items						Total Number of Items					
					(Core Points)			(EB)			(Core & EB)				Core			EB			(Core & EB)					
					MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total	MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total		
E: Text-Dependent Analysis	E	1	1		Draw evidence from literary or informational texts to support analysis, reflection, and/or research.				4						4	4			1						1	1
	Total For Assessment Anchor E.1 Evidence-based Analysis of Text								4						4	4			1						1	1
Total For Reporting Category E								4						4	4			1						1	1	

Reporting Category	Assessment Anchor	Descriptior (Sub-anchor)	Eligible Content	Focus	Points												Items												
					Student Scores			Equating Block (EB)			Total Points						Number of Items						Total Number of Items						
					(Core Points)			(EB)			(Core & EB)						Core			EB			(Core & EB)						
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total					
A: Literature Text	A-K	1	1	1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences, conclusions, and/or generalizations drawn from the text.	1							1			1	1							1			1		
		1	1	2	Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.	1	3						1	3		4	1	1							1	1		2	
		1	1	3	Analyze how particular lines of dialogue or incidents in a story, drama, or poem propel the action, reveal aspects of a character, or provoke a decision.	1							1			1	1								1			1	
	Total For Assessment Anchor A-K.1 Key Ideas and Details					3	3						3	3		6	3	1								3	1		4
	A-C	2	1	1	Analyze how differences in the points of view of the characters and the audience or reader create such effects as suspense or humor.	2							2			2	2								2			2	
		2	1	2	Compare and contrast the structure of two or more texts, and analyze how the differing structure of each text contributes to its meaning and style.	1							1			1	1								1			1	
		2	1	3	Determine how the author uses the meaning of words or phrases, including figurative and connotative meanings, in a text; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.	1	2						1	2		3	1	1							1	1		2	
	Total For Assessment Anchor A-C.2 ESraft and Structure					4	2						4	2		6	4	1								4	1		5
		3	1	1	Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths and traditional stories, including describing how the material is rendered new.	2							2			2	2								2			2	
	Total For Assessment Anchor A-C.3 Integration of Knowledge and Ideas					2							2			2	2									2			2
	A-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.	1	3						1	3		4	1	1							1	1		2	
		4	1	2	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	2							2			2	2								2			2	
	Total For Assessment Anchor A-V.4 Vocabulary Acquisition and Use					3	3						3	3		6	3	1								3	1		4
Total For Reporting Category A					12	8						12	8		20	12	3								12	3		15	

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points									Items																	
					Student Scores			Equating Block (EB)			Total Points			Number of Items			Total Number of Items														
					(Core Points)			(Core & EB)			(Core & EB)			Core			EB			(Core & EB)											
					MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total	MC	ESR	OE	MC	ESR	OE	MC	ESR	OE	Total							
B: Informational Text	B-K	1	1	1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences, conclusions and/or generalizations drawn from the text.		2				1			1	2		3				1			1			1	1		2	
		1	1	2	Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.	2					1			3			3	2						1				3			3
		1	1	3	Analyze how a text makes connections among and distinctions between individuals, ideas, or events.	1	3							1	3		4	1	1								1	1		2	
	Total For Assessment Anchor B-K.1 Key Ideas and Details					3	5				2			5	5		10	3	2				2				5	2		7	
	B-C	2	1	1	Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.	1							1				1	1									1			1	
		2	1	2	Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.	2					1			3			3	2						1				3			3
		2	1	3	Determine how the author uses the meaning of words or phrases, including figurative, connotative, or technical meanings, in a text; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.	2							2				2	2									2			2	
	Total For Assessment Anchor B-C.2 ESraft and Structure					5					1			6			6	5						1			6			6	
		3	1	1	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.						1			1			1							1			1			1	
		3	1	2	Analyze a case in which two or more texts provide conflicting information on the same topic, and identify where the texts disagree on matters of fact or interpretation.																										
	Total For Assessment Anchor B-C.3 Integration of Knowledge and Ideas										1			1			1							1			1			1	
	B-V	4	1	1	Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.	2					2			4			4	2						2			4			4	
		4	1	2	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	1	2						1	2			3	1	1								1	1		2	
Total For Assessment Anchor B-V.4 Vocabulary Acquisition and Use					3	2				2			5	2		7	3	1					2			5	1		6		
Total For Reporting Category B					11	7				6			17	7		24	11	3					6			17	3		20		

Grade 08

English Language Arts

Reporting Category	Assessment Anchor	Descriptior (Sub-anchor)	Eligible Content	Focus	Points										Items										
					Student Scores			Equating Block (EB)			Total Points				Number of Items						Total Number of Items				
					(Core Points)						(Core & EB)				Core			EB			(Core & EB)				
					MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total	MC	ESR	TDA	MC	ESR	TDA	MC	ESR	TDA	Total	
E: Text-Dependent Analysis	E	1	1	Draw evidence from literary or informational texts to support analysis, reflection, and/or research.			4						4	4			1							1	1
	Total For Assessment Anchor E.1 Evidence-based Analysis of Text						4						4	4			1							1	1
	Total For Reporting Category E						4						4	4			1							1	1

Grade 03

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points							Items						
					Student Scores		Equating Block (EB)		Total Points			Number of Items				Total Number of Items		
					(Core Points)				(Core & EB)			Core		EB		(Core & EB)		
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
A-T: Numbers and Operations in Base Ten	1			Use place-value understanding and properties of operations to perform multi-digit arithmetic.		4				4	4		1				1	1
	1	1		Apply place-value strategies to solve problems.														
	1	1	1	Round two- and three-digit whole numbers to the nearest ten or hundred, respectively.	2				2		2	2					2	2
	1	1	2	Add two- and three-digit whole numbers and/or subtract two- and three-digit numbers from three-digit whole numbers.	2		1		3		3	2		1			3	3
	1	1	3	Multiply one-digit whole numbers by two-digit multiples of ten.	1		1		2		2	1		1			2	2
	1	1	4	Order a set of whole numbers from least to greatest or greatest to least.	2		1		3		3	2		1			3	3
	Total for Assessment Anchor A-T.1 Use place-value understanding and properties of operations to perform multi-digit arithmetic.				7	4	3		10	4	14	7	1	3			10	1
Total For Reporting Category A-T				7	4	3		10	4	14	7	1	3			10	1	11

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points							Items						
					Student Scores		Equating Block (EB)		Total Points			Number of Items				Total Number of Items		
					(Core Points)				(Core & EB)			Core		EB		(Core & EB)		
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
A-F: Numbers and Operations—Fractions	1			Develop an understanding of fractions as numbers.														
	1	1		Develop and apply number theory concepts to compare quantities and magnitudes of fractions and whole numbers.														
	1	1	1	Demonstrate that when a whole or set is partitioned into y equal parts, the fraction $1/y$ represents 1 part of the whole and/or the fraction x/y represents x equal parts of the whole.	3		1		4		4		3		1		4	4
	1	1	2	Represent fractions on a number line.	3		1		4		4		3		1		4	4
	1	1	3	Recognize and generate simple equivalent fractions.	1		1		2		2		1		1		2	2
	1	1	4	Express whole numbers as fractions, and/or generate fractions that are equivalent to whole numbers.														
	1	1	5	Compare two fractions with the same denominator, using the symbols $>$, $=$, or $<$, and/or justify the conclusions.	3		1		4		4		3		1		4	4
	Total for Assessment Anchor A-F.1 Develop an understanding of fractions as numbers.					10		4		14		14		10		4		14
Total For Reporting Category A-F					10		4		14		14		10		4		14	14

Grade 03

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
Operations and Algebraic Thinking	1			Represent and solve problems involving multiplication and division.	1				1		1	1			1		1	
	1	1		Understand various meanings of multiplication and division.														
	1	1	1	Interpret and/or describe products of whole numbers.	1				1		1	1			1		1	
	1	1	2	Interpret and/or describe whole-number quotients of whole numbers.	2				2		2	2			2		2	
	1	2		Solve mathematical and real-world problems using multiplication and division, including determining a missing number in a multiplication and/or division equation.	1				1		1	1			1		1	
	1	2	1	Use multiplication and/or division to solve word problems in situations involving equal groups, arrays, and/or measurement quantities.	1		1		2		2	1		1	2		2	
	1	2	2	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.	2				2		2	2			2		2	
	Total For Assessment Anchor B-O.1 Represent and solve problems involving multiplication and division.					8		1		9		9	8		1		9	
	2			Understand properties of multiplication and the relationship between multiplication and division.														
	2	1		Use properties to simplify and solve multiplication problems.														
	2	1	1	Apply the commutative property of multiplication (not identification or definition of the property).	1				1		1	1			1		1	
	2	1	2	Apply the associative property of multiplication (not identification or definition of the property).	2		1		3		3	2		1	3		3	
	2	2		Relate division to a missing-number multiplication equation.														
	2	2	1	Interpret and/or model division as a multiplication equation with an unknown factor.	2		1		3		3	2		1	3		3	
Total For Assessment Anchor B-O.2 Understand properties of multiplication and the relationship between multiplication and division.					5		2		7		7	5		2		7		

B-O: Oper:	3		Solve problems involving the four operations, and identify and explain patterns in arithmetic.															
	3	1	Use operations, patterns, and estimation strategies to solve problems (may include word problems).	1			1	1	1					1			1	1
	3	1	1	Solve two-step word problems using the four operations. Limit to problems with whole numbers and having whole-number answers.	1			1	1	1							1	1
	3	1	2	Represent two-step word problems using equations with a symbol standing for the unknown quantity. Limit to problems with whole numbers and having whole-number answers.	1			1	1	1							1	1
	3	1	3	Assess the reasonableness of answers. Limit problems posed with whole numbers and having whole-number answers.	1			1	1	1							1	1
	3	1	4	Solve two-step equations using order of operations (equation is explicitly stated with no grouping symbols).	1		1	2	2	1			1				2	2
	3	1	5	Identify arithmetic patterns (including patterns in the addition table or multiplication table) and/or explain them using properties of operations.	1			1	1	1							1	1
	3	1	6	Create or match a story to a given combination of symbols and numbers.	1			1	1	1							1	1
	3	1	7	Identify the missing symbol that makes a number sentence true.	1			1	1	1							1	1
	Total For Assessment Anchor B-O.3 Solve problems involving the four operations, and identify and explain patterns in arithmetic.				8		1	9	9	8			1			9		9
Total For Reporting Category B-O				21		4	25	25	21			4			25		25	

Grade 03

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
C-G: Geometry	1			Reason with shapes and their attributes.		4				4	4		1				1	1
	1	1		Analyze characteristics of polygons.														
	1	1	1	Explain that shapes in different categories may share attributes and that the shared attributes can define a larger category.	2		1		3		3	2		1		3		3
	1	1	2	Recognize rhombi, rectangles, and squares as examples of quadrilaterals and/or draw examples of quadrilaterals that do not belong to any of these subcategories.	2		1		3		3	2		1		3		3
	1	1	3	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.	3		1		4		4	3		1		4		4
	Total For Assessment Anchor C-G.1 Reason with shapes and their attributes.					7	4	3		10	4	14	7	1	3		10	1
Total For Reporting Category C-G					7	4	3		10	4	14	7	1	3		10	1	11

Grade 03

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points							Items							
					Student Scores		Equating Block (EB)		Total Points			Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)			Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total	
	1			Solve problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.															
	1	1		Determine or calculate time and elapsed time.															
	1	1	1	Tell, show, and/or write time (analog) to the nearest minute.	1		1		2		2	1		1		2		2	
	1	1	2	Calculate elapsed time to the minute in a given situation.	1				1		1	1				1		1	
	1	2		Use the attributes of liquid volume, mass, and length of objects.															
	1	2	1	Measure and estimate liquid volumes and masses of objects using standard units and metric units.	1				1		1	1				1		1	
	1	2	2	Add, subtract, multiply, and divide to solve one-step word problems involving masses or liquid volumes that are given in the same units.	1				1		1	1				1		1	
	1	2	3	Use a ruler to measure lengths to the nearest quarter inch or centimeter.	1				1		1	1				1		1	
	1	3		Count, compare, and make change using a collection of coins and one-dollar bills.															
	1	3	1	Compare total values of combinations of coins and/or dollar bills less than \$5.00.	1				1		1	1				1		1	
	1	3	2	Make change for an amount up to \$5.00 with no more than \$2.00 change given.	1				1		1	1				1		1	
	1	3	3	Round amounts of money to the nearest dollar.	1				1		1	1				1		1	
Total For Assessment Anchor D-M.1					8				9		9	8			1		9		9
Solve problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.																			

D-M: Measurement and Data

2			Represent and interpret data.		4			4	4		1				1	1
2	1		Organize, display, and answer questions based on data.													
2	1	1	Complete a scaled pictograph and a scaled bar graph to represent a data set with several categories.	1			1	1	1					1		1
2	1	2	Solve one- and two-step problems using information to interpret data presented in scaled pictographs and scaled bar graphs.	1			1	1	1					1		1
2	1	3	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Display the data by making a line plot, where the horizontal scale is marked in appropriate units—whole numbers, halves, or quarters.	1			1	1	1					1		1
2	1	4	Translate information from one type of display to another. Limit to pictographs, tally charts, bar graphs, and tables.	1	1		2	2	1		1			2		2
Total For Assessment Anchor D-M.2 Represent and interpret data.				4	4	1	5	4	9	4	1	1	5	1	6	
3			Geometric measurement: understand concepts of area and relate area to multiplication and to addition.													
3	1		Find the areas of plane figures.													
3	1	1	Measure areas by counting unit squares.	1			1	1	1					1		1
3	1	2	Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.			1	1	1			1			1		1
Total For Assessment Anchor D-M.3 Geometric measurement: understand concepts of area and relate area to multiplication and to addition.				1		1	2	2	1		1		2		2	

4			Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.															
4	1		Find and use the perimeters of plane figures.															
4	1	1	Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, exhibiting rectangles with the same perimeter and different areas, and exhibiting rectangles with the same area and different perimeters. Use the same units throughout the problem.	2		1		3		3		2		1		3		3
Total For Assessment Anchor D-M.4 Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.				2		1		3		3		2		1		3		3
Total For Reporting Category D-M				15	4	4		19	4	23	15	1	4		19	1	20	

Grade 04

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items									
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items					
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)					
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total		
A-T: Numbers and Operations in Base Ten	1			Generalize place-value understanding for multi-digit whole numbers.																
	1	1		Apply place-value and numeration concepts to compare, find equivalencies, and round.																
	1	1	1	Demonstrate an understanding that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.	1		1		2		2		1		1		2		2	
	1	1	2	Read and write whole numbers in expanded, standard, and word form through 1,000,000.	3				3		3		3				3		3	
	1	1	3	Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place, using >, =, and < symbols.	1				1		1		1				1		1	
	1	1	4	Round multi-digit whole numbers to any place.	2		1		3		3		2		1		3		3	
	Total For Assessment Anchor A-T.1					7		2		9		9		7		2		9		9
		2			Use place-value understanding and properties of operations to perform multi-digit arithmetic.															
		2	1		Use operations to solve problems.															
		2	1	1	Add and subtract multi-digit whole numbers.	1		1		2		2		1		1		2		2
		2	1	2	Multiply a whole number of up to four digits by a one-digit whole number and multiply 2 two-digit numbers.	2				2		2		2				2		2
		2	1	3	Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders.	2				2		2		2				2		2
		2	1	4	Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits.	2		1		3		3		2		1		3		3
	Total For Assessment Anchor A-T.2					7		2		9		9		7		2		9		9
Total For Reporting Category A-T					14		4		18		18		14		4		18		18	

Grade 04

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items								
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items				
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)				
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total	
	1			Extend understanding of fraction equivalence and ordering.															
	1	1		Find equivalencies and compare fractions.	1		1		2		2		1		1		2		2
	1	1	1	Recognize and generate equivalent fractions.															
	1	1	2	Compare two fractions with different numerators and different denominators using the symbols $>$, $=$, or $<$ and justify the conclusions.	1		1		2		2		1		1		2		2
Total For Assessment Anchor A-F.1																			
	Extend understanding of fraction equivalence and ordering.				2		2		4		4		2		2		4		4
	2			Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.															
	2	1		Solve problems involving fractions and whole numbers (straight computation or word problems).															
	2	1	1	Add and subtract fractions with a common denominator.	1				1		1		1				1		1
	2	1	2	Decompose a fraction or a mixed number into a sum of fractions with the same denominator.	2		1		3		3		2		1		3		3
	2	1	3	Add and subtract mixed numbers with a common denominator.	1				1		1		1				1		1
	2	1	4	Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators.	1				1		1		1				1		1
	2	1	5	Multiply a whole number by a unit fraction.	1				1		1		1				1		1
	2	1	6	Multiply a whole number by a non-unit fraction.	1				1		1		1				1		1
	2	1	7	Solve word problems involving multiplication of a whole number by a fraction.	1				1		1		1				1		1
Total For Assessment Anchor A-F.2																			
	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.				8		1		9		9		8		1		9		9
	3			Understand decimal notation for fractions and compare decimal fractions.		4			4	4			1				1		1

A-F: Numbers and Operations—Fractions

3	1		Use operations to solve problems involving decimals, including converting between fractions and decimals.														
3	1	1	Add two fractions with respective denominators 10 and 100.			1		1		1			1		1		1
3	1	2	Use decimal notation for fractions with denominators of 10 or 100.	2				2		2	2				2		2
3	1	3	Compare two decimals to hundredths using the symbols $>$, $=$, or $<$, and justify the conclusions.	1				1		1	1				1		1
Total For Assessment Anchor A-F.3 Understand decimal notation for fractions and compare decimal fractions.				3	4	1		4	4	8	3	1	1		4	1	5
Total For Reporting Category A-F				13	4	4		17	4	21	13	1	4		17	1	18

Grade 04

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
B-O: Operations and Algebraic Thinking	1			Use the four operations with whole numbers to solve problems.		4				4	4		1			1	1	
	1	1		Use numbers and symbols to model the concepts of expressions and equations.	1				1		1	1				1	1	
	1	1	1	Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.	2				2		2	2				2	2	
	1	1	2	Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison.	2		1		3		3	2		1		3	3	
	1	1	3	Solve multi-step word problems posed with whole numbers using the four operations. Answers will be either whole numbers or have remainders that must be interpreted yielding a final answer that is a whole number. Represent these problems using equations with a symbol or letter standing for the unknown quantity.	1				1		1	1				1	1	
	1	1	4	Identify the missing symbol that makes a number sentence true.	1				1		1	1				1	1	
	Total For Assessment Anchor B-O.1					7	4	1		8	4	12	7	1	1	8	1	9
	2			Gain familiarity with factors and multiples.														
	2	1		Develop and apply number theory concepts to represent numbers in various ways.														
	2	1	1	Find all factor pairs for a whole number in the interval 1 through 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the interval 1 through 100 is a multiple of a given one-digit number. Determine whether a given whole number in the interval 1 through 100 is prime or composite.	2		1		3		3	2		1		3	3	
Total For Assessment Anchor B-O.2					2		1		3		3	2		1		3	3	

3			Generate and analyze patterns.														
3	1		Recognize, describe, extend, create, and replicate a variety of patterns.	1			1		1	1				1			1
3	1	1	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.	1		1		2		2	1		1		2		2
3	1	2	Determine the missing elements in a function table.	1				1		1	1				1		1
3	1	3	Determine the rule for a function given a table.	2		1		3		3	2		1		3		3
Total For Assessment Anchor B-O.3 Generate and analyze patterns.				5		2		7		7	5		2		7		7
Total For Reporting Category B-O				14	4	4		18	4	22	14	1	4		18	1	19

Grade 04

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points									Items					
					Student Scores		Equating Block (EB)		Total Points			Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)			Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total	
C-G: Geometry	1			Draw and identify lines and angles, and classify shapes by properties of their lines and angles.															
	1	1		List properties, classify, draw, and identify geometric figures in two dimensions.			1		1		1			1		1			1
	1	1	1	Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines. Identify these in two-dimensional figures.	3		1		4		4		3		1		4		4
	1	1	2	Classify two-dimensional figures based on the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	4				4		4		4				4		4
	1	1	3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into mirroring parts. Identify line-symmetric figures and draw lines of symmetry.	3		1		4		4		3		1		4		4
	Total For Assessment Anchor C-G.1 Draw and identify lines and angles, and classify shapes by properties of their lines and angles.					10		3		13		13		10		3		13	
Total For Reporting Category C-G					10		3		13		13		10		3		13		13

Grade 04

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
D-M: Measurement and Data	1			Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.		4				4	4		1			1	1	
	1	1		Solve problems involving length, weight (mass), liquid volume, time, area, and perimeter.														
	1	1	1	Know relative sizes of measurement units within one system of units including standard units, metric units, and time. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit.	1				1		1		1			1	1	
	1	1	2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects; money, including problems involving simple fractions or decimals; and problems that require expressing measurements given in a larger unit in terms of a smaller unit.				1		1				1		1	1	
	1	1	3	Apply the area and perimeter formulas for rectangles in real-world and mathematical problems.	1				1		1					1	1	
	1	1	4	Identify time (analog or digital) as the amount of minutes before or after the hour.	1				1		1					1	1	
	Total For Assessment Anchor D-M.1					3	4	1		4	4	8	3	1	1	4	1	5
	2			Represent and interpret data.														
	2	1		Organize, display, and answer questions based on data.														
	2	1	1	Make a line plot to display a data set of measurements in fractions of a unit.	1				1		1					1	1	
	2	1	2	Solve problems involving addition and subtraction of fractions by using information presented in line plots.	1				1		1					1	1	
	2	1	3	Translate information from one type of display to another.	1		1		2		2		1		1	2	2	
	Total For Assessment Anchor D-M.2					3		1		4		4	3		1	4		4
Represent and interpret data.																		

3			Geometric measurement: understand concepts of angle; measure and create angles.	1				1		1	1				1		1
3	1		Use appropriate tools and units to sketch an angle and determine angle measurements.														
3	1	1	Measure angles in whole-number degrees using a protractor. With the aid of a protractor, sketch angles of a specified measure.			1		1		1				1		1	1
3	1	2	Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems.	2				2		2	2					2	2
Total For Assessment Anchor D-M.3 Geometric measurement: understand concepts of angle; measure and create angles.				3		1		4		4	3			1		4	4
Total For Reporting Category D-M				9	4	3		12	4	16	9	1	3		12	1	13

Grade 05

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items									
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items					
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)					
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total		
A-T: Numbers and Operations in Base Ten	1			Understand the place-value system.	1				1		1		1			1		1		
	1	1		Demonstrate understanding of place-value of whole numbers and decimals, and compare quantities or magnitudes of numbers.	1		1		2		2		1		1		2		2	
	1	1	1	Demonstrate an understanding that in a multi-digit number, a digit in one place represents 1/10 of what it represents in the place to its left.	1				1		1		1				1		1	
	1	1	2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10 and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	2		1		3		3		2		1		3		3	
	1	1	3	Read and write decimals to thousandths using base-ten numerals, word form, and expanded form.	2				2		2		2				2		2	
	1	1	4	Compare two decimals to thousandths based on meanings of the digits in each place using >, =, and < symbols.	2				2		2		2				2		2	
	1	1	5	Round decimals to any place.	2				2		2		2				2		2	
	Total For Assessment Anchor A-T.1 Understand the place-value system.					11		2		13		13		11		2		13		13
	2			Perform operations with multi-digit whole numbers and with decimals to hundredths.	1				1		1		1				1		1	
	2	1		Use whole numbers and decimals to compute accurately.			1		1		1				1		1		1	
	2	1	1	Multiply multi-digit whole numbers.	2		1		3		3		2		1		3		3	
	2	1	2	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.	3				3		3		3				3		3	
	2	1	3	Add, subtract, multiply, and divide decimals to hundredths.	2				2		2		2				2		2	
	Total For Assessment Anchor A-T.2 Perform operations with multi-digit whole numbers and with decimals to hundredths.					8		2		10		10		8		2		10		10
	Total For Reporting Category A-T					19		4		23		23		19		4		23		23

Grade 05

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
A-F: Numbers and Operations—Fractions	1			Use equivalent fractions as a strategy to add and subtract fractions.	2	4	1		3	4	7	2	1	1	3	1	4	
	1	1		Solve addition and subtraction problems involving fractions.	1		1		2		2	1		1	2		2	
	1	1	1	Add and subtract fractions with unlike denominators.	2		1		3		3	2		1	3		3	
	Total For Assessment Anchor A-F.1 Use equivalent fractions as a strategy to add and subtract fractions.				5	4	3		8	4	12	5	1	3		8	1	9
	2			Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	1				1		1	1			1		1	
	2	1		Solve multiplication and division problems involving fractions and whole numbers.	1		1		2		2	1		1	2		2	
	2	1	1	Solve word problems involving division of whole numbers leading to answers in the form of fractions.	2				2		2	2			2		2	
	2	1	2	Multiply a fraction by a fraction.	2		1		3		3	2		1	3		3	
	2	1	3	Demonstrate an understanding of multiplication as scaling.	3				3		3	3			3		3	
	2	1	4	Divide unit fractions by whole numbers and whole numbers by unit fractions.	2				2		2	2			2		2	
	Total For Assessment Anchor A-F.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.				11		2		13		13	11		2		13		13
Total For Reporting Category A-F				16	4	5		21	4	25	16	1	5		21	1	22	

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items								
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items				
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)				
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total	
B-O: Operations and Algebraic Thinking	1			Write and interpret numerical expressions.															
	1	1		Analyze and complete calculations by applying the order of operations.			1		1		1			1		1		1	
	1	1	1	Use multiple grouping symbols in numerical expressions and evaluate expressions containing these symbols.	2				2		2		2			2		2	
	1	1	2	Write simple expressions that model calculations with numbers and interpret numerical expressions without evaluating them.	2		1		3		3		2		1		3		3
	Total For Assessment Anchor B-O.1 Write and interpret numerical expressions.				4		2		6		6		4		2		6		6
	2			Analyze patterns and relationships.		4				4	4		1				1		1
	2	1		Create, extend, and analyze patterns.	1		1		2		2		1		1		2		2
	2	1	1	Generate two numerical patterns using two given rules.	1				1		1		1				1		1
	2	1	2	Identify apparent relationships between corresponding terms of two patterns with the same starting numbers that follow different rules.	1				1		1		1				1		1
	Total For Assessment Anchor B-O.2 Analyze patterns and relationships.				3	4	1		4	4	8		3	1	1		4	1	5
Total For Reporting Category B-O				7	4	3		10	4	14		7	1	3		10	1	11	

Grade 05

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items									
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items					
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)					
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total		
C-G: Geometry	1			Graph points on the coordinate plane to solve real-world and mathematical problems.																
	1	1		Identify parts of a coordinate grid and describe or interpret points given an ordered pair.																
	1	1	1	Identify parts of the coordinate plane and the ordered pair. Limit the coordinate plane to quadrant I.	3		1		4		4		3		1		4		4	
	1	1	2	Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret coordinate values of points in the context of the situation.	3		1		4		4		3		1		4		4	
	Total For Assessment Anchor C-G.1					6		2		8		8		6		2		8		8
	2			Classify two-dimensional figures into categories based on their properties.																
	2	1		Use basic properties to classify two-dimensional figures.			1		1		1				1		1		1	
	2	1	1	Classify two-dimensional figures in a hierarchy based on properties.	4				4		4		4				4		4	
	Total For Assessment Anchor C-G.2					4		1		5		5		4		1		5		5
	Total For Reporting Category C-G					10		3		13		13		10		3		13		13

Grade 05

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items									
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items					
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)					
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total		
D-M: Measurement and Data	1			Convert like measurement units within a given measurement system.																
	1	1		Solve problems using simple conversions.																
	1	1	1	Convert between different-sized measurement units within a given measurement system.	2		1		3		3		2		1		3		3	
	Total for Assessment Anchor D-M.1 Convert like measurement units within a given measurement system.					2		1		3		3		2		1		3		3
	2			Represent and interpret data.																
	2	1		Organize, display, and answer questions based on data.	1				1		1		1				1		1	
	2	1	1	Solve problems involving computation of fractions by using information presented in line plots.	1				1		1		1				1		1	
	2	1	2	Display and interpret data shown in tallies, tables, charts, pictographs, bar graphs, and line graphs, and use a title, appropriate scale, and labels. A grid will be provided to display data on bar graphs or line graphs.	1		1		2		2		1		1		2		2	
	Total For Assessment Anchor D-M.2 Represent and interpret data.					3		1		4		4		3		1		4		4
	3			Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	1	4			1	4	5		1	1			1	1	2	
	3	1		Use, describe, and develop procedures to solve problems involving volume.	1				1		1		1				1		1	
	3	1	1	Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.	1		1		2		2		1		1		2		2	
	3	1	2	Find volumes of solid figures composed of two non-overlapping right rectangular prisms.																
	Total For Assessment Anchor D-M.3 Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.					3	4	1		4	4	8		3	1	1		4	1	5
	Total For Reporting Category D-M					8	4	3		11	4	15		8	1	3		11	1	12

Grade 06

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
	1			Apply and extend previous understandings of multiplication and division to divide fractions by fractions.														
	1	1		Solve real-world and mathematical problems involving division of fractions.	1				1		1	1			1		1	
	1	1	1	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.	3		1		4		4	3		1	4		4	
Total For Assessment Anchor A-N.1 Apply and extend previous understandings of multiplication and division to divide fractions by fractions.					4		1		5		5	4		1	5		5	
	2			Compute with multi-digit numbers and find common factors and multiples.														
	2	1		Compute with multi-digit numbers using the four arithmetic operations with or without a calculator.														
	2	1	1	Solve problems involving operations with whole numbers, decimals, straight computation, or word problems.	3		1		4		4	3		1	4		4	
	2	2		Apply number theory concepts.	1				1		1	1			1		1	
	2	2	1	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12.	1				1		1	1			1		1	
	2	2	2	Apply the distributive property to express a sum of two whole numbers, 1 through 100, with a common factor as a multiple of a sum of two whole numbers with no common factor.			1		1		1			1	1		1	
Total For Assessment Anchor A-N.2 Compute with multi-digit numbers and find common factors and multiples.					5		2		7		7	5		2	7		7	
	3			Apply and extend previous understandings of numbers to the system of rational numbers.														

A-N: The Number System

3	1		Understand that positive and negative numbers are used together to describe quantities having opposite directions or values and locations on the number line and coordinate plane.	1			1	1	1			1	1
3	1	1	Represent quantities in real-world contexts using positive and negative numbers, explaining the meaning of 0 in each situation.			1	1	1		1		1	1
3	1	2	Determine the opposite of a number and recognize that the opposite of the opposite of a number is the number itself.	1		1	2	2	1		1	2	2
3	1	3	Locate and plot integers and other rational numbers on a horizontal or vertical number line; locate and plot pairs of integers and other rational numbers on a coordinate plane.	2			2	2	2			2	2
3	2		Understand ordering and absolute value of rational numbers.										
3	2	1	Write, interpret, and explain statements of order for rational numbers in real-world contexts.	1			1	1	1			1	1
3	2	2	Interpret the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation.	1			1	1	1			1	1
3	2	3	Solve real-world and mathematical problems by plotting points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.										
Total For Assessment Anchor A-N.3 Apply and extend previous understandings of numbers to the system of rational numbers.				6		2	8	8	6		2	8	8
Total For Reporting Category A-N				15		5	20	20	15		5	20	20

Grade 06

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
A-R: Ratios and Proportional Relationships	1			Understand ratio concepts and use ratio reasoning to solve problems.	1	4			1	4	5	1	1			1	1	2
	1	1		Represent and/or solve real-world and mathematical problems using rates, ratios, and/or percents.	1				1		1	1				1		1
	1	1	1	Use ratio language and notation to describe a ratio relationship between two quantities.	2		1		3		3	2		1		3		3
	1	1	2	Find the unit rate a/b associated with a ratio $a:b$ and use rate language in the context of a ratio relationship.	1		1		2		2	1		1		2		2
	1	1	3	Construct tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and/or plot the pairs of values on the coordinate plane. Use tables to compare ratios.	1		1		2		2	1		1		2		2
	1	1	4	Solve unit rate problems including those involving unit pricing and constant speed.	2				2		2	2				2		2
	1	1	5	Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, given a part and the percentage.	1				1		1	1				1		1
Total For Assessment Anchor A-R.1 Understand ratio concepts and use ratio reasoning to solve problems.					9	4	3		12	4	16	9	1	3		12	1	13
Total For Reporting Category A-R					9	4	3		12	4	16	9	1	3		12	1	13

Grade 06

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
	1			Apply and extend previous understandings of arithmetic to numerical and algebraic expressions.		4				4	4			1			1	1
	1	1		Identify, write, and evaluate numerical and algebraic expressions.	1				1	1	1					1		1
	1	1	1	Write and evaluate numerical expressions involving whole-number exponents.	2				2	2	2					2		2
	1	1	2	Write algebraic expressions from verbal descriptions.	1				1	1	1					1		1
	1	1	3	Identify parts of an expression using mathematical terms.	1				1	1	1					1		1
	1	1	4	Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems.	1				1	1	1					1		1
	1	1	5	Apply the properties of operations to generate equivalent expressions.														
	Total For Assessment Anchor B-E.1 Apply and extend previous understandings of arithmetic to numerical and algebraic expressions.				6	4			6	4	10	6	1			6	1	7
B-E: Expressions and Equations	2			Interpret and solve one-variable equations and inequalities.	1				1	1	1					1		1
	2	1		Create, solve, and interpret one-variable equations or inequalities in real-world and mathematical problems.	1				1	1	1					1		1
	2	1	1	Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	2				2	2	2					2		2
	2	1	2	Write algebraic expressions to represent real-world or mathematical problems.	1				1	1	1					1		1
	2	1	3	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q , and x are all non-negative rational numbers.	2		1		3	3	2		1			3		3
	2	1	4	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem and/or represent solutions of such inequalities on number lines.			1		1	1			1			1		1

Total For Assessment Anchor B-E.2 Interpret and solve one-variable equations and inequalities.			7		2		9		9	7		2		9		9
3			Represent and analyze quantitative relationships between dependent and independent variables.			1		1		1		1		1		1
3	1		Use variables to represent two quantities in a real-world problem that change in relationship to one another.													
3	1	1	Write an equation to express the relationship between the dependent and independent variables.	2		1		3		3	2		1		3	3
3	1	2	Analyze the relationship between the dependent and independent variables using graphs and tables and/or relate these to an equation.	2		1		3		3	2		1		3	3
Total For Assessment Anchor B-E.3 Represent and analyze quantitative relationships between dependent and independent variables.			4		3		7		7	4		3		7		7
Total For Reporting Category B-E			17	4	5		22	4	26	17	1	5		22	1	23

Grade 06

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
C-G: Geometry	1			Solve real-world and mathematical problems involving area, surface area, and volume.														
	1	1		Find area, surface area, and volume by applying formulas and using various strategies.	1				1		1				1		1	
	1	1	1	Determine the area of triangles and special quadrilaterals.	1		1		2		2		1		1		2	
	1	1	2	Determine the area of irregular or compound polygons.	1		1		2		2		1		1		2	
	1	1	3	Determine the volume of right rectangular prisms with fractional edge lengths.	2				2		2		2				2	
	1	1	4	Given coordinates for the vertices of a polygon in the plane, use the coordinates to find side lengths and area of the polygon.	2				2		2		2				2	
	1	1	5	Represent three-dimensional figures using nets made of rectangles and triangles.	2				2		2		2				2	
	1	1	6	Determine the surface area of triangular and rectangular prisms.	1				1		1		1				1	
	Total For Assessment Anchor C-G.1 Solve real-world and mathematical problems involving area, surface area, and volume.					10		2		12		12		10		2		12
Total For Reporting Category C-G					10		2		12		12		10		2		12	

Grade 06

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items			Total Number of Items				
					(Core Points)				(Core & EB)		Core		EB	(Core & EB)				
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
D-S: Statistics and Probability	1			Demonstrate understanding of statistical variability by summarizing and describing distributions.	1	4			1	4	5	1	1			1	1	2
	1	1		Display, analyze, and summarize numerical data sets in relation to their context.	1				1		1	1				1		1
	1	1	1	Display numerical data in plots on a number line, including line plots, histograms, and box-and-whisker plots.	3		1		4		4	3		1		4		4
	1	1	2	Determine quantitative measures of center and variability.	3		2		5		5	3		2		5		5
	1	1	3	Describe any overall pattern and any deviations from the overall pattern with reference to the context in which the data were gathered.	1				1		1	1				1		1
	1	1	4	Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.														
	Total For Assessment Anchor D-S.1 Demonstrate understanding of statistical variability by summarizing and describing distributions.					9	4	3		12	4	16	9	1	3		12	1
Total For Reporting Category D-S					9	4	3		12	4	16	9	1	3		12	1	13

Grade 07

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items			Total Number of Items				
					(Core Points)		(EB)		(Core & EB)		Core		EB	(Core & EB)				
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
A-N: The Number System	1			Apply and extend previous understandings of operations to add, subtract, multiply, and divide rational numbers.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	1	1		Solve real-world and mathematical problems involving the four operations with rational numbers.	2	0	1	0	3	0	3	2	0	1	0	3	0	3
	1	1	1	Apply properties of operations to add and subtract rational numbers, including real-world contexts.	3	0	1	0	4	0	4	3	0	1	0	4	0	4
	1	1	2	Represent addition and subtraction on a horizontal or vertical number line.	3	0	0	0	3	0	3	3	0	0	0	3	0	3
	1	1	3	Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.	3	0	1	0	4	0	4	3	0	1	0	4	0	4
	Total For Assessment Anchor A-N.1 Apply and extend previous understandings of operations to add, subtract, multiply, and divide rational numbers.					12	0	3	0	15	0	15	12	0	3	0	15	0
Total For Reporting Category A-N					12	0	3	0	15	0	15	12	0	3	0	15	0	15

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
A-R: Ratios and Proportional Relationships	1			Demonstrate an understanding of proportional relationships.	0	4	0	0	0	4	4	0	1	0	0	0	1	1
	1	1		Analyze, recognize, and represent proportional relationships and use them to solve real-world and mathematical problems.	2	0	0	0	2	0	2	2	0	0	0	2	0	2
	1	1	1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.	2	0	1	0	3	0	3	2	0	1	0	3	0	3
	1	1	2	Determine whether two quantities are proportionally related.	2	0	0	0	2	0	2	2	0	0	0	2	0	2
	1	1	3	Identify the constant of proportionality in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	2	0	1	0	3	0	3	2	0	1	0	3	0	3
	1	1	4	Represent proportional relationships by equations.	2	0	0	0	2	0	2	2	0	0	0	2	0	2
	1	1	5	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$, where r is the unit rate.	2	0	1	0	3	0	3	2	0	1	0	3	0	3
	1	1	6	Use proportional relationships to solve multi-step ratio and percent problems.	1	0	1	0	2	0	2	1	0	1	0	2	0	2
Total For Assessment Anchor A-R.1 Demonstrate an understanding of proportional relationships.					13	4	4	0	17	4	21	13	1	4	0	17	1	18
Total For Reporting Category A-R					13	4	4	0	17	4	21	13	1	4	0	17	1	18

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
B-E: Expressions and Equations	1			Represent expressions in equivalent forms.	2	4	0	0	2	4	6	2	1	0	0	2	1	3
	1	1		Use properties of operations to generate equivalent expressions.	0	0	1	0	1	0	1	0	0	1	0	1	0	1
	1	1	1	Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	Total For Assessment Anchor B-E.1 Represent expressions in equivalent forms.				3	4	1	0	4	4	8	3	1	1	0	4	1	5
	2			Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	2	1		Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers.	1	0	1	0	2	0	2	1	0	1	0	2	0	2
	2	1	1	Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.	2	0	0	0	2	0	2	2	0	0	0	2	0	2
	2	2		Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	2	2	1	Solve word problems leading to equations of the form $px + q = r$ and $p(x+q) = r$, where p , q , and r are specific rational numbers.	2	0	1	0	3	0	3	2	0	1	0	3	0	3
	2	2	2	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers, and graph the solution set of the inequality.	2	0	0	0	2	0	2	2	0	0	0	2	0	2
	2	3		Determine the reasonableness of the answer(s) in problem-solving situations.	0	0	1	0	1	0	1	0	0	1	0	1	0	1
	2	3	1	Determine the reasonableness of answer(s) or interpret the solution(s) in the context of the problem.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	Total For Assessment Anchor B-E.2 Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.				10	0	3	0	13	0	13	10	0	3	0	13	0	13
	Total For Reporting Category B-E				13	4	4	0	17	4	21	13	1	4	0	17	1	18

Grade 07

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items								
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items				
					(Core Points)		(EB)		(Core & EB)		Core		EB		(Core & EB)				
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total	
C-G: Geometry	1			Demonstrate an understanding of geometric figures and their properties.	1	0	0	0	1	0	1	1	0	0	0	1	0	1	
	1	1		Demonstrate and apply properties of geometric figures.	1	0	0	0	1	0	1	1	0	0	0	1	0	1	
	1	1	1	Solve problems involving scale drawings of geometric figures, including finding length and area.	2	0	1	0	3	0	3	2	0	1	0	3	0	3	
	1	1	2	Identify or describe the properties of all types of triangles based on angle and side measures.	1	0	1	0	2	0	2	1	0	1	0	2	0	2	
	1	1	3	Use and apply the triangle inequality theorem.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	1	4	Describe the two-dimensional figures that result from slicing three-dimensional figures.	2	0	0	0	2	0	2	2	0	0	0	2	0	2	
	Total For Assessment Anchor C-G.1 Demonstrate an understanding of geometric figures and their properties.					7	0	2	0	9	0	9	7	0	2	0	9	0	9
	2			Solve real-world and mathematical problems involving angle measure, circumference, area, surface area, and volume.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	1		Identify, use, and describe properties of angles and their measures.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	1	1	Identify and use properties of supplementary, complementary, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	1	0	0	0	1	0	1	1	0	0	0	1	0	1	
	2	1	2	Identify and use properties of angles formed when two parallel lines are cut by a transversal.	2	0	1	0	3	0	3	2	0	1	0	3	0	3	
	2	2		Determine circumference, area, surface area, and volume.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2	2	1	Find the area and circumference of a circle. Solve problems involving area and circumference of a circle(s).	2	0	1	0	3	0	3	2	0	1	0	3	0	3	

2	2	2	Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	2	0	0	0	2	0	2	2	0	0	0	2	0	2
Total For Assessment Anchor C-G.2 Solve real-world and mathematical problems involving angle measure, circumference, area, surface area, and volume.				7	0	2	0	9	0	9	7	0	2	0	9	0	9
Total For Reporting Category C-G				14	0	4	0	18	0	18	14	0	4	0	18	0	18

Grade 07

Mathematics

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)		(EB)		(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
D-S: Statistics and Probability	1			Use random sampling to draw inferences about a population.	1	0	1	0	2	0	2	1	0	1	0	2	0	2
	1	1		Use random samples.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	1	1	1	Determine whether a sample is a random given a real-world situation.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	1	1	2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	Total For Assessment Anchor D-S.1 Use random sampling to draw inferences about a population.				4	0	1	0	5	0	5	4	0	1	0	5	0	5
	2			Draw comparative inferences about populations.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	2	1		Use statistical measures to compare two numerical data distributions.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
	2	1	1	Compare two numerical data distributions using measures of center and variability.	0	0	1	0	1	0	1	0	0	1	0	1	0	1
	Total For Assessment Anchor D-S.2 Draw comparative inferences about populations.				2	0	1	0	3	0	3	2	0	1	0	3	0	3
	3			Investigate chance processes and develop, use, and evaluate probability models.	0	4	0	0	0	4	4	0	1	0	0	0	1	1
	3	1		Predict or determine the likelihood of outcomes.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	1	1	Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	2		Use probability to predict outcomes.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

3	2	1	Determine the probability of a chance event given relative frequency. Predict the approximate relative frequency given the probability.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
3	2	2	Find the probability of a simple event, including the probability of a simple event not occurring.	1	0	0	0	1	0	1	1	0	0	0	1	0	1
3	2	3	Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation.	0	0	1	0	1	0	1	0	0	1	0	1	0	1
Total For Assessment Anchor D-S.3 Investigate chance processes and develop, use, and evaluate probability models.				2	4	1	0	3	4	7	2	1	1	0	3	1	4
Total For Reporting Category D-S				8	4	3	0	11	4	15	8	1	3	0	11	1	12

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items								
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items				
					(Core Points)				(Core & EB)		Core		EB		(Core & EB)				
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total	
A-N: The Number System	1			Demonstrate an understanding of rational and irrational numbers.		4				4	4			1				1	1
	1	1		Apply concepts of rational and irrational numbers.	1				1		1	1					1		1
	1	1	1	Determine whether a number is rational or irrational. For rational numbers, show that the decimal expansion terminates or repeats.	1		1		2		2	1		1			2		2
	1	1	2	Convert a terminating or repeating decimal to a rational number.	1				1		1	1					1		1
	1	1	3	Estimate the value of irrational numbers without a calculator.	1				1		1	1					1		1
	1	1	4	Use rational approximations of irrational numbers to compare and order irrational numbers.	1		1		2		2	1		1			2		2
	1	1	5	Locate/identify rational and irrational numbers at their approximate locations on a number line.	2		1		3		3	2		1			3		3
	Total For Assessment Anchor A-N.1 Demonstrate an understanding of rational and irrational numbers.					7	4	3		10	4	14	7	1	3			10	1
Total For Reporting Category A-N					7	4	3		10	4	14	7	1	3			10	1	11

B-E: Expressions and Equations	2	1		Analyze and describe linear relationships between two variables, using slope.	1				1	1	1				1		1	
	2	1	1	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	2				2	2	2				2		2	
	2	1	2	Use similar right triangles to show and explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane.	1		1		2	2	1		1		2		2	
	2	1	3	Derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .	1				1	1	1				1		1	
	Total For Assessment Anchor B-E.2 Understand the connections between proportional relationships, lines, and linear equations.				5	4	1		6	4	10	5	1	1		6	1	7
	3			Analyze and solve linear equations and pairs of simultaneous linear equations.			1		1	1				1	1		1	
	3	1		Write, solve, graph, and interpret linear equations in one or two variables, using various methods.														
	3	1	1	Write and identify linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results.	1				1	1	1				1		1	
	3	1	2	Solve linear equations that have rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.														
	3	1	3	Interpret solutions to a system of two linear equations in two variables as points of intersection of their graphs because points of intersection satisfy both equations simultaneously.	2				2	2	2				2		2	
	3	1	4	Solve systems of two linear equations in two variables algebraically and estimate solutions by graphing the equations. Solve simple cases by inspection.	2		1		3	3	2		1		3		3	
	3	1	5	Solve real-world and mathematical problems leading to two linear equations in two variables.	2				2	2	2				2		2	
	Total For Assessment Anchor B-E.3 Analyze and solve linear equations and pairs of simultaneous linear equations.				7		2		9	9	7		2		9		9	
	Total For Reporting Category B-E				20	4	5		25	4	29	20	1	5		25	1	26

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block		Total Points		Number of Items				Total Number of Items			
					(Core Points)		(EB)		(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
B-F: Functions	1			Analyze and interpret functions.														
	1	1		Define, evaluate, and compare functions displayed algebraically, graphically, or numerically in tables or by verbal descriptions.	1				1	1	1				1			1
	1	1	1	Determine whether a relation is a function.	1		1		2	2	1		1		2			2
	1	1	2	Compare properties of two functions, each represented in a different way.	3		2		5	5	3		2		5			5
	1	1	3	Interpret the equation $y = mx + b$ as defining a linear function whose graph is a straight line; give examples of functions that are not linear.	3				3	3	3				3			3
	Total For Assessment Anchor B-F.1 Analyze and interpret functions.					8		3		11	11	8		3		11		11
	2			Use functions to model relationships between quantities.			1		1	1			1		1			1
	2	1		Represent or interpret functional relationships between quantities using tables, graphs, and descriptions.														
	2	1	1	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models and in terms of its graph or a table of values.	3				3	3	3				3			3
	2	1	2	Describe qualitatively the functional relationship between two quantities by analyzing a graph. Sketch or determine a graph that exhibits the qualitative features of a function that has been described verbally.	3				3	3	3				3			3
	Total For Assessment Anchor B-F.2 Use functions to model relationships between quantities.					6		1		7	7	6		1		7		7
Total For Reporting Category B-F					14		4		18	18	14		4		18		18	

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores		Equating Block (EB)		Total Points		Number of Items				Total Number of Items			
					(Core Points)		(EB)		(Core & EB)		Core		EB		(Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
C-G: Geometry	1			Demonstrate an understanding of geometric transformations.														
	1	1		Apply properties of geometric transformations to verify congruence or similarity.														
	1	1	1	Identify and apply properties of rotations, reflections, and translations.	3				3	3	3				3			3
	1	1	2	Given two congruent figures, describe a sequence of transformations that exhibits the congruence between them.	1		1		2	2	1		1		2			2
	1	1	3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	1				1	1	1				1			1
	1	1	4	Given two similar two-dimensional figures, describe a sequence of transformations that exhibits the similarity between them.														
	Total For Assessment Anchor C-G.1 Demonstrate an understanding of geometric transformations.					5		1		6	6	5		1		6		6
	2			Understand and apply the Pythagorean theorem.														
	2	1		Solve problems involving right triangles by applying the Pythagorean theorem.														
	2	1	1	Apply the converse of the Pythagorean theorem to show a triangle is a right triangle.	2				2	2	2				2			2
	2	1	2	Apply the Pythagorean theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	1				1	1	1				1			1
	2	1	3	Apply the Pythagorean theorem to find the distance between two points in a coordinate system.	1		1		2	2	1		1		2			2
	Total For Assessment Anchor C-G.2 Understand and apply the Pythagorean theorem.					4		1		5	5	4		1		5		5
	3			Solve real-world and mathematical problems involving volume.														
	3	1		Apply volume formulas of cones, cylinders, and spheres.														
	3	1	1	Apply formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems.	3		1		4	4	3		1		4			4
Total For Assessment Anchor C-G.3 Solve real-world and mathematical problems involving volume.					3		1		4	4	3		1		4		4	
Total For Reporting Category C-G					12		3		15	15	12		3		15		15	

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points							Items						
					Student Scores		Equating Block		Total Points			Number of Items				Total Number of Items		
					(Core Points)		(EB)		(Core & EB)			Core		EB		(Core & EB)		
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total
D-S: Statistics and Probability	1			Investigate patterns of association in bivariate data.		4				4	4		1			1	1	
	1	1		Analyze and interpret bivariate data displayed in multiple representations.														
	1	1	1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative correlation, linear association, and nonlinear association.	3				3	3	3	3			3	3		
	1	1	2	For scatter plots that suggest a linear association, identify a line of best fit by judging the closeness of the data points to the line.	1		1		2	2	1	1			2	2		
	1	1	3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	1		1		2	2	1	1			2	2		
	1	2		Understand that patterns of association can be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table.			1		1	1		1			1	1		
	1	2	1	Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible associations between the two variables.	2				2	2	2				2	2		
	Total For Assessment Anchor D-S.1 Investigate patterns of association in bivariate data.					7	4	3		10	4	14	7	1	3		10	1
Total For Reporting Category D-S					7	4	3		10	4	14	7	1	3		10	1	11

Grade 04

Science

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items								
					Student Scores (Core Points)		Equating Block (EB)		Total Points (Core & EB)		Number of Items				Total Number of Items				
											Core		EB		(Core & EB)				
					MC	SCR	MC	SCR	MC	SCR	Total	MC	SCR	MC	SCR	MC	SCR	Total	
	1	1	1	Distinguish between a scientific fact and an opinion, providing clear explanations that connect observations and results (e.g., a scientific fact can be supported by making observations).	1		1		2		2		1		1		2		2
	1	1	2	Identify and describe examples of common technological changes past to present in the community (e.g., energy production, transportation, communications).	1	2			1	2	3		1	1			1	1	2
	1	3	1	Observe and record change by using time and measurement.	2		1		3		3		2		1		3		3
	1	3	2	Describe relative size, distance, or motion.	3				3		3		3				3		3
	1	3	3	Observe and describe the change to objects caused by temperature change or light.	1		1		2		2		1		1		2		2
	1	3	4	Explain what happens to a living organism when its food supply, access to water, shelter, or space is changed (e.g., it might die, migrate, change behavior, eat something else).	2		1		3		3		2		1		3		3
	1	3	5	Provide examples, predict, or describe how everyday human activities (e.g., solid waste production, food production and consumption, transportation, water consumption, energy production and use) may change the environment.	2	2	1		3	2	5		2	1	1		3	1	4
Total For Assessment Anchor A.1 Reasoning and Analysis					12	4	5		17	4	21		12	2	5		17	2	19

A

2	1	1	Generate questions about objects, organisms, or events that can be answered through scientific investigations.	1				1		1	1				1		1
2	1	2	Design and describe an investigation (a fair test) to test one variable.	3		1		4		4	3		1		4		4
2	1	3	Observe a natural phenomenon (e.g., weather changes, length of daylight/night, movement of shadows, animal migrations, growth of plants), record observations, and then make a prediction based on those observations.	2				2		2	2				2		2
2	1	4	State a conclusion that is consistent with the information/data.	1		1		2		2	1		1		2		2
2	2	1	Identify appropriate tools or instruments for specific tasks and describe the information they can provide (e.g., measuring: length - ruler, mass - balance scale, volume - beaker, temperature - thermometer; making observations: hand lens, binoculars, telescope).	1		1		2		2	1		1		2		2
Total For Assessment Anchor A.2 Processes, Procedures, and Tools of Scientific Investigations				8		3		11		11	8		3		11		11

3	1	1	Categorize systems as either natural or human-made (e.g., ballpoint pens, simple electrical circuits, plant anatomy, water cycle).	3		1		4		4	3		1		4		4
3	1	2	Explain a relationship between the living and nonliving components in a system (e.g., food web, terrarium).	1		1		2		2	1		1		2		2
3	1	3	Categorize the parts of an ecosystem as either living or nonliving and describe their roles in the system.	1				1		1	1				1		1
3	1	4	Identify the parts of the food and fiber systems as they relate to agricultural products from the source to the consumer.														
3	2	1	Identify what different models represent (e.g., maps show physical features, directions, distances; globes represent Earth; drawings of watersheds depict terrain; dioramas show ecosystems; concept maps show relationships of ideas). Identify what different models represent														
3	2	2	Use models to make observations to explain how systems work (e.g., water cycle, Sun-Earth-Moon system).	2				2		2	2				2		2
3	2	3	Use appropriate, simple modeling tools and techniques to describe or illustrate a system (e.g., two cans and string to model a communications system, terrarium to model an ecosystem).														
3	3	1	Identify and describe observable patterns (e.g., growth patterns in plants, weather, water cycle).	1		1		2		2	1		1		2		2
3	3	2	Predict future conditions/events based on observable patterns (e.g., day/night, seasons, sunrise/sunset, lunar phases).	1		1		2		2	1		1		2		2
Total For Assessment Anchor A.3 Systems, Models, and Patterns				9		4		13		13	9		4		13		13
Total For Reporting Category A: Nature of Science				29	4	12		41	4	45	29	2	12		41	2	43

Grade 04

Science

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items								
					Student Scores (Core Points)		Equating Block (EB)		Total Points (Core & EB)		Number of Items				Total Number of Items (Core & EB)				
					MC	SCR	MC	SCR	MC	SCR	Total	MC	SCR	MC	SCR	MC	SCR	Total	
	1	1	1	Identify life processes of living things (e.g., growth, digestion, respiration).															
	1	1	2	Compare similar functions of external characteristics of organisms (e.g., anatomical characteristics: appendages, type of covering, body segments).	2	2			2	2	4		2	1			2	1	3
	1	1	3	Describe basic needs of plants and animals (e.g., air, water, food).	1		1		2		2		1		1		2		2
	1	1	4	Describe how different parts of a living thing work together to provide what the organism needs (e.g., parts of plants: roots, stems, leaves).			1		1		1				1		1		1
	1	1	5	Describe the life cycles of different organisms (e.g., moth, grasshopper, frog, seed-producing plant).	1				1		1		1				1		1
Total For Assessment Anchor B.1 Structures and Functions of Organisms					4	2	2		6	2	8		4	1	2		6	1	7
	2	1	1	Identify characteristics for plant and animal survival in different environments (e.g., wetland, tundra, desert, prairie, deep ocean, forest).			1		1		1				1		1		1
	2	1	2	Explain how specific adaptations can help a living organism survive (e.g., protective coloration, mimicry, leaf sizes and shapes, ability to catch or retain water).		2				2	2			1				1	1
	2	2	1	Identify physical characteristics (e.g., height, hair color, eye color, attached earlobes, ability to roll tongue) that appear in both parents and could be passed on to offspring.	2				2		2		2				2		2
Total For Assessment Anchor B.2 Continuity of Life					2	2	1		3	2	5		2	1	1		3	1	4

B	3	1	1	Describe the living and nonliving components of a local ecosystem (e.g., lentic and lotic systems, forest, cornfield, grasslands, city park, playground).																
	3	1	2	Describe interactions between living and nonliving components (e.g. plants – water, soil, sunlight, carbon dioxide, temperature; animals – food, water, shelter, oxygen, temperature) of a local ecosystem.	1			1		1	1					1			1	
	3	2	1	Describe what happens to a living thing when its habitat is changed.																
	3	2	2	Describe and predict how changes in the environment (e.g., fire, pollution, flood, building dams) can affect systems.																
	3	2	3	Explain and predict how changes in seasons affect plants, animals, or daily human life (e.g., food availability, shelter, mobility).	1				1		1	1					1			1
	3	3	1	Identify everyday human activities (e.g., driving, washing, eating, manufacturing, farming) within a community that depend on the natural environment.			1		1		1				1		1			1
	3	3	2	Describe the human dependence on the food and fiber systems from production to consumption (e.g., food, clothing, shelter, products).	1				1		1	1					1			1
	3	3	3	Identify biological pests (e.g., fungi – molds, plants – foxtail, purple loosestrife, Eurasian water milfoil; animals – aphides, ticks, zebra mussels, starlings, mice) that compete with humans for resources.																
	3	3	4	Identify major land uses in the urban, suburban and rural communities (e.g., housing, commercial, recreation).																
	3	3	5	Describe the effects of pollution (e.g., litter) in the community.																
Total For Assessment Anchor B.3 Ecological Behavior and Systems				3		1		4		4	3		1		4				4	
Total For Reporting Category B: Biology				9	4	4		13	4	17	9	2	4		13	2			15	

Grade 04

Science

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items								
					Student Scores (Core Points)		Equating Block (EB)		Total Points (Core & EB)		Number of Items				Total Number of Items (Core & EB)				
					MC	SCR	MC	SCR	MC	SCR	Total	MC	SCR	MC	SCR	MC	SCR	Total	
C	1	1	1	Use physical properties [e.g., mass, shape, size, volume, color, texture, magnetism, state to describe matter.	1		1		2		2		1		1		2		2
	1	1	2	Categorize/group objects using physical characteristics.	1		1		2		2		1		1		2		2
	Total For Assessment Anchor C.1 Structures, Properties, and Interaction of Matter and Energy				2		2		4		4		2		2		4		4
	2	1	1	Identify energy forms, energy transfer, and energy examples (e.g., light, heat, electrical).															
	2	1	2	Describe the flow of energy through an object or system (e.g., feeling radiant heat from a light bulb, eating food to get energy, using a battery to light a bulb or run a fan).	2		1		3		3		2		1		3		3
	2	1	3	Recognize or illustrate simple direct current series and parallel circuits composed of batteries, light bulbs (or other common loads), wire, and on/off switches.	1				1		1		1				1		1
	2	1	4	Identify characteristics of sound (e.g., pitch, loudness, reflection).	1				1		1		1				1		1
	Total For Assessment Anchor C.2 Forms, Sources, Conversions, and Transfer of Energy				4		1		5		5		4		1		5		5
	3	1	1	Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction).	2	2			2	2	4		2	1			2	1	3
	3	1	2	Compare the relative movement of objects or describe types of motion that are evident (e.g., bouncing ball, moving in a straight line, back and forth, merry-go-round).	1				1		1		1				1		1
	3	1	3	Describe the position of an object by locating it relative to another object or a stationary background (e.g., geographic direction, left, up).	1		1		2		2		1		1		2		2
	Total For Assessment Anchor C.3 Principles of Motion and Force				4	2	1		5	2	7		4	1	1		5	1	6
Total For Reporting Category C: Physical Sciences				10	2	4		14	2	16		10	1	4		14	1	15	

Grade 04

Science

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points						Items							
					Student Scores (Core Points)		Equating Block (EB)		Total Points (Core & EB)		Number of Items				Total Number of Items			
											Core		EB		(Core & EB)			
					MC	SCR	MC	SCR	MC	SCR	Total	MC	SCR	MC	SCR	MC	SCR	Total
D	1	1	1	Describe how prominent Earth features in Pennsylvania (e.g., mountains, valleys, caves, sinkholes, lakes, rivers) were formed.	1				1		1	1				1	1	
	1	1	2	Identify various Earth structures (e.g., mountains, watersheds, peninsulas, lakes, rivers, valleys) through the use of models.	1				1		1	1				1	1	
	1	1	3	Describe the composition of soil as weathered rock and decomposed organic remains.	1				1		1	1				1	1	
	1	2	1	Identify products and by-products of plants and animals for human use (e.g., food, clothing, building materials, paper products).			1		1		1	1		1		1	1	
	1	2	2	Identify the types and uses of Earth materials for renewable, nonrenewable, and reusable products (e.g., human-made products: concrete, paper, plastics, fabrics).														
	1	2	3	Recognize ways that humans benefit from the use of water resources (e.g., agriculture, energy, recreation).			1		1		1	1		1		1	1	
	1	3	1	Describe types of freshwater and saltwater bodies (e.g., lakes, rivers, wetlands, oceans).	1		1		2		2	1		1		2	2	
	1	3	2	Explain how water goes through phase changes (i.e., evaporation, condensation, freezing, and melting).	1				1		1	1				1	1	
	1	3	3	Describe or compare lentic systems (i.e., ponds, lakes, and bays) and lotic systems (i.e., streams, creeks, and rivers).	1				1		1	1				1	1	
	1	3	4	Explain the role and relationship of a watershed or a wetland on water sources (e.g., water storage, groundwater recharge, water filtration, water source, water cycle).														
Total For Assessment Anchor D.1 Earth Features and Processes that Change Earth and its Resources					6		3		9		9	6		3		9	9	

2	1	1	Identify basic cloud types (i.e., cirrus, cumulus, stratus, and cumulonimbus) and make connections to basic elements of weather (e.g., changes in temperature, precipitation).	1				1		1	1				1		1
2	1	2	Identify weather patterns from data charts or graphs of the data (e.g., temperature, wind direction, wind speed, cloud types, precipitation).			1		1		1			1		1		1
2	1	3	Identify appropriate instruments (i.e., thermometer, rain gauge, weather vane, anemometer, and barometer) to study weather and what they measure.														
Total For Assessment Anchor D.2 Weather, Climate, and Atmospheric Processes				1		1		2		2	1		1		2		2
3	1	1	Describe motions of the Sun - Earth - Moon system.	2				2		2	2				2		2
3	1	2	Explain how the motion of the Sun - Earth - Moon system relates to time (e.g., days, months, years).	1				1		1	1				1		1
3	1	3	Describe the causes of seasonal change as they relate to the revolution of Earth and the tilt of Earth's axis.														
Total For Assessment Anchor D.3 Composition and Structure of the Universe				3				3		3	3				3		3
Total For Reporting Category D: Earth and Space Sciences				10		4		14		14	10		4		14		14

Grade 08

Science

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points							Items						
					Student Scores (Core Points)		Equating Block (EB)		Total Points (Core & EB)			Number of Items				Total Number of Items (Core & EB)		
					MC	SCR	MC	SCR	MC	SCR	Total	MC	SCR	MC	SCR	MC	SCR	Total
	1	1	1	Distinguish between a scientific theory and an opinion, explaining how a theory is supported with evidence, or how new data/information may change existing theories and practices	1	2			1	2	3	1	1			1	1	2
	1	1	2	Explain how certain questions can be answered through scientific inquiry and/or technological design.	1		1		2		2	1		1		2		2
	1	1	3	Use evidence, such as observations or experimental results, to support inferences about a relationship.	2				2		2	2				2		2
	1	1	4	Develop descriptions, explanations, predictions, and models using evidence.	1				1		1	1				1		1
	1	2	1	Describe the positive and negative, intended and unintended, effects of specific scientific results or technological developments (e.g., air/space travel, genetic engineering, nuclear fission/fusion, artificial intelligence, lasers, organ transplants).		2	1		1	2	3		1	1		1	1	2
	1	2	2	Identify environmental issues and explain their potential long-term health effects (e.g., pollution, pest controls, vaccinations).	1		1		2		2	1		1		2		2
	1	2	3	Describe fundamental scientific or technological concepts that could solve practical problems (e.g., Newton’s laws of motion, Mendelian genetics).	2				2		2	2				2		2
	1	2	4	Explain society’s standard of living in terms of technological advancements and how these advancements impact on agriculture (e.g., transportation, processing, production, storage).	1				1		1	1				1		1
	1	3	1	Use ratio to describe change (e.g., percents, parts per million, grams per cubic centimeter, mechanical advantage).	2				2		2	2				2		2

A: Nature of Science	1	3	2	Use evidence, observations, or explanations to make inferences about change in systems over time (e.g., carrying capacity, succession, population dynamics, loss of mass in chemical reactions, indicator fossils in geologic time scale) and the variables affecting these changes.	1	1	2	2	1	1	2	2				
	1	3	3	Examine systems changing over time, identifying the possible variables causing this change, and drawing inferences about how these variables affect this change.	1	1	2	2	1	1	2	2				
	1	3	4	Given a scenario, explain how a dynamically changing environment provides for the sustainability of living systems.												
	Total For Assessment Anchor A.1 Reasoning and Analysis				13	4	5	18	4	22	13	2	5	18	2	20
	2	1	1	Use evidence, observations, or a variety of scales (e.g., mass, distance, volume, temperature) to describe relationships.	2		2	2	2			2	2			
	2	1	2	Use space/time relationships, define concepts operationally, raise testable questions, or formulate hypotheses.	1		1	1	1			1	1			
	2	1	3	Design a controlled experiment by specifying how the independent variables will be manipulated, how the dependent variable will be measured, and which variables will be held constant.												
	2	1	4	Interpret data/observations; develop relationships among variables based on data/observations to design models as solutions.	2	1	3	3	2	1	3	3				
	2	1	5	Use evidence from investigations to clearly communicate and support conclusions.	2	1	3	3	2	1	3	3				
	2	1	6	Identify a design flaw in a simple technological system and devise possible working solutions.	1	2	3	3	1	2	3	3				
	2	2	1	Describe the appropriate use of instruments and scales to accurately and safely measure time, mass, distance, volume, or temperature under a variety of conditions.	1	1	2	2	1	1	2	2				
	2	2	2	Apply appropriate measurement systems (e.g., time, mass, distance, volume, temperature) to record and interpret observations under varying conditions.	1		1	1	1		1	1				

2	2	3	Describe ways technology (e.g., microscope, telescope, micrometer, hydraulics, barometer) extends and enhances human abilities for specific purposes.	1				1		1	1				1		1
Total For Assessment Anchor A.2 Processes, Procedures, and Tools of Scientific Investigations				11		5		16		16	11		5		16		16

3	1	1	Describe a system (e.g., watershed, circulatory system, heating system, agricultural system) as a group of related parts with specific roles that work together to achieve an observed result.	1				1		1	1					1		1
3	1	2	Explain the concept of order in a system [e.g., (first to last: manufacturing steps, trophic levels); (simple to complex: cell, tissue, organ, organ system)].	1				1		1	1					1		1
3	1	3	Distinguish between system inputs, system processes, system outputs, and feedback (e.g., physical, ecological, biological, informational).	1				1		1	1					1		1
3	1	4	Distinguish between open loop (e.g., energy flow, food web) and closed loop (e.g., materials in the nitrogen and carbon cycles, closed-switch) systems.															
3	1	5	Explain how components of natural and human-made systems play different roles in a working system.	1				1		1	1					1		1
3	2	1	Describe how scientists use models to explore relationships in natural systems (e.g., an ecosystem, river system, the solar system).			1		1		1				1		1		1
3	2	2	Describe how engineers use models to develop new and improved technologies to solve problems.	1				1		1	1					1		1
3	2	3	Given a model showing simple cause- and-effect relationships in a natural system, predict results that can be used to test the assumptions in the model (e.g., photosynthesis, water cycle, diffusion, infiltration).															
3	3	1	Identify and describe patterns as repeated processes or recurring elements in human-made systems (e.g., trusses, hub-and-spoke system in communications and transportation systems, feedback controls in regulated systems).			1		1		1				1		1		1
3	3	2	Describe repeating structure patterns in nature (e.g., veins in a leaf, tree rings, crystals, water waves) or periodic patterns (e.g., daily, monthly, annually).	1				1		1	1					1		1
Total For Assessment Anchor A.3 Systems, Models, and Patterns				6		2		8		8	6			2		8		8
Total For Reporting Category A				30	4	12		42	4	46	30	2	12		42	2	44	

Grade 08

Science

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points									Items					
					Student Scores (Core Points)		Equating Block (EB)		Total Points (Core & EB)			Number of Items				Total Number of Items			
					MC	OE	MC	OE	MC	OE	Total	Core		EB		(Core & EB)			
												MC	OE	MC	OE	MC	OE	MC	OE
	1	1	1	Describe the structures of living things that help them function effectively in specific ways (e.g., adaptations, characteristics).	1		1		2		2		1		1		2		2
	1	1	2	Compare similarities and differences in internal structures of organisms (e.g., invertebrate/vertebrate, vascular/nonvascular, single-celled/multi-celled) and external structures (e.g., appendages, body segments, type of covering, size, shape).	1	2			1	2	3		1	1			1	1	2
	1	1	3	Apply knowledge of characteristic structures to identify or categorize organisms (i.e., plants, animals, fungi, bacteria, and protista).															
	1	1	4	Identify the levels of organization from cell to organism and describe how specific structures (parts), which underlie larger systems, enable the system to function as a whole.	1				1		1		1				1		1
Total For Assessment Anchor B.1 Structures and Functions of Organisms					3	2	1		4	2	6		3	1	1		4	1	5
	2	1	1	Explain how inherited structures or behaviors help organisms survive and reproduce in different environments.															
	2	1	2	Explain how different adaptations in individuals of the same species may affect survivability or reproduction success.															
	2	1	3	Explain that mutations can alter a gene and are the original source of new variations.															
	2	1	4	Describe how selective breeding or biotechnology can change the genetic makeup of organisms.			1		1		1				1		1		1
	2	1	5	Explain that adaptations are developed over long periods of time and are passed from one generation to another	1				1		1		1				1		1

B: Biological Sciences	2	2	1	Identify and explain differences between inherited and acquired traits.	1				1		1	1				1		1	
	2	2	2	Recognize that the gene is the basic unit of inheritance, that there are dominant and recessive genes, and that traits are inherited.			1		1		1			1		1		1	
	Total For Assessment Anchor B.2 Continuity of Life				2		2		4		4	2		2		4		4	
	3	1	1	Explain the flow of energy through an ecosystem (e.g., food chains, food webs).		2			2	2		1					1		1
	3	1	2	Identify major biomes and describe abiotic and biotic components (e.g., abiotic: different soil types, air, water sunlight; biotic: soil microbes, decomposers).	1				1		1	1					1		1
	3	1	3	Explain relationships among organisms (e.g., producers/consumers, predator/prey) in an ecosystem.															
	3	2	1	Use evidence to explain factors that affect changes in populations (e.g., deforestation, disease, land use, natural disaster, invasive species).															
	3	2	2	Use evidence to explain how diversity affects the ecological integrity of natural systems															
	3	2	3	Describe the response of organisms to environmental changes (e.g., changes in climate, hibernation, migration, coloration) and how those changes affect survival.	1				1		1	1					1		1
	3	3	1	Explain how human activities may affect local, regional, and global environments.	1				1		1	1					1		1
	3	3	2	Explain how renewable and nonrenewable resources provide for human needs (i.e., energy, food, water, clothing, and shelter).			1		1		1			1		1		1	1
	3	3	3	Describe how waste management affects the environment (e.g., recycling, composting, landfills, incineration, sewage treatment).	1				1		1	1					1		1
	3	3	4	Explain the long-term effects of using integrated pest management (e.g., herbicides, natural predators, biogenetics) on the environment.	1				1		1	1					1		1
	Total For Assessment Anchor B.3 Ecological Behavior and Systems				5	2	1		6	2	8	5	1	1		6	1	7	
	Total For Reporting Category B				10	4	4		14	4	18	10	2	4		14	2	16	

Grade 08

Science

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points									Items					
					Student Scores (Core Points)		Equating Block (EB)		Total Points (Core & EB)			Number of Items				Total Number of Items (Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total	
C: Physical Sciences	1	1	1	Explain the differences among elements, compounds, and mixtures.	1				1		1	1					1		1
	1	1	2	Use characteristic physical or chemical properties to distinguish one substance from another (e.g., density, thermal expansion/contraction, freezing/melting points, streak test).	2				2		2	2					2		2
	1	1	3	Identify and describe reactants and products of simple chemical reactions.			1		1		1			1			1		1
	Total For Assessment Anchor C.1 Structures, Properties, and Interaction of Matter and Energy					3		1		4		4	3		1		4		4
	2	1	1	Distinguish among forms of energy (e.g., electrical, mechanical, chemical, light, sound, nuclear) and sources of energy (i.e., renewable and nonrenewable energy)	2				2		2	2					2		2
	2	1	2	Explain how energy is transferred from one place to another through convection, conduction, or radiation.	1				1		1	1					1		1
	2	1	3	Describe how one form of energy (e.g., electrical, mechanical, chemical, light, sound, nuclear) can be converted into a different form of energy.															
	2	2	1	Describe the Sun as the major source of energy that impacts the environment.	1		1		2		2	1		1			2		2
	2	2	2	Compare the time span of renewability for fossil fuels and the time span of renewability for alternative fuels.	1				1		1	1					1		1
	2	2	3	Describe the waste (i.e., kind and quantity) derived from the use of renewable and nonrenewable resources and their potential impact on the environment.			1		1		1			1			1		1
	Total For Assessment Anchor C.2 Forms, Sources, Conversions, and Transfer of Energy					5		2		7		7	5		2		7		7
	3	1	1	Describe forces acting on objects (e.g., friction, gravity, balanced versus unbalanced).															
	3	1	2	Distinguish between kinetic and potential energy.	1		1		2		2	1		1			2		2

3	1	3	Explain that mechanical advantage helps to do work (physics) by either changing a force or changing the direction of the applied force (e.g., simple machines, hydraulic systems).														
Total For Assessment Anchor C.3 Principles of Motion and Force				1		1		2		2	1		1		2		2
Total For Reporting Category C				9		4		13		13	9		4		13		13

Grade 08

Science

Reporting Category	Assessment Anchor	Descriptor (Sub-anchor)	Eligible Content	Focus	Points							Items							
					Student Scores (Core Points)		Equating Block (EB)		Total Points (Core & EB)			Number of Items				Total Number of Items (Core & EB)			
					MC	OE	MC	OE	MC	OE	Total	MC	OE	MC	OE	MC	OE	Total	
	1	1	1	Explain the rock cycle as changes in the solid earth and rock types found in Pennsylvania (igneous – granite, basalt, pumice; sedimentary – limestone, sandstone, shale, coal; and metamorphic – slate, quartzite, marble, gneiss).															
	1	1	2	Describe natural processes that change Earth’s surface (e.g., landslides, volcanic eruptions, earthquakes, mountain building, new land being formed, weathering, erosion, sedimentation, soil formation).				1		1		1						1	
	1	1	3	Identify soil types (i.e., humus, topsoil, subsoil, loam, loess, and parent material) and their characteristics (i.e., particle size, porosity, and permeability) found in different biomes and in Pennsylvania, and explain how they formed.															
	1	1	4	Explain how fossils provide evidence about plants and animals that once lived throughout Pennsylvania’s history (e.g., fossils provide evidence of different environments).	2	2		1		3	2	5	2	1	1		3	1	4
	1	2	1	Describe a product’s transformation process from production to consumption (e.g., prospecting, propagating, growing, maintaining, adapting, treating, converting, distributing, disposing) and explain the process’s potential impact on Earth’s resources.	1					1		1	1				1		1
	1	2	2	Describe potential impacts of human-made processes (e.g., manufacturing, agriculture, transportation, mining) on Earth’s resources, both nonliving (i.e., air, water, or earth materials) and living (i.e., plants and animals).	1					1		1	1				1		1

D: Earth and Space Sciences

1	3	1	Describe the water cycle and the physical processes on which it depends (i.e., evaporation, condensation, precipitation, transpiration, runoff, infiltration, energy inputs, and phase changes).	2				2		2	2				2	2	
1	3	2	Compare and contrast characteristics of freshwater and saltwater systems on the basis of their physical characteristics (i.e., composition, density, and electrical conductivity) and their use as natural resources.	1				1		1	1				1	1	
1	3	3	Distinguish among different water systems (e.g., wetland systems, ocean systems, river systems, watersheds) and describe their relationships to each other as well as to landforms.	1				1		1	1				1	1	
1	3	4	Identify the physical characteristics of a stream and how these characteristics determine the types of organisms found within the stream environment (e.g., biological diversity, water quality, flow rate, tributaries, surrounding watershed).														
Total For Assessment Anchor D.1 Earth Features and Processes that Change Earth and its Resources				8	2	2		10	2	12	8	1	2		10	1	11
2	1	1	Explain the impact of water systems on the local weather or the climate of a region (e.g., lake effect snow, land/ocean breezes).														
2	1	2	Identify how global patterns of atmospheric movement influence regional weather and climate.														
2	1	3	Identify how cloud types, wind directions, and barometric pressure changes are associated with weather patterns in different regions of the country.														
Total For Assessment Anchor D.2 Weather, Climate, and Atmospheric Processes																	
3	1	1	Describe patterns of Earth's movements (i.e., rotation and revolution) and the Moon's movements (i.e., phases, eclipses, and tides) in relation to the Sun.														
3	1	2	Describe the role of gravity as the force that governs the movement of the solar system and universe.	1		1		2		2	1		1		2	2	

3	1	3	Compare and contrast characteristics of celestial bodies found in the solar system (e.g., moons, asteroids, comets, meteors, inner and outer planets).			1		1		1			1		1		1
Total For Assessment Anchor D.3 Composition and Structure of the Universe				1		2		3		3	1		2		3		3
Total For Reporting Category D				9	2	4		13	2	15	9	1	4		13	1	14

APPENDIX C: ITEM AND TEST DEVELOPMENT PROCESS

Item and Test Development Process for PSSA

Step	Description
1. Review Guiding Documentation	Each year item and test development specialists meet internally to review all guiding documentation related to the PSSA. Documentation reviewed includes the test design blueprints, the Pennsylvania Assessment Anchors and Eligible Content, the test item specifications, the test style specifications (style guide), and all test content descriptions.
2. Meet with PDE to Confirm Understanding of Program	The goal of the meeting each year is to ensure that item and test development teams have a clear understanding of PDE's vision for test development. A successful development cycle requires a clear understanding of Pennsylvania's content-area test specifications and of any unique interpretations of the Pennsylvania Assessment Anchors (if any).
3. Create Preliminary Test Item Development Plan	Item and test development specialists generate a preliminary development plan which includes an overview of the program, the internal and external (PDE) review and approval processes, a projected schedule for development of test items—including the number of test items to be developed for review by PDE and subsequent review by the committees of Pennsylvania educators. Item and test development specialists also generate strategies for securing passages and developing science scenarios and passage-based items, etc.
4. Meet with PDE to Finalize Test Item Development Plan	Over the course of the meeting, item and test development specialists verify all steps in the development process including timelines and schedules for test item/test development.
5. Analyze Item Bank	Existing test items in the current PSSA Item Bank are reviewed for technical psychometric quality as well as for their match to the Assessment Anchors. During this phase, test development specialists also make a tally of the test items by Assessment Anchor—including test development specialists' best thinking regarding the number of usable test items in the existing item bank. A tally is also made of the number of usable passages, as well as other stimulus prompts in the bank, including science scenarios.
6. Refine Test Item Development Plan to Include Writers and Subcontractors	Item and test development specialists identify the writers who will write the test items (test development specialists or other professional item writers, subcontractors, etc.), the estimated number of writers needed, the qualifications of writers, and the approximate number of test items to be submitted by each source.
7. Train Item Writers	Item and test development specialists train item writers, as needed. Item writers who have written for the PSSA in the past receive updated information, as needed.
8. Write and Review Items	Test items are written by item writers after training is complete, and feedback is provided by the item and test development specialists to item writers on a regular basis. As test items are written, they are reviewed and edited in a series of internal reviews. Item and test development specialists review and edit items to include, but not limited to, the following: match to Assessment Anchor/Eligible Content, relevance to purpose, accuracy of content, item difficulty, interest level, grade appropriateness, depth of knowledge and cognitive complexity, adherence to the principles of Universal Design, and freedom from issues of bias/fairness/sensitivity. At the same time, the process of procuring permissions also begins, including securing permissions for passages, art, etc.
9. Enter Test Items into Database	Upon acceptance from item writers, test items are entered into the item management system, IDEAS (<i>Item Development and Educational Assessment System</i>). Item data stored in the system database includes, but is not limited to, the following: readability, cognitive level, estimated level of difficulty, alignment to Assessment Anchors, and correlation to stimulus prompts and passages.
10. Prepare Item Set for Sample Item Review by PDE	Item and test development specialists prepare a subset of the items for review by PDE.
11. PDE Conducts Sample Item Review	After a subset of the items is submitted to PDE for review, PDE reviews the items and provides feedback to item and test development teams via a conference call. Items are revised per PDE feedback.

Step	Description
12. Continue to Write and Review Items	The remaining items are written, and feedback is provided by the item and test development specialists to item writers on a regular basis. Items are entered into the item management system, IDEAS (<i>Item Development and Educational Assessment System</i>) (See step 8 and step 9).
13. Review Items Prior to Test Item Review and Validation Sessions	Prior to New Item Content Review, all items are submitted to PDE for review. Item and test development specialists incorporate all PDE feedback, and PDE-requested edits to items are made.
14. Prepare for Test Item Review Sessions (the New Item Content Review and the Bias, Fairness, and Sensitivity Review)	Item and test development specialists prepare all items and stimulus passages for review by the New Item Content Review Committee (consisting of Pennsylvania educators) and by the separate Bias, Fairness, and Sensitivity Committee (consisting of a panel of experts including Pennsylvania educators). Item and test development specialists also prepare training materials needed for training committee members to review items for content or for bias, fairness, and sensitivity issues. All training materials and other ancillary materials (e.g., agendas, presentations, etc.) are also developed and then submitted to PDE for review and approval. Invitations are sent to Pennsylvania educators and national experts from PDE-approved committee lists.
15. Conduct Test Item Review Sessions (the New Item Content Review and the Bias, Fairness, and Sensitivity Review)	Committees of Pennsylvania educators and national experts review items in two meetings: one addressing item content and quality, the other addressing bias, fairness, and sensitivity. PDE, with support from item and test development specialists, presents training on how to review new test items for content considerations or bias/fairness/sensitivity issues. At the New Item Content Review, suggested edits to test items are made and/or replacement test items are written during the actual item review so that both the committee and the PDE are able to observe changes to the test items and approve the test items during the committee review process. At the Bias, Fairness, and Sensitivity Review, experts in bias, fairness, and sensitivity review all test items and passages and come to a consensus about any issues that are noted. At both meetings the results are carefully documented.
16. Conduct Item Review Resolution and Cleanup	Following the conclusion of the New Item Content Review Committee meetings, PDE re-examines the consensus changes suggested by the committee members during the New Item Content Review Committee meetings. DRC item and test development specialists then record all of PDE's follow-up decisions and changes. During this cleanup process, PDE either accepts the changes as requested by the committee or rejects the decision of the committee. If a committee decision is rejected, PDE provides an alternate decision for DRC to implement. During this cleanup process, PDE also interprets the report from the Bias, Fairness, and Sensitivity Committee meetings and subsequently identifies changes to test items and passages. DRC item and test development specialists then apply the changes to the test items and passages per PDE's decisions.
17. Submit Field Test Items for Final Sign-Off	PDE-approved changes are applied to the items, scenarios, non-permissioned passages, prompts, etc. (Changes reflect PDE's arbitration of the committee decisions.) Once all revisions to the items, non-permissioned passage text, and/or the art used by test items and passages are completed, the test items are submitted to PDE for final review and sign-off. (Changes requested to permissioned passages are sought from the publisher of record, and, if approved by the copyright holders, changes are implemented.) [PDE's approval process for field test items generally occurs simultaneously with PDE's approval of the core test forms. See step 25.]
<i>To follow the path for new field test items, skip to step 22, or to follow the chronological test development path, continue with step 18.</i>	

Step	Description
18. Review Results of the Field Test	Following the administration of a field test form and the subsequent range-finding and field test scoring processes for field test items, performance data for all field test items are analyzed by DRC psychometricians and test development specialists. Test item performance data that meet certain triggering criteria are flagged for additional reviews by test development specialists. Flagged field-test items with extreme performance data are considered psychometrically unusable and are removed from future operational consideration. Field-test items with marginal performance data are prepared for the Field Test Item Data Review meeting.
19. Prepare for Field Test Item Data Review	Test development specialists prepare the items and stimulus passages for review by the Field Test Item Data Review Committee (which consists of Pennsylvania educators). Psychometricians also prepare training materials needed for training committee members to review items for their performance. All training materials and other ancillary materials (e.g., agendas, presentations, etc.) are submitted to PDE for review and approval. Invitations are also sent to Pennsylvania educators from PDE-approved committee lists.
20. Conduct Field Test Item Data Review	Committees of Pennsylvania educators review the performance data of flagged field-test items. Psychometricians present training on how to review field-test items based on their performance data. At the Item Data Review, committee members examine the performance of the items and determine whether each field-test item is technically sound and appropriate for use on an operational PSSA test. Since test items cannot be modified at the Field Test Item Data Review, the committee can either accept an item as is, or the committee can reject the item.
21. Conduct Field Test Item Data Review Reconciliation	Following the conclusion of the Field Test Item Data Review Committee meetings, PDE re-examines the consensus decisions (accept or reject) suggested by the committee members during the Field Test Item Data Review Committee meetings. Test development specialists record all of PDE's follow-up decisions and changes. During this cleanup process, PDE either accepts the decisions of the data review committee, or PDE rejects the decisions of the data review committee. If a committee decision is not accepted, PDE provides an alternate decision for test development specialists to implement. All PDE-approved changes to the test items status (accepted or rejected) are incorporated into the <i>Item Development and Educational Assessment System, IDEAS</i> .
22. Select Items to Fill Core, Field Test, and Equating Block Positions in Core and Field Test Forms	After the PDE-approved changes to the new field-test items is completed AND the results of the prior field test have been finalized following data review, test development specialists collaborate with psychometricians to follow the Test Design Blueprints and build requirements to make the initial selection of items for core, field-test, and equating block positions for all test forms.
23. Review Core and Equating Block Selections	After test content and psychometric requirements have been achieved for core and equating block positions, the core and equating block items are provided to PDE for review and approval. Any changes to the content of the core or equating block requested by PDE are balanced with psychometric requirements until all core and equating block positions are approved by PDE, test development specialists, and psychometricians. Test development specialists work with psychometricians and PDE staff to create scrambled versions of the core items that will appear across forms.
24. Construct Test Forms	Items, passages, and test components are assembled into forms using the form construction and typesetting function of DRC's <i>Item Development and Educational Assessment System, IDEAS</i> . Forms are reviewed internally for style and formatting requirements.
25. Review Typeset Forms	After forms are constructed in IDEAS, draft hard copies of the forms are produced and presented to PDE for review and approval. Any changes to the content of the core or equating block requested by PDE are balanced with psychometric requirements until all core and equating block positions are approved by PDE, test development specialists, and psychometricians. PDE also re-reviews all field-test items appearing in the test forms. DRC applies changes to the field-test items as required.

Step	Description
26. Print Test Forms	Following PDE's approval of the test forms, DRC completes a series of final proofing of all test forms. Final forms (along with ancillary materials) are then approved for printing.
27. Assemble Documentation of Test Materials	Metadata for each test item and form is documented and proofed, including: grade, form, session/section, item sequence, reporting category, Assessment Anchor, descriptor (sub-anchor), Eligible Content, number of points, item type, number of answer options, item usage, stimulus ID, etc.
28. Prepare Online Forms	Following approval of the print forms, all online forms are prepared. Forms are rendered in form sets, and items and forms are compared for continuity with the print forms as well as to ensure that all tools and features are functioning as expected.
<i>To follow the path for new field test items, return to step 18.</i>	

APPENDIX D: ITEM AND DATA REVIEW CARD EXAMPLES

Item Review Card Example

Standard: Use the four operations with whole numbers to solve problems.		PA - Item Card
<p>1. [Redacted]</p> <p>A. [Redacted]</p> <p>B. [Redacted]</p>	Item ID	[Redacted]
	Content Area	Mathematics
	Passage ID	[Redacted]
	Passage Title	[Redacted]
	Grade	4
	CCAACS Standards	B-O.1
	Item Type	Open Ended
	Points	4
	Depth of Knowledge	2
	Bloom's Taxonomy	[Redacted]
	Est Difficulty	Medium
	Key	[Redacted]
	Calculator	C

1. **Continued.** Please refer to the previous page for task explanation.

[Redacted]

c. [Redacted]

[Redacted]

[Redacted]

<p>Standard: Describe how prominent Earth features in Pennsylvania (e.g., mountains, valleys, caves, sinkholes, lakes, rivers) were formed.</p>	<p>PA - Data Card</p>																								
<p>1. </p> <p></p>	<table border="1"> <tr><td>Item ID</td></tr> <tr><td></td></tr> <tr><td>Content Area</td></tr> <tr><td>Science</td></tr> <tr><td>Passage ID</td></tr> <tr><td></td></tr> <tr><td>Passage Title</td></tr> <tr><td></td></tr> <tr><td>Grade</td></tr> <tr><td>4</td></tr> <tr><td>Standards</td></tr> <tr><td>AACS: D.1.1.1</td></tr> <tr><td>Item Type</td></tr> <tr><td>Multiple Choice</td></tr> <tr><td>Points</td></tr> <tr><td>1</td></tr> <tr><td>Depth of Knowledge</td></tr> <tr><td>2</td></tr> <tr><td>Est Difficulty</td></tr> <tr><td>Medium</td></tr> <tr><td>Key</td></tr> <tr><td>A</td></tr> <tr><td>Focus</td></tr> <tr><td></td></tr> </table>	Item ID		Content Area	Science	Passage ID		Passage Title		Grade	4	Standards	AACS: D.1.1.1	Item Type	Multiple Choice	Points	1	Depth of Knowledge	2	Est Difficulty	Medium	Key	A	Focus	
Item ID																									
																									
Content Area																									
Science																									
Passage ID																									
Passage Title																									
Grade																									
4																									
Standards																									
AACS: D.1.1.1																									
Item Type																									
Multiple Choice																									
Points																									
1																									
Depth of Knowledge																									
2																									
Est Difficulty																									
Medium																									
Key																									
A																									
Focus																									

Data Recognition Corporation





PA - Master Statistics Data Card

Administration(s)

Form Name	Use Function	Rptg Flag	Seq	Period	Year	Session	Calc	Model/Ext	Grade	N	P-Value	Item Total Corr
				Spring	2015		Yes	Rasch	4	1548	0.54	0.34

Traditional Statistics

N	P-Val	Mean	Item Total Corr
122762	0.54		0.34

Distractor/Step Specific

Label	Proportion	Corr	Avg Meas	Step Meas
A*	0.54	0.34		
B	0.20	-0.10		
C	0.14	-0.21		
D	0.12	-0.16		
MULTS	0.00			
OMITS	0.00			

DIF Analysis

Category	Bias Code	Num Value	N - Ref	N - Focal
MALEFEMALE	A-	-0.26	5349	5011
WHITEBLACK	A+	0.14	7285	1569
WHITEHISPANIC	A-	-0.40	7285	889

Standard: Use the four operations with whole numbers to solve problems.		PA - Item Card
<p>1. [Redacted]</p> <p>A. [Redacted]</p> <p>B. [Redacted]</p>	Item ID	[Redacted]
	Content Area	Mathematics
	Passage ID	[Redacted]
	Passage Title	[Redacted]
	Grade	4
	CCAACS Standards	B-O.1
	Item Type	Open Ended
	Points	4
	Depth of Knowledge	2
	Bloom's Taxonomy	[Redacted]
	Est Difficulty	Medium
	Key	[Redacted]
	Calculator	C

Item Review Criteria Guidelines

The purpose of this form is to provide guidelines to the item review process in terms of item characteristics that are essential in building a fair and balanced assessment. Use these guidelines in conjunction with the Item Rating Sheet when recording your feedback on individual items.

Content Alignment		Options
Standards, Anchors, Eligible Content	Does the content of the item align with the Standard/Anchor/Eligible Content? Each item was written to assess a particular Standard/Anchor/Eligible Content statement which is indicated on the individual Item Card. Consider the degree to which the item is, in fact, aligned with the indicated eligible content. In making this judgment, it is important to consider whether the content is aligned (e.g., do the eligible content and the item both deal with fractions) and whether the required performance is aligned (e.g., if the eligible content calls for a comparison to be made, is this reflected in the item).	HIGHER —Aligns to the higher level of the EC LOWER —Aligns to the lower level of the EC NONE —No alignment with EC

Rigor Level Alignment		Options
Grade	Is the item grade-level appropriate? Is the content consistent with the experiences of a student at the grade level assessed? Is the challenge level appropriate for the grade?	ABOVE Grade Level AT Grade Level BELOW Grade Level
Difficulty	Do you agree with the item's difficulty rating? Item Difficulty is indicated as Easy, Medium, and Hard? Is your rating in agreement with the difficulty rating on the Item Form?	HARD MEDIUM EASY
Depth of Knowledge	Depth of Knowledge is based on the alignment work of Norman Webb. Rate each item based on the cognitive demand, using the following levels: <ol style="list-style-type: none"> 1. Recall – <i>Recall</i> of a fact, information, or procedure. 2. Basic Application of Skill or Concept – <i>Use</i> of information, conceptual knowledge, procedures, two or more steps, etc. 3. Strategic Thinking – Requires reasoning, developing a plan or sequence of steps; has some complexity; more than one possible answer. 4. Extended Thinking – Requires an investigation, time to think and process multiple conditions of the problem or task, and more than 10 minutes to do non-routine manipulations. (This level is generally not assessed in on-demand assessments.) 	4 = Extended Thinking 3 = Strategic Thinking 2 = Basic Application 1 = Recall

Source of Challenge	Is the source of challenge appropriately targeted to the content? The hardest part of the item (i.e., source of challenge) should be the content that is targeted. For example, in mathematics, the mathematics should be the major source of challenge rather than the wording or graphic. Students should not give an incorrect answer to a mathematics item because the reading level is too high or a graphic is flawed. Conversely, students should not give correct answers for reasons such as prior knowledge that make the answer to the question obvious (e.g., if the question asks which country has the largest population and students are to read a graph that includes China, there is no need to read the graph to answer the question).	Y = Yes N = No
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Technical Design		Options
Correct Answer	Is there one clear, correct answer? There should be no other answer that “could” be correct. CAUTION: This does not mean that “good” distractors are unfair.	Y = Yes N = No
Distractors	Are distractors fair and appropriate? Distractors that are appropriate offer students reasonable choices that can be arrived at by making common errors. There should be no distractors that make no sense at all. It should be possible to examine each option and to reason how a student with some deficiency in knowledge or skill could choose it. The distractors should be formatted according to acceptable standards of test construction (e.g., a phrase that is common to each distractor should be placed in the stem).	Y = Yes N = No
Graphics	Are the graphics clear and accurate?	Y = Yes N = No

Universal Design		Options
Language Demand	Is language clear, well-formatted, and precise? Does the item use correct terminology for the content area? In order for all students to enter into the questions of the assessment, they must be able to understand them. If the items are formatted poorly, use unnecessarily complex words or phrases, or use figures or layouts that are difficult to understand, some students will give incorrect answers due to these factors rather than the content that is being assessed.	Y = Yes N = No
Bias	Is the item free of bias? All students will not be able to enter into the assessment if bias considerations are not resolved. Does the item contain clear bias problems? <i>A thorough, independent bias review</i> (separate from this meeting) <i>will be completed for all items.</i>	Y = Yes N = No

Status		Options
Acceptance Status	This is an overall judgment about the item. Based on the consensus of the committee, indicate whether the item was approved without revision to the content of the item or whether the item was accepted by the committee after revision of the content of the item. If there is a dissenting view (opposed to the committee consensus), record a brief explanation of the dissenting view on the back of the Item Rating Sheet.	—Approved as is —Accepted with suggested revisions —Dissenting View

NOTES:

- If you leave a box blank on the Item Rating Sheet, it will be recorded to indicate that you did not have any specific feedback for that item or issue.
- If you object to the consensus of the committee, please note this on the item rating sheet and then record a brief explanation of the dissenting view on the back of the Item Rating Sheet.
- Do NOT remove any items from the item binder at any time.**
- You must sign your Item Rating Sheet.

APPENDIX F: ITEM STATISTICS

Multiple-Choice Paper/Pencil Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
P-Value	P-Value
Prop A	Proportion A
Prop B	Proportion B
Prop C	Proportion C
Prop D	Proportion D
Prop Omits	Proportion Omits
Point Biserial	Point Biserial
Corr A	Correlation A
Corr B	Correlation B
Corr C	Correlation C
Corr D	Correlation D
IRT Difficulty Estimate	IRT Difficulty Estimate
IRT Difficulty Error	IRT Difficulty Error
Infit	Infit
Infit Mean Square	Infit Mean Square
Outfit	Outfit
Outfit Mean Square	Outfit Mean Square
Male/Female DIF Code	Male/Female DIF Code
White/Black DIF Code	White/Black DIF Code
White/Hispanic DIF Code	White/Hispanic DIF Code

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Error	Infitt Mean Square	Infitt Std Error	Outfit Mean Square	Outfit Std Error	Female/White/Black/Hispanic	Black/White/Hispanic	Black/White/Hispanic	Black/White/Hispanic	
ELA	3	819161	0	0	1	125594	0.557869006	0.081484784	0.094359603	0.557869006	0.0259558578	0.006425466	0.32431424	-0.234217532	-0.155802628	-0.155802628	-0.066617856	0.4453	0.0063	9.0011	1.0964	9.0011	1.1216	A-	A-	A-	A-	A-
ELA	3	663847	0	0	1	125594	0.899979298	0.035216655	0.899979298	0.031885661	0.7030829498	0.001719827	0.398760928	-0.245188396	-0.398760928	-0.206086254	-0.206086254	-1.9667	0.01	-8.991	0.8971	-8.991	0.8971	A-	A-	A-	A-	A-
ELA	3	221391	0	0	1	125594	0.578676969	0.109433797	0.578676969	0.05578676969	0.116374986	0.004211985	0.374280353	-0.175537774	-0.374280353	-0.208910073	-0.134383008	0.4892	0.0063	9.001	1.0398	9.001	1.0457	A-	A-	A-	A-	A-
ELA	3	478561	0	0	2	125594	0.474115005	0.144832397	0.176338042	0.474115005	0.195431311	0.009045018	0.364482039	-0.119431891	-0.189624886	0.364482039	-0.157476888	0.7124	0.0063	9.001	1.0455	9.001	1.0724	A-	A-	A-	A-	A-
ELA	3	285969	0	0	2	125594	0.796574677	0.059286272	0.12481488	0.017269933	0.796574677	0.001879071	0.467157655	-0.267250071	-0.300157638	-0.182687656	0.467157655	-1.0308	0.0077	-8.991	0.9048	-8.992	0.7825	A-	A-	A-	A-	A-
ELA	3	770922	0	0	2	125594	0.866678058	0.025261398	0.866678058	0.033799385	0.461026801	0.009931812	0.493976269	-0.249291793	-0.439762693	-0.253311721	-0.228287120	-1.537	0.0065	-8.991	0.8826	-8.991	0.7137	A-	A-	A-	A-	A-
ELA	3	770400	0	0	2	125594	0.376621542	0.299958597	0.151988745	0.376621542	0.161806801	0.005911132	0.408864876	-0.134361693	-0.145401122	-0.408864876	-0.218953263	1.3702	0.0065	-8.991	0.9664	9.001	1.0678	A-	A-	A-	A-	A-
ELA	3	333208	0	0	2	125594	0.548107394	0.244080831	0.120266484	0.548107394	0.382161568	0.005786429	0.388919484	-0.21481272	-0.34166274	-0.388919484	-0.197192314	0.4465	0.0063	9.001	1.0245	9.001	1.1047	A-	A-	A-	A-	A-
ELA	3	333119	0	0	2	125594	0.75496377	0.075496377	0.128995016	0.681845684	0.34953899	0.005480483	0.324313313	0.324313313	0.324313313	0.324313313	0.324313313	-0.6873	0.0072	8.741	1.0317	9.001	1.1017	A-	A-	A-	A-	A-
ELA	3	754538	0	0	2	125594	0.589940602	0.096867685	0.12628788	0.184061341	0.589940602	0.002643438	0.39892571	-0.226189724	-0.226189724	-0.226189724	-0.226189724	0.2698	0.0064	4.651	1.0121	1.241	1.0047	A-	A-	A-	A-	A-
ELA	3	628683	0	0	2	125594	0.507333153	0.225580108	0.129186108	0.129186108	0.129186108	0.00594202	0.360425468	-0.133407368	-0.16052339	-0.16052339	-0.16052339	0.6815	0.0063	9.001	1.0588	9.001	1.0749	A-	A-	A-	A-	A-
ELA	3	212287	0	0	2	125594	0.511210727	0.151210727	0.204303136	0.151210727	0.204303136	0.006640045	0.3781062	-0.175238309	-0.26176055	-0.191513061	0.6726	0.0063	9.001	1.0362	9.001	1.0591	A-	A-	A-	A-	A-	
ELA	3	707805	0	0	2	125594	0.398660334	0.160604086	0.211890481	0.398660334	0.23450961	0.003226339	0.28747145	-0.153659035	-0.168875597	-0.28747145	-0.0295434	1.3107	0.0065	9.001	1.1126	9.001	1.2557	A-	A-	A-	A-	A-
ELA	3	700400	0	0	2	125594	0.452744558	0.142514477	0.348490501	0.142514477	0.348490501	0.005048012	0.283920484	-0.112410049	-0.283920484	-0.103451953	-0.111278396	1.5785	0.0067	9.001	1.1259	9.001	1.2667	A-	A-	A-	A-	A-
ELA	3	229362	0	0	2	125594	0.66422759	0.06422759	0.623089991	0.215989617	0.054668217	0.002778795	0.335674421	-0.335674421	-0.175484058	-0.181753522	-0.17491938	-0.2033	0.0067	9.001	1.0827	9.001	1.0981	A-	A-	A-	A-	A-
ELA	3	729392	0	0	2	125594	0.700550982	0.00550982	0.709175757	0.107457363	0.03818654	0.008065153	0.452682073	-0.0452682073	-0.219960668	-0.226195743	-0.219960668	-0.4721	0.0069	-8.991	0.9521	-8.991	0.9071	A-	A-	A-	A-	A-
ELA	3	493879	0	0	2	125594	0.8627651	0.045686986	0.038735927	0.26909451	0.8627651	0.005439893	0.34632654	-0.240935107	-0.163040275	-0.160156355	-0.34632654	-0.2631	0.0094	-8.991	0.8755	-8.992	0.7748	A-	A-	A-	A-	A-
ELA	3	161439	0	0	2	125594	0.783994458	0.0783994458	0.053776454	0.504954855	0.006751915	0.005619215	0.20239736	-0.392039736	-0.235473338	-0.160400295	-0.245150776	-0.8649	0.0074	-8.991	0.9203	-8.991	0.918	A-	A-	A-	A-	A-
ELA	3	379727	0	0	2	125594	0.452744558	0.09574502	0.1468878036	0.452744558	0.059240113	0.00442887	0.411652574	-0.184034646	-0.230820523	-0.11652574	-0.142365239	0.8789	0.0063	-8.549	0.979	9.001	1.0083	A-	A-	A-	A-	A-
ELA	3	757091	0	0	2	125594	0.537589375	0.09306035	0.074979636	0.289751103	0.537589375	0.004124401	0.51257583	-0.19718335	-0.144140165	-0.344802619	0.51257583	0.4703	0.0063	-8.991	0.8894	-8.991	0.8568	A-	A-	A-	A-	A-
ELA	3	579322	0	0	2	125594	0.765366688	0.105697724	0.076564167	0.136455563	0.765366688	0.005239104	0.457963061	-0.266495656	-0.479638061	-0.266495656	-0.266495656	-0.345	0.0068	-9.249	0.9715	-2.059	0.989	A-	A-	A-	A-	A-
ELA	3	890031	0	0	2	125594	0.792203449	0.071906301	0.792203449	0.04245257	0.089423062	0.003637809	0.479638061	-0.266495656	-0.479638061	-0.266495656	-0.266495656	-0.4721	0.0076	-8.991	0.8755	-8.992	0.7748	A-	A-	A-	A-	A-
ELA	3	566466	0	0	2	125594	0.818231763	0.046085004	0.075513161	0.0530519	0.004426963	0.00510966089	0.479542322	-0.150966089	-0.29632523	-0.2742909	-0.28995563	-1.1294	0.0079	-8.992	0.8203	-8.994	0.6453	A-	A-	A-	A-	A-
ELA	3	115802	0	0	2	125594	0.466434948	0.086198385	0.746643948	0.111350861	0.05902113	0.00442887	0.479542322	-0.150966089	-0.29632523	-0.2742909	-0.28995563	-1.1294	0.0079	-8.992	0.8203	-8.994	0.6453	A-	A-	A-	A-	A-
ELA	3	37251	0	0	2	125594	0.57739232	0.139911142	0.16570853	0.57739232	0.111366785	0.004801185	0.468919263	-0.241760309	-0.198147965	-0.468919263	-0.222790836	0.3052	0.0064	-8.991	0.9319	-8.991	0.8941	A-	A-	A-	A-	A-
ELA	3	742578	0	0	2	125594	0.69865987	0.16965987	0.69865987	0.076991562	0.073992526	0.00404968	0.462216216	-0.263216216	-0.462216216	-0.191538259	-0.289787125	-0.3129	0.0067	-8.991	0.9173	-8.991	0.8603	A-	A-	A-	A-	A-
ELA	3	465106	0	0	2	125594	0.886607736	0.146591398	0.073121276	0.054806966	0.886607736	0.003627285	0.527502418	-0.239754243	-0.294757339	-0.287316088	-0.527502418	-0.3074	0.0074	-8.992	0.8621	-8.992	0.7807	A-	A-	A-	A-	A-
ELA	3	887340	0	0	2	125594	0.659056999	0.211268054	0.117019599	0.15992006	0.054955699	0.002495252	0.345049111	-0.148611318	-0.161565948	-0.162186737	-0.345049111	-0.7129	0.0063	9.001	1.0728	9.001	1.1168	A-	A-	A-	A-	A-
ELA	3	78474	0	0	2	125594	0.950064697	0.05004697	0.138032072	0.151440355	0.05247719	0.007548312	0.47167733	-0.24094359	-0.220198437	-0.24094359	-0.220198437	-0.7129	0.0066	-8.991	0.9273	-8.991	0.8755	A-	A-	A-	A-	A-
ELA	3	515489	0	0	2	125594	0.506051244	0.149640906	0.506051244	0.200972976	0.126749685	0.01515998	0.369670577	-0.234205036	-0.369670577	-0.074057353	-0.193277007	0.6175	0.0063	9.001	1.0421	9.001	1.0637	A-	A-	A-	A-	A-
ELA	3	231349	0	0	2	125594	0.790810071	0.082105933	0.087599726	0.790810071	0.073210344	0.007074001	0.564325136	-0.341298192	-0.341298192	-0.243173632	-0.243173632	-0.8621	0.0076	-8.992	0.9752	-8.994	0.6287	A-	A-	A-	A-	A-
ELA	3	323959	0	0	2	125594	0.47447824	0.096305306	0.07765021	0.651941077	0.774447824	0.011863624	0.529379952	-0.207128795	-0.26444006	-0.281089962	-0.529379952	-0.9424	0.0074	-8.992	0.8383	-8.993	0.6941	A-	A-	A-	A-	A-
ELA	3	5597708	0	0	2	125594	0.890282329	0.048906079	0.048906079	0.028282719	0.296511287	0.003490423	0.441981847	-0.241981847	-0.044164332	-0.182435886	-0.194623164	-1.8805	0.0097	3.011	1.0202	9.001	1.296	A+	A-	A-	A-	A-
ELA	3	235168	0	0	2	125594	0.661154195	0.085402169	0.661154195	0.101573324	0.146551587	0.004140283	0.440893353	-0.226565691	-0.440893353	-0.254693254	-0.180840643	-0.15	0.0066	-8.999	0.9534	-8.991	0.9293	A+	A-	A-	A-	A-
ELA	3	458684	0	0	2	125594	0.758157237	0.097711674	0.08544198	0.08544198	0.056626909	0.01735752	0.427078816	-0.247078816	-0.20952806	-0.275397868	-0.181319633	-0.7353	0.0072	-8.991	0.9447	-8.991	0.8872	A+	A-	A-	A-	A-
ELA	3	855411	0	0	2	125594	0.554962817	0.166024964	0.161623963	0.112123191	0.075853893	0.004761374	0.342942901	-0.080222273	-0.141053403	-0.171251866	-0.279490401	0.4189	0.0063	9.001	1.1447	9.001	1.172	A-	A-	A-	A-	A-
ELA	3	473759	0	0	2	125594	0.38413268	0.278604073	0.140412759	0.38413268	0.188153893	0.00153256	0.31525426	-0.273780395	-0.31525426	-0.051994441	1.3064	0.0065	9.001	1.0788	9.001	1.168	A-	A-	A-	A-	A-	
ELA	3	698424	0	0	2	125594	0.890282329	0.048906079	0.048906079	0.028282719	0.296511287	0.003490423	0.464023015	-0.275461149	-0.464023015	-0.185486839	-0.395498491	-0.3403	0.0068	-8.991	0.9263	-8.991						

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficultly Estimate	IRT Error	Infitt Mean Square	Outfit Mean Square	Male/Female DIF Code	White/Hispanic DIF Code		
ELA	4	424580	4	4-B-V	2	13768	0.0511196979	0.002745497	0.002745497	0.002745497	0.002745497	0.002745497	0.002745497	0.002745497	0.002745497	0.002745497	0.002745497	-1.8916	0.0221	-8.2992	0.8457	-9.8994	0.6258	A-	
ELA	4	608335	4	4-B-V	2	13768	0.063001162	0.044110982	0.044110982	0.044110982	0.044110982	0.044110982	0.044110982	0.044110982	0.044110982	0.044110982	0.044110982	0.044110982	-0.7995	0.0291	-8.9891	0.8561	-9.8893	0.7488	A-
ELA	4	1314733	4	4-B-C	2	13768	0.0585145456	0.176336498	0.5985145456	0.176336498	0.008497966	0.008497966	0.008497966	0.008497966	0.008497966	0.008497966	0.008497966	0.008497966	0.2225	0.0194	-4.169	0.9637	-3.009	0.9613	A-
ELA	4	645727	4	4-B-C	2	13768	0.0545830912	0.167266705	0.184821557	0.167266705	0.09449448	0.09449448	0.09449448	0.09449448	0.09449448	0.09449448	0.09449448	0.09449448	0.426	0.0192	-7.4991	0.9423	-4.2591	0.949	A-
ELA	4	306897	4	4-B-C	2	13768	0.028094131	0.207655433	0.194590006	0.166037188	0.282094131	0.002033701	0.002033701	0.002033701	0.002033701	0.002033701	0.002033701	0.002033701	1.0242	0.0193	0.561	1.0043	6.5811	1.0829	A+
ELA	4	484836	4	4-B-K	2	13768	0.02502337	0.177367809	0.255447414	0.2841821899	0.27520337	0.007045327	0.007045327	0.007045327	0.007045327	0.007045327	0.007045327	0.007045327	1.8699	0.0211	9.0012	1.232	9.9018	1.7857	A+
ELA	4	639774	4	4-B-K	2	13768	0.0413640673	0.290383498	0.209471238	0.084180709	0.413640673	0.001243474	0.001243474	0.001243474	0.001243474	0.001243474	0.001243474	0.001243474	1.0895	0.0194	7.1211	1.0565	9.9011	1.1464	A+
ELA	4	347817	4	4-D	2	13768	0.0407791918	0.220874492	0.154924461	0.4047791918	0.216879721	0.001089483	0.001089483	0.001089483	0.001089483	0.001089483	0.001089483	0.001089483	1.145	0.0195	-1.459	0.9886	4.6911	1.0611	A+
ELA	4	440631	5	D	2	13785	0.051149801	0.0565107	0.161044614	0.591149801	0.1891915	0.001015597	0.001015597	0.001015597	0.001015597	0.001015597	0.001015597	0.001015597	2.0258	0.0194	9.0011	1.1001	9.9012	1.1839	A+
ELA	4	819284	5	B-V	1	13785	0.080667392	0.029597388	0.880667392	0.05318825	0.03518317	0.00943054	0.00943054	0.00943054	0.00943054	0.00943054	0.00943054	0.00943054	-1.7504	0.028	-9.4232	0.8359	-9.8994	0.5908	A+
ELA	4	840919	5	B-V	1	13785	0.091864335	0.298135633	0.082335872	0.47847864	0.068049476	0.001450852	0.001450852	0.001450852	0.001450852	0.001450852	0.001450852	0.001450852	-1.024	0.0232	-3.089	0.9611	-4.099	0.9869	A+
ELA	4	140220	5	B-C	2	13785	0.019876678	0.226115343	0.082335872	0.095175916	0.168076678	0.001595938	0.001595938	0.001595938	0.001595938	0.001595938	0.001595938	0.001595938	0.0627	0.0196	-6.3691	0.9482	-6.2191	0.9159	A+
ELA	4	959660	5	B-C	2	13785	0.0545830912	0.250924918	0.089090793	0.556548587	0.1020272	0.001450852	0.001450852	0.001450852	0.001450852	0.001450852	0.001450852	0.001450852	0.3975	0.0192	-5.519	0.9583	-4.2391	0.9495	A+
ELA	4	143539	5	B-K	2	13785	0.0545012693	0.250924918	0.089090793	0.556548587	0.1020272	0.001450852	0.001450852	0.001450852	0.001450852	0.001450852	0.001450852	0.001450852	0.4507	0.0192	9.0011	1.1195	9.9012	1.1926	A+
ELA	4	251323	5	B-C	2	13785	0.059339862	0.049981864	0.167509007	0.11882481	0.659339862	0.003119333	0.003119333	0.003119333	0.003119333	0.003119333	0.003119333	0.003119333	-0.1513	0.0201	-7.8891	0.9318	-6.2991	0.9051	A+
ELA	4	344516	5	B-C	2	13785	0.051492509	0.140805293	0.121383025	0.588142909	0.164381574	0.001225970	0.001225970	0.001225970	0.001225970	0.001225970	0.001225970	0.001225970	0.3837	0.0193	9.0011	1.1159	9.9012	1.2035	A+
ELA	4	673416	5	B-K	2	13785	0.032818281	0.221762786	0.13710555	0.392818281	0.0774681702	0.001276729	0.001276729	0.001276729	0.001276729	0.001276729	0.001276729	0.001276729	1.2628	0.0195	9.0011	1.1186	9.9013	1.3106	A+
ELA	4	265560	5	D	2	13785	0.0416780648	0.042772602	0.380123361	0.04772602	0.034192634	0.001894483	0.001894483	0.001894483	0.001894483	0.001894483	0.001894483	0.001894483	-0.5148	0.0252	-4.6891	0.9705	-1.239	0.9616	A+
ELA	4	537742	6	D	2	13745	0.0726009458	0.141708039	0.060748363	0.726009458	0.064896326	0.00183203	0.00183203	0.00183203	0.00183203	0.00183203	0.00183203	0.00183203	-0.1745	0.0211	-9.909	0.9302	-5.7991	0.8958	A+
ELA	4	433645	6	A-V	2	13745	0.069963623	0.10360131	0.69963623	0.065187341	0.127319025	0.002910149	0.002910149	0.002910149	0.002910149	0.002910149	0.002910149	0.002910149	-0.3693	0.0207	-6.0491	0.9422	-5.7291	0.905	A+
ELA	4	809625	6	A-V	2	13745	0.095416515	0.074499818	0.037831939	0.795416515	0.089705347	0.001673336	0.001673336	0.001673336	0.001673336	0.001673336	0.001673336	0.001673336	-0.9898	0.0231	-8.8992	0.8225	-8.9893	0.6605	A+
ELA	4	140166	6	A-V	2	13745	0.074681702	0.083230266	0.056165879	0.079519825	0.774681702	0.004801746	0.004801746	0.004801746	0.004801746	0.004801746	0.004801746	0.004801746	-0.8422	0.0224	-8.1291	0.9063	-6.8791	0.8526	A+
ELA	4	525915	6	A-C	2	13745	0.0416780648	0.300472899	0.446780648	0.143324845	0.105056384	0.002982903	0.002982903	0.002982903	0.002982903	0.002982903	0.002982903	0.002982903	0.956	0.0192	4.671	1.0351	9.6811	1.1164	A+
ELA	4	470944	6	A-K	2	13745	0.0174950891	0.714950891	0.105638414	0.127464533	0.051436886	0.000291015	0.000291015	0.000291015	0.000291015	0.000291015	0.000291015	0.000291015	-0.4584	0.0209	9.0012	1.1862	9.9014	1.4329	A+
ELA	4	244232	6	A-K	2	13745	0.059963623	0.10360131	0.69963623	0.065187341	0.127319025	0.002910149	0.002910149	0.002910149	0.002910149	0.002910149	0.002910149	0.002910149	-0.7887	0.0218	-8.9891	0.8561	-9.6292	0.8122	A+
ELA	4	885475	6	A-K	2	13745	0.025391051	0.114077846	0.094288832	0.625391051	0.165223718	0.000509276	0.000509276	0.000509276	0.000509276	0.000509276	0.000509276	0.000509276	0.0461	0.0197	-2.489	0.9792	0.371	1.0051	A+
ELA	4	140166	6	A-V	2	13777	0.089090793	0.088703462	0.49219714	0.079478515	0.038730493	0.001887720	0.001887720	0.001887720	0.001887720	0.001887720	0.001887720	0.001887720	0.7217	0.028	9.9912	1.1714	9.9013	1.2832	A+
ELA	4	891524	7	A-V	2	13777	0.049000005	0.048707062	0.035493939	0.880090005	0.038730493	0.001451609	0.001451609	0.001451609	0.001451609	0.001451609	0.001451609	0.001451609	-1.7473	0.0198	-8.9912	0.8079	-8.9895	0.5426	A+
ELA	4	470929	7	A-C	2	13777	0.051901099	0.051901099	0.08979234	0.0438411386	0.025342237	0.001748813	0.001748813	0.001748813	0.001748813	0.001748813	0.001748813	0.001748813	-0.114	0.02	-4.809	0.9582	-2.199	0.9663	A+
ELA	4	619339	7	A-K	2	13777	0.0747680192	0.0477680192	0.056180192	0.028741822	0.218842422	0.001659449	0.001659449	0.001659449	0.001659449	0.001659449	0.001659449	0.001659449	0.7949	0.0191	9.0011	1.1161	9.9012	1.1917	A+
ELA	4	404949	7	A-K	2	13777	0.00246788	0.076939827	0.094068827	0.800246788	0.26203092	0.001814619	0.001814619	0.001814619	0.001814619	0.001814619	0.001814619	0.001814619	-1.0389	0.0233	-8.9892	0.8415	-9.8995	0.6814	A+
ELA	4	784075	7	A-K	2	13777	0.078035857	0.109965885	0.078035857	0.061515862	0.078035857	0.000798432	0.000798432	0.000798432	0.000798432	0.000798432	0.000798432	0.000798432	0.0225	0.025	-6.689	0.9916	0.051	1.001	A+
ELA	4	334522	7	A-K	2	13681	0.058825892	0.046793133	0.031374363	0.07433345	0.686825892	0.007078432	0.007078432	0.007078432	0.007078432	0.007078432	0.007078432	0.007078432	-1.6236	0.027	-8.4491	0.8067	-8.9893	0.6729	A+
ELA	4	740461	8	D	2	13681	0.065848879	0.176889018	0.063801989	0.465848879	0.291351517	0.001379111	0.001379111	0.001379111	0.001379111	0.001379111	0.001379111	0.8548	0.0192	0.321	1.0023	3.771	1.0456	A+	
ELA	4	940139	8	D	2	13681	0.038386675	0.38286675	0.26341036	0.028741822	0.218842422	0.001659449	0.001659449	0.001659449	0.001659449	0.001659449	0.001659449	0.001659449	1.2885	0.0197	9.0013	1.2595	9.9015	1.5217	A+
ELA	4	971934	8	A-V	1	13681	0.073868869	0.042686938	0.088815145	0.473868869	0.072436225	0.001315693	0.001315693	0.001315693	0.001315693	0.001315693	0.001315693	0.001315693	0.8192	0.0192	9.0011	1.029	9.9012	1.1891	A+
ELA	4	393452	8	A-V	2	13681	0.015218186	0.055405377	0.283209022	0.03430896	0.15218186	0.000212996	0.000212996	0.000212996	0.000212996	0.000212996	0.000212996	0.000212996	-1.1542	0.024	-8.992	0.7945	-9.8994	0.6203	A+
ELA	4	443030	8	A-C	2	13681	0.08078722	0.48830722	0.02830722	0.07433345	0.686825892	0.007078432	0.007078432	0.007078432	0.007078432	0.007078432	0.007078432	0.007078432	0.7726	0.0192	9.0012	1.1551	9.9013	1.2625	A+
ELA	4	939813	8	A-K	2	13681	0.057909378	0.0695709378	0.023026336																

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	Diff Estimate	IRT Error	Diff Difficulty	Infrit	Mean Square	Outfit	Mean Square	Outfit	Male/DIF Code	White/Black DIF Code	White/Hispanic DIF Code	
ELA	5	691136	1	A-V	2	122402	0.001413969	0.0251113969	0.019688297	0.04395353	0.909176321	0.001682979	0.47687412	-0.241707881	-0.219006215	-0.2548814885	0.47687412	-2.0516	0.0104	-9.8992	0.8425	-9.8992	0.5329						
ELA	5	131905	0-B-C	2	122402	0.071051795	0.01517595	0.0666175389	0.137759187	0.084091763	0.001519583	0.374777887	0.374777887	0.374777887	-0.179321988	-0.302023344	-0.077547843	-2.2479	0.0068	-9.9009	0.9849	5.801	1.0314						
ELA	5	207541	0-B-V	2	122402	0.089653764	0.186982379	0.072024967	0.689593764	0.242958334	0.000972206	0.315252873	-0.102642148	-0.15252873	-0.217642273	-0.315252873	-0.1218169577	-0.377	0.0069	9.9011	1.1872	9.9013	1.3076						
ELA	5	466311	0-D	2	122402	0.376646437	0.376646437	0.376646437	0.19761932	0.047932487	0.024391758	0.001209131	0.24763027	-0.26763027	-0.26763027	-0.117727311	-0.101596564	1.3637	0.0066	9.9011	1.1872	9.9013	1.3469						
ELA	5	871301	0-D	2	122402	0.79664548	0.113454029	0.036862143	0.051902747	0.79664548	0.00040849	0.446515127	-0.269207585	-0.232529081	-0.229875811	0.446515127	0.446515127	-0.9785	0.0077	-9.8991	0.9196	-9.8992	0.8084						
ELA	5	945813	0-D	2	122402	0.800669683	0.094743865	0.112899154	0.008666983	0.00302283	0.425414066	-0.231904728	-0.2191741028	-0.231361115	-0.2191741028	-0.231361115	-0.1815614066	-0.2626	0.0068	-8.8229	0.9852	-8.159	0.9574						
ELA	5	646625	0-D	2	122402	0.03388834	0.255012173	0.051049418	0.603388834	0.088446267	0.00156507	0.521208908	-0.360669645	-0.202041628	-0.521208908	-0.360669645	-0.1815614066	1.5554	0.0065	-9.8991	0.8993	-9.8991	0.8564						
ELA	5	181350	0-D	3	122402	0.096859228	0.135602259	0.69859528	0.083927857	0.082645708	0.00071886	0.354449861	-0.321984929	0.453409064	-0.19720891	-0.152498129	-0.299	0.0069	-9.8991	0.9426	-9.8991	1.9073							
ELA	5	741512	0-D	3	122402	0.629533831	0.151451714	0.529533831	0.177272651	0.17726515	0.040487901	0.000871469	0.30960004	-0.112469673	0.30960004	-0.17726515	-0.152498129	0.4283	0.0064	9.9011	1.1359	9.9012	1.8037						
ELA	5	678958	0-D	3	122402	0.85243705	0.104883907	0.585243705	0.164204833	0.143723142	0.001691149	0.449559234	-0.163515332	0.449559234	-0.226035716	-0.245553022	0.2403	0.0065	-7.1119	0.981	-9.739	0.9601							
ELA	5	582770	0-D	3	122402	0.89246908	0.155798108	0.151338037	0.10190195	0.859246908	0.00054697	0.492939392	-0.129304207	-0.202005477	-0.202005477	-0.002393492	-0.002393492	0.1468	0.0067	6.881	1.0184	7.541	1.0311						
ELA	5	925111	0-D	3	122402	0.657570955	0.13393577	0.106509698	0.01570955	0.00915018	0.026561391	-0.208023204	-0.257675756	-0.257675756	-0.06517897	0.500261391	0.500261391	-0.1269	0.0065	-9.8991	0.9196	-9.8991	0.8654						
ELA	5	547825	0-D	3	122402	0.216646075	0.052727897	0.134963115	0.721646075	0.090317152	0.00171566	0.397003089	-0.195172502	-0.198763291	-0.397003089	-0.230353089	-0.4719	0.007	1.201	1.004	-1.859	0.9887							
ELA	5	508761	0-D	3	122402	0.471606575	0.198667698	0.144474763	0.1477606575	0.16408625	0.00604565	0.315858023	-0.19325555	-0.123413695	-0.315858023	-0.099303285	-0.8043	0.0064	9.9011	1.1142	9.9012	1.822							
ELA	5	650511	0-D	3	122402	0.577964412	0.065634581	0.058871587	0.577964412	0.29867976	0.00310452	0.468671142	-0.279200469	-0.225393994	0.468671142	-0.238959807	0.3293	0.0065	-9.899	0.9554	-9.8991	0.9358							
ELA	5	39958	0-D	3	122402	0.737602327	0.737602327	0.115831441	0.038144802	0.107646622	0.002100991	0.449961318	-0.49961318	0.449961318	-0.021357178	-0.112880611	-0.23307827	0.6145	0.0064	9.901	1.0294	9.9011	1.0855						
ELA	5	395003	0-A-V	3	122402	0.87694646	0.187302031	0.587694646	0.08794326	0.135438963	0.0016503	0.410209662	-0.301114326	0.410209662	-0.162670755	-0.151545479	0.2688	0.0065	8.611	1.0233	9.901	1.0484							
ELA	5	607631	0-A-V	3	122402	0.512952526	0.052195226	0.183166942	0.08824022	0.203967255	0.001944413	0.248745761	-0.248745761	0.248745761	-0.000467159	-0.226763818	-0.123408491	0.5882	0.0064	9.9012	1.2064	9.9011	1.2841						
ELA	5	328863	0-A-V	3	122402	0.642097351	0.093854676	0.113494878	0.642097351	0.546322773	0.002164997	0.315697451	-0.1637612	-0.189466765	-0.261663261	-0.151245451	-0.239068793	-0.0603	0.0067	-9.8991	0.9091	-9.8991	0.8919						
ELA	5	141599	0-A-K	2	122402	0.723378703	0.102890476	0.092670054	0.723378703	0.78356563	0.001812866	0.529211802	-0.290896983	-0.234994296	0.529211802	-0.288687929	-0.5048	0.0071	-9.8991	0.8692	-9.8992	0.7861							
ELA	5	680396	0-A-V	2	122402	0.499101322	0.077817356	0.499101322	0.2682881	0.15242398	0.001609451	0.452401829	-0.283484856	-0.259180896	-0.281751449	-0.0730180229	0.6145	0.0072	-8.9991	0.885	-8.9992	0.7999							
ELA	5	462700	0-A-K	3	122402	0.443089165	0.132089345	0.18989384	0.443089165	0.231948824	0.003071845	0.337585007	-0.200507954	-0.170690192	-0.337585007	-0.074010205	-0.1122	0.0065	9.9011	1.0788	9.9012	1.1666							
ELA	5	610241	0-A-K	3	122402	0.507066877	0.114499763	0.127407314	0.099279424	0.507066877	0.002941128	0.463046089	-0.179507784	-0.202635961	-0.261663261	-0.463046089	0.6703	0.0064	-8.999	0.9592	-9.8991	0.6009	0.9757						
ELA	5	483469	0-A-V	3	122402	0.83352396	0.1113494878	0.078613813	0.83352396	0.23471839	0.00465679	0.315697451	-0.1637612	-0.189466765	-0.261663261	-0.151245451	-0.27887368	-1.2608	0.0083	-9.8991	0.9091	-9.8991	1.1307						
ELA	5	578866	0-B-C	3	122402	0.596787634	0.596787634	0.27443179	0.69279914	0.57997418	0.00735282	0.506966154	0.506966154	0.506966154	-0.339458471	-0.169158314	-0.227663014	0.207	0.0065	-9.8991	0.9102	-9.8991	0.8861						
ELA	5	945461	0-B-K	2	122402	0.70451821	0.105660038	0.060121567	0.70451821	0.194787388	0.001076564	0.467148675	-0.237243071	-0.251638203	-0.44748675	-0.170834947	-0.3811	0.0069	-4.779	0.9845	-2.839	0.9836							
ELA	5	198740	0-B-V	2	122402	0.612628879	0.121323998	0.612628879	0.708707879	0.02867731	0.006769924	0.498302023	-0.2792572	-0.43984512	-0.243594514	-0.240693407	0.1228	0.0066	-9.8991	0.9219	-9.8991	0.8831							
ELA	5	377190	0-B-C	3	122402	0.507066877	0.114499763	0.127407314	0.099279424	0.507066877	0.002941128	0.463046089	-0.179507784	-0.202635961	-0.261663261	-0.463046089	0.6703	0.0064	-8.999	0.9592	-9.8991	0.6009	0.9757						
ELA	5	983390	0-B-V	2	122402	0.608812329	0.168886129	0.608812329	0.228689074	0.051935426	0.0040849	0.169277998	-0.169277998	0.169277998	-0.169277998	-0.169277998	-0.169277998	-0.1757	0.0068	9.9013	1.0968	9.9011	1.1353						
ELA	5	985964	1-D	2	13694	0.576259867	0.159558931	0.158025413	0.10449832	0.576259867	0.000894321	0.390835724	-0.17617407	-0.198174337	-0.180364335	0.390835724	0.386	0.0194	6.6111	1.0536	5.9611	1.0745							
ELA	5	970312	1-A-V	2	13694	0.682939578	0.044590516	0.080251101	0.682939578	0.067816514	0.003696972	0.467759176	-0.221483792	-0.245919939	-0.329195939	-0.162531657	-1.2875	0.0249	-9.4791	0.9677	-9.8991	0.8993	0.7345						
ELA	5	394512	1-A-V	2	13694	0.904410168	0.090291168	0.904410168	0.904410168	0.145100917	0.00146789	0.331927435	-0.217266703	-0.112626479	-0.217266703	-0.162531657	-2.0144	0.0307	-9.4291	0.9279	-2.4591	0.8916	0.8565						
ELA	5	462229	1-A-C	3	13694	0.68767434	0.09420184	0.68767434	0.185100917	0.6678899	0.001541284	0.503511007	-0.251598375	-0.259819676	-0.266362400	-0.2931	0.0205	-9.8991	0.9064	-9.8992	0.8302								
ELA	5	935389	1-D	2	13694	0.591559633	0.120146789	0.172844037	0.591559633	0.10018349	0.001541284	0.363135083	-0.152069047	-0.207216488	0.363135083	-0.156758328	0.219	0.0195	6.9711	1.0565	9.9011	1.1345							
ELA	5	388776	1-A-K	2	13694	0.73395648	0.1470771	0.73395648	0.059296042	0.39579378	0.00385123	0.388036118	-0.21956446	0.388036118	-0.21259261	-0.199204335	-0.6959	0.0219	-0.649	0.9927	2.8711	1.0617							
ELA	5	248956	1-A-K	3	13694	0.491748211	0.491748211	0.170366584	0.491748211	0.190302322	0.00730427	0.712527919	-0.338805837	-0.292922132	-0.338805837	-0.292922132	-0.7825	0.0192	8.0511	1.0624	9.6711	1.1126							
ELA	5	926682	1-A-K	3	13694	0.81291076	0.09653863	0.81291076	0.781291076	0.121623821	0.00109537	0.561749154	-0.327440463	-0.300836067	0.561749154	-0.267971889	0.8453	0.0227	-9.8992	0.8091	-9.8991	0.6505							
ELA	5	935745	1-A-K	2	13694	0.694784951	0.1145420																						

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Estimate	IRT Error	Diff. Mean	Diff. Square	Outfit	Mean	Diff. Code	White/Hispanic	Black/Hispanic	White/Hispanic	Black/Hispanic	Diff. Code	Diff. Code		
ELA	6	644219	0	A-V	2	123756	0.563661718	0.180371053	0.077555836	0.173922881	0.004032128	0.357449595	0.357449595	-0.193314518	-0.224949699	-0.160534769	0.5564	0.0064	9.0011	1.0603	9.0011	1.0603	9.0011	1.0603	A+	A+	A+	A+	A+	A+		
ELA	6	742090	0	A-V	2	123756	0.168083972	0.066324057	0.768083972	0.058332525	0.103526294	0.003369534	0.47779264	-0.2504272	0.47779264	-0.268496969	-0.239606357	-0.5207	0.0073	-8.9991	0.8844	-8.9991	0.8844	-8.9991	0.8844	A+	A+	A+	A+	A+	A+	
ELA	6	803652	0	A-V	2	123756	0.055876651	0.129028088	0.2121110928	0.157661851	0.093886357	0.00644333	0.415577005	-0.139134806	-0.232393654	-0.175901785	-0.203918453	0.611	0.0063	-1.0119	1.9375	-1.0119	1.9375	-1.0119	1.9375	A+	A+	A+	A+	A+	A+	
ELA	6	868371	0	D	2	123756	0.495887068	0.130603769	0.199090499	0.172670416	0.0495887068	0.00711077	0.277564005	-0.096001569	-0.09586731	-0.179041934	-0.277564005	0.9142	0.0063	9.0011	1.1136	9.0011	1.1136	9.0011	1.1136	A+	A+	A+	A+	A+	A+	
ELA	6	489998	0	D	2	123756	0.734849219	0.224498206	0.734849219	0.024144284	0.016176993	0.00019393	0.299219125	-0.192142102	0.299219125	-0.173024331	-0.19790876	-0.3638	0.0071	9.0011	1.0915	9.0011	1.0915	9.0011	1.0915	A+	A+	A+	A+	A+	A+	
ELA	6	825538	0	2	123756	0.121747632	0.622725363	0.082808063	0.028206016	0.171224021	0.002128223	0.498370098	-0.274666615	0.498370098	-0.282525968	-0.192770034	0.2799	0.0065	-8.9991	0.908	-8.9991	0.908	-8.9991	0.908	A+	A+	A+	A+	A+	A+		
ELA	6	352347	0	2	123756	0.071737129	0.039133456	0.026608164	0.035642716	0.216608164	0.00864605	0.465957085	-0.459570285	-0.234744418	-0.232925953	-0.288743293	-0.2514	0.0069	-8.9991	0.9361	-8.9991	0.9361	-8.9991	0.9361	A+	A+	A+	A+	A+	A+		
ELA	6	280473	0	D	2	123756	0.622240538	0.127824105	0.057605288	0.622240538	0.117806001	0.00024932	0.391111858	-0.251333004	-0.282869818	-0.399111458	-0.119464885	0.3098	0.0065	2.551	1.0068	-1.059	0.9955	-1.059	0.9955	A+	A+	A+	A+	A+	A+	
ELA	6	197209	0	D	2	123756	0.854001959	0.054405443	0.014617473	0.07586186	0.854001959	0.00019493	0.391131874	-0.241813774	-0.182647833	-0.229248433	-0.39131874	-1.1803	0.0085	-8.9991	0.9	-8.9991	0.9	-8.9991	0.9	A+	A+	A+	A+	A+	A+	
ELA	6	501850	0	D	2	123756	0.782265102	0.03945829	0.782265102	0.02232619	0.161091179	0.00210091	0.293974839	-0.195467627	0.293974839	-0.108255243	-0.189088201	-0.6482	0.0075	9.621	1.0388	9.621	1.0388	9.621	1.0388	A+	A+	A+	A+	A+	A+	
ELA	6	841026	0	D	2	123756	0.69594879	0.122612337	0.063051488	0.69594879	0.122612337	0.00393347	0.262173708	-0.070659891	-0.231560778	-0.115704809	0.1635	0.0069	9.0012	1.1579	9.0012	1.1579	9.0012	1.1579	A+	A+	A+	A+	A+	A+		
ELA	6	129887	0	D	2	123756	0.46275166	0.191740198	0.207658619	0.46275166	0.135654029	0.00049473	0.334929651	-0.16141321	-0.122700747	0.334929651	-0.152447199	1.1243	0.0063	9.0011	1.0619	9.0011	1.0619	9.0011	1.0619	A+	A+	A+	A+	A+	A+	
ELA	6	279762	0	D	2	123756	0.476615689	0.091728886	0.120317329	0.144825301	0.641568984	0.002136304	0.403207825	-0.267249491	-0.189049654	-0.15855972	0.403207825	0.1974	0.0065	-2.489	0.9932	3.831	1.0171	3.831	1.0171	A+	A+	A+	A+	A+	A+	
ELA	6	223795	0	B-K	2	123756	0.609190666	0.310659685	0.040012422	0.038664792	0.609190666	0.008080402	0.438338402	-0.245339329	-0.245339329	-0.251805451	-0.251761236	0.438338402	0.3427	0.0065	-8.999	0.9642	-8.999	0.9642	-8.999	0.9642	A+	A+	A+	A+	A+	A+
ELA	6	631531	0	B-K	2	123756	0.520726268	0.12296775	0.520726268	0.208507062	0.146190892	0.001446595	0.328939398	-0.248924739	0.328939398	-0.12956898	-0.081890504	0.7837	0.0063	9.0011	1.076	9.0011	1.076	9.0011	1.076	A+	A+	A+	A+	A+	A+	
ELA	6	448671	0	B-K	2	123756	0.72263163	0.072263163	0.05493875	0.72263163	0.072263163	0.00435136	0.2817467894	-0.421617894	-0.191033814	-0.289762947	-0.161788821	-0.2755	0.007	-8.999	0.9667	-8.999	0.9667	-8.999	0.9667	A+	A+	A+	A+	A+	A+	
ELA	6	447810	0	B-V	2	123756	0.473714406	0.473714406	0.272649407	0.05803355	0.196741976	0.00614112	0.485143635	-0.185143635	-0.059412357	-0.216477734	-0.038548826	1.016	0.0063	9.0012	1.2317	9.0012	1.2317	9.0012	1.2317	A+	A+	A+	A+	A+	A+	
ELA	6	413852	0	B-C	2	123756	0.683932668	0.07104302	0.139653835	0.140930932	0.683932668	0.00077572	0.192424115	-0.122930479	-0.202307954	-0.180014901	-0.219424115	0.1924	0.0065	9.0012	1.1853	9.0012	1.1853	9.0012	1.1853	A+	A+	A+	A+	A+	A+	
ELA	6	268991	0	B-C	2	123756	0.856199457	0.070315783	0.856199457	0.051746986	0.154643686	0.000218171	0.412824114	-0.273824286	0.412824114	-0.231980834	-0.167267891	-1.2925	0.0087	-8.9991	0.8823	-8.9991	0.8823	-8.9991	0.8823	A+	A+	A+	A+	A+	A+	
ELA	6	745092	0	A-V	2	123756	0.521881767	0.172468406	0.521881767	0.162141634	0.048086557	0.00888846	0.467535983	-0.245315088	0.467535983	-0.25885501	-0.237915118	-0.2466	0.0069	-8.9991	0.9261	-8.9991	0.9261	-8.9991	0.9261	A+	A+	A+	A+	A+	A+	
ELA	6	446965	0	A-V	2	123756	0.389314457	0.182770936	0.389314457	0.31812599	0.389314457	0.008912092	0.281754945	-0.030523545	-0.138207162	0.281754945	-0.194163181	1.3714	0.0064	9.0011	1.0707	9.0011	1.0707	9.0011	1.0707	A+	A+	A+	A+	A+	A+	
ELA	6	788001	0	A-V	2	123756	0.736158247	0.736158247	0.0473674	0.13257539	0.082767704	0.00460584	0.391442672	-0.391442672	-0.220466861	-0.184965588	-0.225351188	-0.2789	0.007	-8.999	0.9656	-8.999	0.9656	-8.999	0.9656	A+	A+	A+	A+	A+	A+	
ELA	6	427959	0	A-K	2	123756	0.476671838	0.086298846	0.511138243	0.224425482	0.476671838	0.00097773	0.320928909	-0.286581018	-0.104668315	-0.06636124	-0.320928909	0.8973	0.0063	9.0011	1.1004	9.0012	1.1004	9.0012	1.1004	A+	A+	A+	A+	A+	A+	
ELA	6	380316	0	A-C	2	123756	0.577176056	0.098338666	0.577176056	0.245903229	0.076012476	0.00270597	0.339065718	-0.178271882	0.339065718	-0.143100004	-0.190880247	0.3549	0.0064	9.0011	1.0921	9.0012	1.0921	9.0012	1.0921	A+	A+	A+	A+	A+	A+	
ELA	6	997492	0	B-C	2	123756	0.521881767	0.172468406	0.521881767	0.14528298	0.157050971	0.002456447	0.293987272	-0.154588233	0.293987272	0.024405052	-0.134755998	0.7723	0.0063	9.0012	1.2161	9.0013	1.2161	9.0013	1.2161	A+	A+	A+	A+	A+	A+	
ELA	6	998790	0	B-V	2	123756	0.648752384	0.648752384	0.122587996	0.149296364	0.001333269	0.133691373	-0.0167861525	0.0171793928	-0.126765222	-0.230841004	0.1757	0.0066	9.0011	1.0515	9.0011	1.0515	9.0011	1.0515	A+	A+	A+	A+	A+	A+		
ELA	6	111853	0	B-K	2	123756	0.799427907	0.799427907	0.086193801	0.038721355	0.07344971	0.00093891	0.40659611	-0.40659611	-0.0596611	-0.171959798	-0.237617768	-0.256185332	-0.5695	0.0073	-8.9991	0.8745	-8.9991	0.8745	-8.9991	0.8745	A+	A+	A+	A+	A+	A+
ELA	6	260247	0	B-C	2	123756	0.813964575	0.048215844	0.051456091	0.813964575	0.051456091	0.00686358	0.490705311	-0.246381479	-0.254079583	-0.289262921	-0.490705311	-0.8351	0.0078	-8.9992	0.8307	-8.9992	0.8307	-8.9992	0.8307	A+	A+	A+	A+	A+	A+	
ELA	6	346397	0	A-C	2	123756	0.490473189	0.269465723	0.490473189	0.451043429	0.094856007	0.00151038	0.220230787	-0.063582925	0.220230787	-0.147133828	-0.147107672	0.9463	0.0063	9.0012	1.1103	9.0013	1.1103	9.0013	1.1103	A+	A+	A+	A+	A+	A+	
ELA	6	626288	1	D	2	13851	0.551007147	0.551007147	0.189950184	0.133585878	0.122373836	0.00072197	0.289660515	-0.289660515	-0.079803442	-0.184266411	-0.148127213	0.6144	0.019	9.0011	1.1347	9.0012	1.1347	9.0012	1.1347	A+	A+	A+	A+	A+	A+	
ELA	6	791296	1	B-C	2	13851	0.723265468	0.19595267	0.305357506	0.273265468	0.259620244	0.00156136	0.133691373	-0.0167861525	0.0171793928	-0.126765222	-0.230841004	0.20716	0.0209	9.0012	1.1866	9.0016	1.1866	9.0016	1.1866	A+	A+	A+	A+	A+	A+	
ELA	6	252336	1	B-C	2	13851	0.42856115	0.273121074	0.1587161	0.138834741	0.00288675	0.000460848	0.313691373	-0.0167861525	0.0171793928	-0.126765222	-0.230841004	0.20716	0.0209	9.0012	1.1866	9.0016	1.1866	9.0016	1.1866	A+	A+	A+	A+	A+	A+	
ELA	6	455781	1	B-K	2	13851	0.371886506	0.371886506	0.388058624	0.131903834	0.10652703	0.000969848	0.313691373	-0.0167861525	0.0171793928	-0.126765222	-0.230841004	0.20716	0.0209	9.0012	1.1866	9.0016	1.1866	9.0016	1.1866	A+	A+	A+	A+	A+	A+	
ELA	6	700120	1	B-C	2	13851	0.411594831	0.262147137	0.051034329	0.61728395	0.26373547	0.001588733	0.424117281	-0.225632285	-0.109259894	-0.227538984	0.424117281	1.1468	0.019	-0.509	0.9641	0.021	1.0002	0.021	1.0002	A+	A+	A+	A+	A+	A+	
ELA	6	597861	1	D	2	13851	0.571353669	0.155584434	0.243303733	0.375135366	0.224388131	0.0010772	0.296400668	-0.240767379	-0.0358419529	-0.296400668	-0.094538579	1.5028	0.0194	9.0011	1.0928	9.										

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Error	Infitt Mean Square	Outfit Mean Square	Male/Female DIF Code	White/Hispanic Code	Black DIF Code	Hispanic DIF Code	
ELA	7	2748601	5-B-C	3	13726	0.5571900733	0.148623051	0.5571900733	0.144324639	0.1445636019	0.144324639	0.002331342	0.347338498	0.12867448	0.347338498	-0.262324756	-0.094420047	0.5018	0.023	6.461	1.048	8.111	1.0882	A+	A-	
ELA	7	838851	5-B-C	3	13726	0.305770071	0.293967653	0.305770071	0.293967653	0.123269707	0.275462626	0.00801399	0.16830749	0.16830749	-0.087086782	-0.105427079	-0.004000864	1.7785	0.019	9.012	1.913	9.011	1.182	A-	A-	
ELA	7	439305	5-D	3	13726	0.442590704	0.222424596	0.442590704	0.222424596	0.190878625	0.442590704	0.00801399	0.30877729	0.30877729	-0.039902218	-0.175160143	-0.191056377	1.0652	0.019	9.012	1.087	9.011	1.182	A-	A-	
ELA	7	119002	6-D	2	13679	0.652838146	0.175816946	0.652838146	0.175816946	0.6655838146	0.118210395	0.00014621	0.312692322	0.312692322	-0.147358047	-0.182773113	0.312692322	-0.0536	0.02	9.011	1.095	7.061	1.1045	B-	A-	
ELA	7	904748	6-A-K	3	13679	0.648877842	0.108999196	0.648877842	0.108999196	0.648877842	0.142773595	0.00438629	0.443923855	0.443923855	-0.214851725	-0.290090979	0.443923855	0.039	0.0198	-6.2491	0.9481	-5.6291	0.9255	A+	A+	
ELA	7	126855	6-A-K	3	13679	0.693435519	0.159694682	0.693435519	0.159694682	0.693435519	0.159694682	0.00050362	0.380529863	0.380529863	-0.267273771	-0.102421497	0.380529863	0.195	0.0195	5.291	1.0166	2.371	1.0298	A+	A+	
ELA	7	189771	6-A-K	3	13679	0.653645588	0.156356588	0.653645588	0.156356588	0.653645588	0.193435193	0.00804514	0.366729866	0.366729866	-0.177043672	-0.173466127	0.366729866	0.4795	0.0191	9.012	1.0402	5.001	1.0557	A+	A+	
ELA	7	959947	6-A-C	3	13679	0.51429198	0.1191966491	0.51429198	0.1191966491	0.51429198	0.276335989	0.002929412	0.248506261	0.248506261	-0.154830066	-0.248506261	0.248506261	0.7246	0.019	9.012	1.1693	9.012	1.2434	A+	A+	
ELA	7	117862	6-A-C	3	13679	0.635645881	0.143577747	0.635645881	0.143577747	0.635645881	0.20622853	0.002777981	0.4345452797	0.4345452797	-0.180452621	-0.201883942	-0.201883942	0.1095	0.0197	-4.959	0.9596	-4.2591	0.9455	A+	A+	
ELA	7	544458	6-A-C	3	13679	0.56093282	0.126178814	0.56093282	0.126178814	0.56093282	0.193800716	0.356093282	0.00365524	0.228545977	0.228545977	-0.207870487	0.107274649	0.228545977	1.5233	0.0197	9.012	1.168	9.013	1.2967	A+	A-
ELA	7	765349	6-A-V	2	13679	0.402441699	0.27823856	0.402441699	0.27823856	0.402441699	0.196500593	0.004027062	0.319560033	0.319560033	-0.2761150876	0.319560033	-0.097963354	1.2824	0.0193	9.3311	1.073	9.011	1.1089	A+	A-	
ELA	7	494943	7-A-K	3	13634	0.628458266	0.089963931	0.628458266	0.089963931	0.628458266	0.05134223	0.005737537	0.369897192	0.369897192	-0.195877222	-0.156887676	0.369897192	0.6568	0.019	1.551	1.013	1.551	1.016	A+	A-	
ELA	7	390279	7-A-C	3	13634	0.562677033	0.1262706338	0.562677033	0.1262706338	0.562677033	0.199493688	0.000294134	0.410529545	0.410529545	-0.23310829	-0.190973796	0.410529545	1.8774	0.0193	5.931	1.0485	8.431	1.1089	A+	A-	
ELA	7	551003	7-D	2	13634	0.678638199	0.099493688	0.678638199	0.099493688	0.678638199	0.1471738	0.000219014	0.148229249	0.148229249	-0.22767061	-0.139399241	0.148229249	1.7559	0.0195	-0.119	0.999	2.321	1.0293	A+	A-	
ELA	7	160111	8-D	3	13663	0.578231373	0.1663448834	0.578231373	0.1663448834	0.578231373	0.141117794	0.011243949	0.00586768	0.191116927	0.191116927	-0.143428707	0.191116927	0.191116927	0.4046	0.0192	9.012	1.2159	9.014	1.3701	A+	A+
ELA	7	106740	7-A-V	2	13634	0.42878979	0.24878979	0.42878979	0.24878979	0.42878979	0.311160584	0.00660114	0.08403884	0.08403884	-0.210057807	-0.10485483	0.208063025	2.1346	0.0215	9.012	1.226	9.017	1.7154	A+	A+	
ELA	7	731451	7-A-V	2	13634	0.36086255	0.113246296	0.36086255	0.113246296	0.36086255	0.408024058	0.00660114	0.418803619	0.418803619	-0.23388882	-0.30257034	0.418803619	1.4956	0.0196	-6.8791	0.9456	1.091	1.0139	B-	A-	
ELA	7	299434	7-A-V	2	13634	0.80445944	0.07268932	0.80445944	0.07268932	0.80445944	0.04452105	0.00880153	0.461878347	0.461878347	-0.24667882	-0.262928471	0.461878347	1.2154	0.0233	-5.9091	0.8813	-9.892	0.7525	A+	A-	
ELA	7	535965	7-D	2	13634	0.45657914	0.104958193	0.45657914	0.104958193	0.45657914	0.249963327	0.000953499	0.301233825	0.301233825	-0.183052637	-0.20133825	-0.092727217	1.1015	0.019	9.011	1.0969	9.012	1.1731	A+	A-	
ELA	7	626701	8-A-C	3	13663	0.676846525	0.058918246	0.676846525	0.058918246	0.676846525	0.145648833	0.000292761	0.390242871	0.390242871	-0.23828096	-0.235915556	0.390242871	-0.1226	0.0202	0.051	1.0004	1.004	0.521	1.0076	A+	A+
ELA	7	933565	8-A-V	2	13663	0.540510869	0.132254995	0.540510869	0.132254995	0.540510869	0.17690112	0.00036592	0.347366803	0.347366803	-0.363208857	-0.104434655	0.347366803	0.6164	0.0191	7.6211	1.0571	9.231	1.018	A+	A+	
ELA	7	138505	8-A-C	3	13663	0.501500403	0.501500403	0.501500403	0.501500403	0.501500403	0.180341067	0.001097956	0.312876737	0.312876737	-0.118086625	-0.232690177	-0.097332145	0.8095	0.019	9.011	1.099	9.011	1.145	A+	A-	
ELA	7	844880	8-A-C	3	13663	0.6419893142	0.1193003	0.6419893142	0.1193003	0.6419893142	0.342164971	0.00142665	0.289470734	0.289470734	-0.173576384	-0.289470734	-0.070731323	1.2154	0.0192	9.011	1.094	9.012	1.1964	A+	A-	
ELA	7	652741	8-A-C	3	13663	0.520696004	0.14945473	0.520696004	0.14945473	0.520696004	0.00512326	0.437879553	0.437879553	-0.174185785	-0.216653827	-0.174185785	0.7133	0.0197	-0.7891	0.9493	-5.2891	0.9455	A+	A-		
ELA	7	626701	8-A-C	3	13663	0.682426993	0.0682426993	0.682426993	0.0682426993	0.682426993	0.173456312	0.000512333	0.383413257	0.383413257	-0.221784664	-0.221784664	-0.221784664	0.3513	0.0202	0.051	1.0004	1.004	0.521	1.0076	A+	A+
ELA	7	933565	8-A-V	2	13663	0.578231373	0.1663448834	0.578231373	0.1663448834	0.578231373	0.141117794	0.011243949	0.00586768	0.191116927	0.191116927	-0.143428707	0.191116927	0.191116927	0.4046	0.0192	9.012	1.2159	9.014	1.3701	A+	A+
ELA	7	869329	9-A-V	2	13685	0.587285349	0.387285349	0.587285349	0.387285349	0.587285349	0.210303252	0.089367921	0.00657654	0.295930519	0.295930519	-0.158148983	-0.133375472	-0.144405489	0.3854	0.0191	9.011	1.142	9.011	1.431	A+	A+
ELA	7	759971	9-A-V	2	13685	0.502287818	0.502287818	0.502287818	0.502287818	0.502287818	0.16733865	0.000434417	0.095442332	0.095442332	-0.122474663	-0.095442332	-0.110085312	1.3604	0.0192	9.011	1.1464	9.012	1.2097	A+	A+	
ELA	7	420434	8-A-V	2	13663	0.57154578	0.105028178	0.57154578	0.105028178	0.57154578	0.274339457	0.00292761	0.446525337	0.446525337	-0.275479265	-0.211307724	0.446525337	0.4381	0.0192	-7.4791	0.9442	-6.6691	0.9262	A+	A-	
ELA	7	569256	8-D	2	13663	0.386328074	0.166800649	0.386328074	0.166800649	0.386328074	0.24261214	0.00988449	0.222530583	0.222530583	-0.0405483	-0.118785483	-0.222530583	1.5313	0.0197	9.012	1.1652	9.014	1.3289	A+	A-	
ELA	7	379792	9-D	2	13685	0.72942875	0.070515163	0.72942875	0.070515163	0.72942875	0.429492875	0.000730727	0.501318888	0.501318888	-0.30632109	-0.286794315	-0.286794315	0.4107	0.0211	9.1511	1.0965	9.014	1.3872	A+	A-	
ELA	7	869329	9-A-V	2	13685	0.587285349	0.387285349	0.587285349	0.387285349	0.587285349	0.210303252	0.089367921	0.00657654	0.295930519	0.295930519	-0.158148983	-0.133375472	-0.144405489	0.3854	0.0191	9.011	1.142	9.011	1.431	A+	A+
ELA	7	759971	9-A-V	2	13685	0.502287818	0.502287818	0.502287818	0.502287818	0.502287818	0.16733865	0.000434417	0.095442332	0.095442332	-0.122474663	-0.095442332	-0.110085312	1.3604	0.0192	9.011	1.1464	9.012	1.2097	A+	A+	
ELA	7	420434	8-A-V	2	13663	0.57154578	0.105028178	0.57154578	0.105028178	0.57154578	0.274339457	0.00292761	0.446525337	0.446525337	-0.275479265	-0.211307724	0.446525337	0.4381	0.0192	-7.4791	0.9442	-6.6691	0.9262	A+	A-	
ELA	7	569256	8-D	2	13663	0.386328074	0.166800649	0.386328074	0.166800649	0.386328074	0.24261214	0.00988449	0.222530583	0.222530583	-0.0405483	-0.118785483	-0.222530583	1.5313	0.0197	9.012	1.1652	9.014	1.3289	A+	A-	
ELA	7	379792	9-D	2	13685	0.72942875	0.070515163	0.72942875	0.070515163	0.72942875	0.429492875	0.000730727	0.501318888	0.501318888	-0.30632109	-0.286794315	-0.286794315	0.4107	0.0211	9.1511	1.0965	9.014	1.3872	A+	A-	
ELA	7	869329	9-A-V	2	13685	0.587285349	0.387285349	0.587285349	0.387285349	0.587285349	0.210303252	0.089367921	0.00657654	0.295930519	0.295930519	-0.158148983	-0.133375472	-0.144405489	0.3854	0.0191	9.011	1.142	9.011	1.431	A+	A+
ELA	7	759971	9-A-V	2	13685	0.502287818	0.502287818	0.502287818	0.502287818	0.502287818	0.16733865	0.000434417	0.095442332	0.095442332	-0.122474663	-0.095442332	-0.110085312	1.3604	0.0192	9.011	1.1464	9.012	1.2097	A+	A+	
ELA	7	420434	8																							

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Error	Infitt Mean Square	Infitt	Outfit Mean Square	Outfit	Male/Female DIF Code	White/Hispanic DIF Code	
ELA	8	556645	0	0	2	121075	0.575164154	0.060830644	0.575164154	0.116935784	0.246662393	0.00025604	0.350957324	-0.15188886	0.535697324	-0.2697726311	-0.3241331588	0.22979	0.0065	-9.8991	0.8658	-9.8992	0.8261	A-	A-	
ELA	8	427733	0	0	2	121075	0.892083419	0.01937662	0.065603964	0.02192856	0.892083419	0.00030374	0.380938625	-0.21278876011	-0.202972485	-0.202972485	-0.202972485	-1.8911	0.0098	-9.8991	0.914	-9.8992	0.8117	A-	A-	
ELA	8	922658	0	0	2	121075	0.104183357	0.086367954	0.075545698	0.032117134	0.000536633	0.412486227	-0.167343197	-0.239250096	-0.240090474	-0.240090474	-0.240090474	-0.548	0.007	-9.8991	0.9556	-9.8991	0.9073	A-	A-	
ELA	8	871838	0	0	2	121075	0.719438365	0.073318191	0.719438365	0.114391906	0.0921116457	0.000536633	0.410048005	-0.18343795	-0.141004005	-0.233478632	-0.211629359	-0.507	0.0071	-9.8991	0.9556	-9.8991	1.0376	A-	A-	
ELA	8	626131	0	0	2	121075	0.065363824	0.136873839	0.184224654	0.506363824	0.171274004	0.001115011	0.351240077	-0.135654894	-0.184892784	0.351240077	-0.149382274	0.682	0.0064	9.9011	1.05	9.9011	1.0893	A-	A-	
ELA	8	294611	0	0	2	121075	0.07016519	0.095949297	0.077990217	0.110625645	0.160016019	0.00289818	0.42324978	-0.21942459	-0.216196877	-0.23676669	-0.42324978	-0.762	0.0073	-9.8991	0.9417	-9.8991	0.9195	A-	A-	
ELA	8	146344	0	0	2	121075	0.70675054	0.08952759	0.70675054	0.70675054	0.12209005	0.00289818	0.403260827	-0.28899069	-0.247148719	0.403260827	-0.100664802	-0.4647	0.0069	-4.839	0.9844	-4.839	0.9967	B-	B-	
ELA	8	228716	0	0	2	121075	0.813793103	0.127631633	0.827343539	0.0303944828	0.000396448	0.418013170	0.418013170	0.418013170	-0.253980782	-0.246037345	-0.246037345	-1.159	0.008	-9.8991	0.9268	-9.8992	0.8446	B-	B-	
ELA	8	213916	0	0	2	121075	0.822614082	0.038338972	0.0448583936	0.822614082	0.000569895	0.464265048	-0.252176548	-0.236511382	-0.236511382	-0.236511382	-0.236511382	-1.2777	0.0081	-9.8991	0.8801	-9.8991	0.8737	B-	B-	
ELA	8	965912	0	0	2	121075	0.528944869	0.163221144	0.528944869	0.23874458	0.06842866	0.00462523	0.327567363	-0.107566993	0.327567363	-0.216556378	-0.122134939	0.4856	0.0064	9.9011	1.0809	9.9011	1.1155	A-	A-	
ELA	8	245214	0	0	2	121075	0.906462994	0.28024778	0.128036341	0.099921536	0.060089416	0.00089416	0.402607608	-0.203537109	-0.203987059	-0.20295906	-0.20295906	-0.3716	0.0068	-5.369	0.9834	9.9011	1.0665	A-	A-	
ELA	8	743418	0	0	2	121075	0.45624804	0.275449102	0.0889003572	0.48482325	0.549426204	0.001205864	0.296964939	0.033460337	0.238707079	-0.28807561	0.260684693	0.3698	0.0064	9.9011	1.498	9.9011	1.265	A-	A-	
ELA	8	336657	0	0	2	121075	0.62591782	0.191352467	0.106562874	0.07562874	0.62591782	0.001633535	0.355639063	-0.181542983	-0.181542983	-0.252736778	-0.455363393	0.0238	0.0066	-9.8991	0.9401	-9.8991	0.9079	A-	A-	
ELA	8	662578	0	0	2	121075	0.613875697	0.146289847	0.106562874	0.048583936	0.148667644	0.000685526	0.391800853	-0.391800853	-0.242121267	-0.242121267	-0.140221489	-0.4227	0.0069	-9.8991	1.0052	-9.8991	1.0347	A-	A-	
ELA	8	564915	0	0	2	121075	0.642073095	0.202188726	0.110534792	0.642073095	0.044600454	0.00231262	0.390728485	-0.217276701	-0.13775886	0.390728485	-0.217887984	-0.1713	0.0067	9.561	1.0277	9.9011	1.0656	A-	A-	
ELA	8	694900	0	0	2	121075	0.931525494	0.267520132	0.253039645	0.391525494	0.084385711	0.00042967	0.216428148	-0.046840182	-0.130857135	-0.216428148	-0.098692766	1.1739	0.0065	9.9012	1.1732	9.9012	1.3667	A-	A-	
ELA	8	798841	0	0	2	121075	0.55615445	0.55615445	0.230097047	0.134625073	0.0181687	0.00038329	0.288211154	0.288211154	0.288211154	-0.136872705	-0.202993712	0.4568	0.0064	9.9012	1.2429	9.9012	1.1913	A-	A-	
ELA	8	651194	0	0	2	121075	0.624315507	0.144323766	0.110524657	0.09794196	0.483417234	0.00037101	0.281617401	-0.118517479	-0.118517479	-0.203331384	-0.176676339	0.0642	0.0065	9.9011	1.0769	9.9011	1.1481	A-	A-	
ELA	8	749835	1	0	2	121075	0.613875697	0.146289847	0.101903379	0.613875697	0.113441273	0.00110453	0.485745091	-0.485745091	-0.259384331	-0.2043492694	-0.198785736	-0.6118	0.0212	-9.8991	0.8957	-9.8992	0.7913	A-	A-	
ELA	8	653280	1	0	2	13508	0.791975126	0.0362748	0.138732603	0.03257329	0.791975126	0.00014806	0.470912398	-0.246603911	-0.323964886	-0.182661363	-0.182661363	-0.1612	0.0229	-9.0091	0.891	-9.8992	0.7762	A-	A-	
ELA	8	437702	1	0	2	13508	0.344909752	0.3477939	0.203657092	0.344909752	0.102531833	0.000666272	0.163235385	0.080936411	-0.167147466	-0.163235385	-0.157790065	1.3848	0.0199	9.9012	1.1923	9.9014	1.42	A-	A-	
ELA	8	464666	1	0	2	13508	0.320920936	0.320920936	0.2386399325	0.289532129	0.154352976	0.000666272	0.060606432	-0.060606432	-0.091751381	0.099716071	0.060370676	1.5157	0.0202	9.9014	1.4455	9.9018	1.8408	A-	A-	
ELA	8	791980	1	0	2	13508	0.483417234	0.266804856	0.151021617	0.483417234	0.00037101	0.000448064	0.338280658	-0.078634931	-0.338280658	-0.156943068	-0.197786468	1.0096	0.0193	3.491	1.0262	9.9012	1.1593	A+	A+	
ELA	8	805549	1	0	2	13508	0.47161648	0.192281954	0.47161648	0.19674058	0.134805562	0.0005874043	0.406210058	-0.160349168	-0.160349168	-0.120409941	0.17349321	0.046021065	1.6906	0.0207	9.9013	1.3326	9.9017	1.6742	A-	A-
ELA	8	366094	2	0	2	13449	0.738344858	0.05097033	0.07539594	0.130492973	0.738344858	0.000520485	0.481895608	-0.24048426	-0.213861567	-0.296626864	-0.481895608	-0.6353	0.0214	-9.8991	0.8956	-9.8992	0.8	A-	B-	
ELA	8	603177	2	0	2	13449	0.87638255	0.03284897	0.07661536	0.0824259662	0.87638255	0.001412744	0.458532385	-0.221913285	-0.260530555	-0.263916989	-0.10235353278	-1.341	0.0249	-8.8291	0.874	-9.8993	0.7307	A-	A-	
ELA	8	561199	2	0	2	13449	0.612610603	0.145438323	0.068034798	0.173321437	0.612610603	0.00029742	0.406262626	-0.189527304	-0.209804106	-0.205685121	0.441063236	0.048	0.0196	-6.449	0.9632	-3.489	0.9563	A-	A-	
ELA	8	940239	2	0	2	13449	0.47161648	0.192281954	0.47161648	0.19674058	0.134805562	0.0005874043	0.24200744	-0.100882711	-0.24200744	-0.049989401	-0.142033445	0.7411	0.0192	9.9012	1.1722	9.9013	1.267	A-	A-	
ELA	8	750642	2	0	2	13449	0.486478548	0.147451116	0.2320061863	0.366971395	0.486478548	0.000173388	0.197338989	-0.395684638	-0.229529938	-0.204834444	-0.112327846	1.3251	0.0193	9.981	1.0073	2.201	1.0246	A+	A+	
ELA	8	945903	3	0	2	13460	0.488930163	0.342793462	0.088707281	0.07830836	0.488930163	0.00817236	0.488606443	-0.343846923	-0.140118161	-0.1471651906	0.488606443	0.665	0.0192	-9.8991	0.9059	-8.8091	0.905	A+	B-	
ELA	8	418131	3	0	2	13460	0.88365275	0.88365275	0.04936107	0.039524107	0.88365275	0.00045765	0.452139979	-0.245307366	-0.263697124	-0.2017639602	-1.804	0.0285	-6.7391	0.8765	-7.7493	0.7379	A-	A-		
ELA	8	898954	3	0	2	13460	0.771693908	0.058320951	0.771693908	0.080312036	0.888781575	0.00046765	0.463238428	-0.428310245	-0.428310245	-0.306386326	-0.306386326	-0.8689	0.0224	-7.9491	0.9101	-8.9192	0.8128	A-	A-	
ELA	8	114959	3	0	2	13460	0.495245171	0.141084695	0.141084695	0.254157652	0.495245171	0.001188707	0.335515285	-0.267789453	-0.187168113	-0.115595944	-0.402526627	0.6459	0.0197	-1.159	0.9915	1.341	1.015	A+	A+	
ELA	8	570269	3	0	2	13460	0.32615156	0.148662704	0.295393759	0.32615156	0.228751857	0.000686648	0.261367063	-0.247898383	-0.064267572	0.261367063	-0.082727968	0.0391	0.0197	9.0011	1.0739	9.9012	1.165	A+	A+	
ELA	8	27587	3	0	2	13460	0.43506686	0.157280832	0.271661762	0.43506686	0.130609212	0.001485884	0.296603919	-0.118730808	-0.115922603	0.296603919	-0.15484475	0.9555	0.0194	9.9011	1.064	9.9012	1.2085	A-	A-	
ELA	8	896508	3	0	2	13460	0.53471533	0.062460487	0.106166419	0.27332838	0.53471533	0.002674591	0.4158894296	-0.135995583	-0.208243316	-0.241411797	-0.4158894296	0.3553	0.0193	-1.559	0.9883	-1.379	0.9838	A+	A+	
ELA	8	435846	3	0	2	13460	0.384695394	0.109138187	0.163150074	0.384695394	0.34115899	0.001485884	0.182631861	-0.221693016	-0.130940567	0.182631861	0.062850838	1.2064	0.0197	9.9012	1.2202	9.9014	1.4012	A-	A-	
ELA	8	463577	3	0	2	13460	0.712109955	0.049034175	0.712109955	0.03721397	0.200668648	0.000668648	0.245023058	-0.245023058	-0.203806963	-0.027723089	-0.4944	0.0209	9.9011	1.1395	9.9014	1.409	A+	A+		
ELA	8	17299	3	0	2	13460	0.32615156	0.148662704	0.295393759	0.32615156	0.228751857	0.000686648	0.261367063	-0.247898383	-0.064267572	0.261367063	-0.0140302	1.5224	0.0204	9.9011	1.1127	9.9013	1.3071	A-	A-	
ELA	8	540312	4	0	2	13433	0.05665153	0.347502419	0.305665153	0.08933241	0.256979081	0.000446661	0.226957509	0.013665999	0.226957509	-0.28134428										

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Estimate	IRT Error	Infirt	Mean Square	Outfit	Male/Female	White/Black	Hispanic	Black/White	Diff	Code	Diff	Code		
MATH	3	203019	0	D-M	1	1261.40	0.081052798	0.0997907087	0.772498811	0.042318859	0.005811004	0.261332961	-0.212923691	-0.069737986	-0.069737986	0.261332961	-0.130305748	0.0076	0.0076	9.0012	1.1859	9.0016	1.15978									
MATH	3	198545	0	B-O	1	1261.40	0.02899952	0.099120025	0.608990011	0.052531600	0.00585857	0.382884582	-0.202172858	-0.225284582	-0.225284582	0.382884582	-0.136450404	0.0066	0.0066	9.0011	1.1036	9.0011	1.1119									
MATH	3	757018	0	B-O	1	1261.40	0.057618995	0.167417156	0.1555509751	0.086546609	0.0578618995	0.011431743	0.578946040	-0.467551217	-0.178964604	-0.178964604	0.578946040	0.0895	0.0066	-9.8991	0.867	-9.8992	0.8102									
MATH	3	790409	0	C-G	1	1261.40	0.053291898	0.074298398	0.161306349	0.129724116	0.006730617	0.354619016	-0.252844652	0.354619016	-0.149492174	-0.149492174	0.354619016	0.0395	0.0065	9.0012	1.1566	9.0012	1.2008									
MATH	3	980697	0	A-F	1	1261.40	0.850662629	0.865062629	0.032752754	0.013905585	0.082662121	0.005295703	0.40730834	0.04730834	-0.183393318	-0.183393318	0.40730834	-1.7725	0.0089	-9.8991	0.9288	-9.8992	0.8428									
MATH	3	240250	0	B-O	1	1261.40	0.905145077	0.905145077	0.040686843	0.024771748	0.009038973	0.392970076	0.428071764	-0.281921712	-0.281921712	0.392970076	-2.8864	0.0104	-9.8991	0.9895	-9.8993	0.6766										
MATH	3	242758	0	B-O	1	1261.40	0.791025844	0.141092784	0.791025844	0.057167877	0.029016197	0.00751365	0.329034379	0.329034379	-0.238328233	-0.238328233	0.329034379	-1.1809	0.0078	9.581	1.0403	-1.769	0.9828									
MATH	3	332743	0	D-M	1	1261.40	0.566394482	0.566394482	0.069400223	0.103940067	0.05965576	0.008213097	0.396021066	0.396021066	-0.283311291	-0.283311291	0.396021066	0.2078	0.0066	9.0012	1.2235	9.0013	1.266									
MATH	3	628501	0	A-F	1	1261.40	0.678103694	0.678103694	0.151609233	0.101530046	0.0599013794	0.008625337	0.396021066	0.396021066	-0.194563295	-0.194563295	0.396021066	-0.3919	0.0069	9.0011	1.0814	9.0011	1.0494									
MATH	3	939902	0	B-O	1	1261.40	0.74524338	0.14695957	0.033137783	0.061368321	0.74524338	0.012914222	0.254603101	-0.18853022	-0.13456284	-0.056380038	0.254603101	-0.8801	0.0073	9.0012	1.2332	9.0015	1.4929									
MATH	3	876708	0	B-O	1	1261.40	0.513897257	0.199548211	0.513897257	0.138417631	0.01318059	0.005353542	0.419321927	-0.289626127	0.419321927	-0.133906360	0.419321927	-0.5838	0.0068	-9.8991	1.0628	-9.8991	1.1011									
MATH	3	216390	0	D-M	1	1261.40	0.67346599	0.075083008	0.126326582	0.07346599	0.006247027	0.522036033	0.236629641	-0.07688104	0.522036033	-0.2381346661	0.522036033	-0.3601	0.0065	-9.8991	0.9188	-9.8992	0.8365									
MATH	3	121270	0	C-F	1	1261.40	0.83821944	0.83821944	0.033486602	0.085181313	0.039614714	0.004031327	0.434977338	0.434977338	-0.284592752	-0.284592752	0.434977338	-1.4774	0.0083	-9.8991	0.9353	-9.8992	0.8304									
MATH	3	333773	0	B-O	1	1261.40	0.675649279	0.0817861107	0.043530997	0.0807040	0.050118915	0.001745519	0.438986434	-0.372358875	-0.372358875	0.438986434	-1.39	0.0081	-9.8991	0.9539	-9.8992	0.9157										
MATH	3	927476	0	C-G	1	1261.40	0.674152529	0.049231013	0.065791977	0.1432424766	0.024591472	0.073426668	0.00565245	0.569238603	-0.272358875	-0.272358875	0.569238603	-0.9419	0.0074	-9.8992	0.8116	-9.8993	0.686									
MATH	3	611269	0	A-T	1	1261.40	0.734152529	0.049231013	0.065791977	0.1432424766	0.024591472	0.073426668	0.00565245	0.569238603	-0.272358875	-0.272358875	0.569238603	-0.4472	0.0069	9.0011	1.058	9.0011	1.0481									
MATH	3	323209	0	A-T	1	1261.40	0.642563818	0.102988743	0.642563818	0.10697658	0.14245283	0.010908514	0.511996784	-0.211301707	0.511996784	-0.211301707	0.511996784	-0.2628	0.0068	-9.8991	0.9462	-9.8991	0.9189									
MATH	3	518409	0	B-O	1	1261.40	0.632154749	0.190621532	0.115974314	0.049175519	0.632154749	0.011400032	0.439090827	-0.254072978	-0.254072978	0.439090827	-0.1455	0.0067	9.0011	1.0458	9.0011	1.0567										
MATH	3	222445	0	B-O	1	1261.40	0.795750753	0.067082131	0.795750753	0.061325466	0.05977338	0.006587918	0.434977338	0.434977338	-0.27144076	-0.27144076	0.434977338	-1.4295	0.0082	9.0011	1.0881	9.0011	1.08									
MATH	3	333773	0	B-O	1	1261.40	0.675649279	0.0817861107	0.043530997	0.0807040	0.050118915	0.001745519	0.438986434	-0.372358875	-0.372358875	0.438986434	-1.39	0.0081	-9.8991	0.9539	-9.8992	0.9157										
MATH	3	573734	0	D-M	1	1261.40	0.621769463	0.023735532	0.621769463	0.326137625	0.023664183	0.003908356	0.5966314166	-0.207569522	0.5966314166	-0.207569522	0.5966314166	-0.6441	0.0067	-9.8992	0.8307	-9.8992	0.7572									
MATH	3	798523	0	A-T	1	1261.40	0.840566038	0.043594419	0.840566038	0.054399873	0.051831299	0.009045505	0.456772322	-0.269830732	0.456772322	-0.269830732	0.456772322	-0.6858	0.0082	-9.8992	0.8449	-9.8992	0.7984									
MATH	3	183493	0	B-O	1	1261.40	0.991200625	0.063048993	0.034656119	0.098057119	0.799120025	0.00458221	0.429096679	-0.249037315	-0.249037315	0.429096679	-1.6785	0.0079	-9.8991	0.9659	-9.8991	0.888										
MATH	3	186399	0	B-O	1	1261.40	0.50062629	0.140542255	0.190340632	0.081506729	0.004359125	0.005359125	0.52016536	-0.460828234	-0.460828234	0.52016536	-1.2794	0.0079	-9.8992	0.8067	-9.8993	0.6696										
MATH	3	143460	1	A-F	1	14357	0.61150658	0.120202102	0.132130668	0.641150658	0.5897165146	0.007425917	0.520684005	-0.283018721	-0.244551843	0.520684005	-0.2236	0.0196	-0.75791	0.9337	-0.78291	0.86631										
MATH	3	634095	1	D-M	1	14357	0.580259959	0.325625131	0.040746628	0.07791154	0.589259959	0.003621927	0.578479553	-0.085388994	-0.085388994	0.578479553	-0.0668	0.0196	-9.8991	0.8684	-9.8992	0.8398										
MATH	3	108707	1	C-G	1	14357	0.71977293	0.088319287	0.71977293	0.105662743	0.077801769	0.00865602	0.461674175	-0.267112393	0.461674175	-0.196568566	0.461674175	-0.6858	0.021	-1.759	0.9824	-3.9391	0.9121									
MATH	3	970240	1	C-G	1	14357	0.544055165	0.107613011	0.223862924	0.117642962	0.044055165	0.00367933	0.471623194	-0.212225028	0.471623194	-0.113364733	0.471623194	-0.7628	0.0195	9.9311	1.0685	8.6311	1.2224									
MATH	3	916183	1	B-O	1	14357	0.560005572	0.19600195	0.147802466	0.560005572	0.084000836	0.011905856	0.521603704	-0.24229025	0.521603704	-0.24229025	0.521603704	-0.2994	0.0195	-9.0491	0.9256	-8.0391	0.8865									
MATH	3	567300	1	A-T	1	14357	0.611702305	0.067826335	0.611702305	0.050915923	0.012467786	0.0039388994	0.29974255	-0.279831689	0.29974255	-0.279831689	0.29974255	-1.3901	0.0238	-8.8992	0.8155	-9.8994	0.6351									
MATH	3	624041	1	A-T	1	14357	0.688583966	0.095911402	0.688583966	0.101135335	0.098140238	0.00546284	0.51134367	-0.259766836	0.51134367	-0.259766836	0.51134367	-0.5034	0.0206	-7.6391	0.909	-5.4391	0.8911									
MATH	3	239589	1	D-M	1	14357	0.407327436	0.195862645	0.128439089	0.407327436	0.264122031	0.003830884	0.297641404	-0.284380407	-0.106587224	0.297641404	0.007898906	1.0634	0.0198	9.0012	1.2238	9.0014	1.3694									
MATH	3	146411	1	D-M	1	14357	0.544055165	0.107613011	0.223862924	0.117642962	0.044055165	0.00367933	0.471623194	-0.212225028	0.471623194	-0.113364733	0.471623194	-0.7628	0.0195	9.9311	1.0685	8.6311	1.2224									
MATH	3	929565	1	B-O	1	14357	0.6752638	0.06056091	0.291221018	0.666326897	0.5752638	0.00599024	0.2835952	-0.233197239	-0.047036343	0.2835952	0.1879	0.0219	-8.8992	0.8177	-9.8993	0.6899										
MATH	3	431973	2	A-F	1	14357	0.52562538	0.4319732	0.52562538	0.02742086	0.05484172	0.0037318	0.550209757	-0.20517272	0.550209757	-0.13308896	0.550209757	2.9195	0.0198	-9.0011	1.0205	-9.8991	0.8569									
MATH	3	443264	2	D-M	1	14357	0.398607462	0.095039839	0.398607462	0.05343268	0.073866074	0.003301988	0.39446556	-0.267456428	-0.127402767	0.39446556	0.0447	0.0197	9.0012	1.1864	9.0013	1.2603										
MATH	3	465857	2	A-T	1	13931	0.707271553	0.032445625	0.094322016	0.159428612	0.707271553	0.005957936	0.588219114	-0.23720461	-0.370951165	-0.30920706	0.588219114	-0.5666	0.0212	-9.8992	0.8199	-9.8993	0.7291									
MATH	3	301367	2	B-O																												

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Error	Infitt Mean Square	Infitt Std Error	Outfit Mean Square	Outfit Std Error	Male/Black DIF Code	White/Hispanic DIF Code		
MATH	4	581362	2	A	2	13810	0.135409124	0.1403122	0.135409124	0.1403122	0.135409124	0.1403122	0.135409124	0.1403122	0.135409124	0.1403122	0.135409124	2.4738	0.0276	9.9012	1.8894	9.9024	2.4105	A+	A+		
MATH	4	581363	2	D-M	2	13810	0.205123613	0.185879772	0.482186821	0.123533671	0.205123613	0.185879772	0.482186821	0.123533671	0.205123613	0.185879772	0.482186821	0.123533671	2.4738	0.0276	9.9012	1.8894	9.9024	2.4105	A+	A+	
MATH	4	581986	2	A-F	1	13810	0.095438088	0.060246198	0.107388096	0.133309196	0.095438088	0.060246198	0.107388096	0.133309196	0.095438088	0.060246198	0.107388096	0.133309196	-1.0016	0.0207	-9.8991	9.0140	-8.5392	0.8339	A-	A-	
MATH	4	582689	2	B-O	1	13810	0.068110065	0.110065177	0.068110065	0.110065177	0.068110065	0.110065177	0.068110065	0.110065177	0.068110065	0.110065177	0.068110065	0.110065177	-0.5081	0.0198	-3.8669	0.9679	-3.6691	0.9429	A-	A-	
MATH	4	146107	2	A-F	1	13810	0.565749457	0.159811731	0.165604634	0.105141202	0.565749457	0.159811731	0.165604634	0.105141202	0.565749457	0.159811731	0.165604634	0.105141202	-0.2802	0.0197	-9.8992	0.8465	-9.8992	0.7733	A+	A+	
MATH	4	578436	2	B-O	1	13810	0.722230268	0.116654598	0.722230268	0.116654598	0.722230268	0.116654598	0.722230268	0.116654598	0.722230268	0.116654598	0.722230268	0.116654598	-1.6168	0.0212	-9.8991	0.9091	-9.8991	0.7658	A+	A+	
MATH	4	111327	3	A-T	1	13798	0.487636356	0.114232229	0.487636356	0.114232229	0.487636356	0.114232229	0.487636356	0.114232229	0.487636356	0.114232229	0.487636356	0.114232229	-0.4833	0.0199	9.9011	1.4966	9.9013	1.2643	A+	A+	
MATH	4	629468	3	A-F	1	13798	0.529134657	0.1529134657	0.529134657	0.1529134657	0.529134657	0.1529134657	0.529134657	0.1529134657	0.529134657	0.1529134657	0.529134657	0.1529134657	0.2432	0.0197	-9.8991	0.9986	-9.8991	1.3711	1.0177	A+	A+
MATH	4	408302	3	D-M	1	13798	0.675691549	0.1671691549	0.675691549	0.1671691549	0.675691549	0.1671691549	0.675691549	0.1671691549	0.675691549	0.1671691549	0.675691549	0.1671691549	-0.0563	0.0196	9.9011	1.0984	9.9012	1.1577	A+	A+	
MATH	4	177666	3	C-G	1	13798	0.686821568	0.1686821568	0.686821568	0.1686821568	0.686821568	0.1686821568	0.686821568	0.1686821568	0.686821568	0.1686821568	0.686821568	0.1686821568	-2.2575	0.0269	-4.1591	0.9317	-6.3192	0.7691	A+	B-	
MATH	4	302177	3	A-T	1	13798	0.375442528	0.117553269	0.375442528	0.117553269	0.375442528	0.117553269	0.375442528	0.117553269	0.375442528	0.117553269	0.375442528	0.117553269	0.7044	0.0201	0.7111	1.0064	6.1311	1.0896	A+	A+	
MATH	4	817894	3	C-G	1	13798	0.448760669	0.261635212	0.448760669	0.261635212	0.448760669	0.261635212	0.448760669	0.261635212	0.448760669	0.261635212	0.448760669	0.261635212	0.3685	0.0197	9.9011	1.0961	9.9011	1.14	A+	A+	
MATH	4	922264	3	B-O	1	13798	0.615983256	0.159805769	0.615983256	0.159805769	0.615983256	0.159805769	0.615983256	0.159805769	0.615983256	0.159805769	0.615983256	0.159805769	-0.2424	0.0197	9.9011	1.0796	8.2011	1.1206	A+	A+	
MATH	4	742287	3	B-O	1	13798	0.675691549	0.1671691549	0.675691549	0.1671691549	0.675691549	0.1671691549	0.675691549	0.1671691549	0.675691549	0.1671691549	0.675691549	0.1671691549	-0.8387	0.0205	-9.8991	0.9892	-9.8991	0.7542	A+	A+	
MATH	4	192404	3	A-F	1	13798	0.72293086	0.192293086	0.72293086	0.192293086	0.72293086	0.192293086	0.72293086	0.192293086	0.72293086	0.192293086	0.72293086	0.192293086	-1.1455	0.0213	-3.429	0.9664	-3.6891	0.9191	A+	A+	
MATH	4	610038	3	B-O	1	13798	0.575442528	0.117553269	0.575442528	0.117553269	0.575442528	0.117553269	0.575442528	0.117553269	0.575442528	0.117553269	0.575442528	0.117553269	-1.3412	0.0219	-9.8991	0.8942	-9.2192	0.7853	A+	A+	
MATH	4	104310	3	D-M	1	13798	0.359762228	0.134817945	0.359762228	0.134817945	0.359762228	0.134817945	0.359762228	0.134817945	0.359762228	0.134817945	0.359762228	0.134817945	1.644	0.0228	9.9013	1.2868	9.9022	2.2147	A+	A+	
MATH	4	519264	3	D-M	1	13798	0.641336669	0.194622409	0.641336669	0.194622409	0.641336669	0.194622409	0.641336669	0.194622409	0.641336669	0.194622409	0.641336669	0.194622409	1.4884	0.022	2.171	1.0244	5.9014	1.3918	A+	A+	
MATH	4	224989	4	A-F	1	13802	0.539725402	0.152079409	0.539725402	0.152079409	0.539725402	0.152079409	0.539725402	0.152079409	0.539725402	0.152079409	0.539725402	0.152079409	0.0454	0.0195	5.591	1.0463	5.9011	1.0714	A+	A+	
MATH	4	351998	4	D-M	2	13802	0.365236922	0.124679032	0.365236922	0.124679032	0.365236922	0.124679032	0.365236922	0.124679032	0.365236922	0.124679032	0.365236922	0.124679032	0.8422	0.0203	9.9012	1.1778	9.9014	1.475	A+	A+	
MATH	4	571516	4	A-F	1	13802	0.606144037	0.248297348	0.606144037	0.248297348	0.606144037	0.248297348	0.606144037	0.248297348	0.606144037	0.248297348	0.606144037	0.248297348	-0.4638	0.0198	9.9012	1.1841	9.9013	1.2802	A+	A+	
MATH	4	309333	4	A-F	1	13802	0.494348645	0.166497609	0.494348645	0.166497609	0.494348645	0.166497609	0.494348645	0.166497609	0.494348645	0.166497609	0.494348645	0.166497609	0.1271	0.0195	8.8411	1.0742	8.8411	1.1288	A+	A+	
MATH	4	492364	4	D-M	1	13802	0.538397334	0.142370671	0.538397334	0.142370671	0.538397334	0.142370671	0.538397334	0.142370671	0.538397334	0.142370671	0.538397334	0.142370671	-0.2094	0.0196	-9.8992	0.8455	-9.8992	0.7883	A+	A+	
MATH	4	650080	4	B-O	1	13802	0.394725402	0.125209825	0.394725402	0.125209825	0.394725402	0.125209825	0.394725402	0.125209825	0.394725402	0.125209825	0.394725402	0.125209825	0.6599	0.02	-3.719	0.9675	0.121	1.0016	A+	A+	
MATH	4	834476	4	C-G	1	13802	0.505941168	0.150941168	0.505941168	0.150941168	0.505941168	0.150941168	0.505941168	0.150941168	0.505941168	0.150941168	0.505941168	0.150941168	0.6662	0.0195	9.9011	1.12	9.9012	1.1546	A+	A+	
MATH	4	509650	4	A-F	1	13802	0.400240545	0.1083176531	0.400240545	0.1083176531	0.400240545	0.1083176531	0.400240545	0.1083176531	0.400240545	0.1083176531	0.400240545	0.1083176531	0.968	0.0205	3.011	1.0289	6.9911	1.025	A+	A+	
MATH	4	929536	4	A-T	1	13802	0.5007245	0.23924069	0.5007245	0.23924069	0.5007245	0.23924069	0.5007245	0.23924069	0.5007245	0.23924069	0.5007245	0.23924069	0.3612	0.0196	9.9012	1.4499	9.9012	1.2296	A+	A+	
MATH	4	156483	4	B-O	1	13802	0.669250833	0.175699174	0.669250833	0.175699174	0.669250833	0.175699174	0.669250833	0.175699174	0.669250833	0.175699174	0.669250833	0.175699174	-0.8129	0.0203	-9.8992	0.7881	-9.8991	0.677	A+	A+	
MATH	4	944375	4	B-O	1	13802	0.51656202	0.115128242	0.51656202	0.115128242	0.51656202	0.115128242	0.51656202	0.115128242	0.51656202	0.115128242	0.51656202	0.115128242	-0.3311	0.0196	5.551	1.0462	2.291	1.0331	A+	A+	
MATH	4	923996	4	D-M	2	13802	0.283002463	0.220475293	0.283002463	0.220475293	0.283002463	0.220475293	0.283002463	0.220475293	0.283002463	0.220475293	0.283002463	0.220475293	1.316	0.0215	9.9013	1.2652	9.9017	1.6574	A+	A+	
MATH	4	141651	5	D-M	1	13796	0.481358987	0.128660943	0.481358987	0.128660943	0.481358987	0.128660943	0.481358987	0.128660943	0.481358987	0.128660943	0.481358987	0.128660943	-0.7179	0.0201	-9.8991	0.8791	-9.8991	0.8213	A+	A+	
MATH	4	506926	5	B-O	1	13796	0.36632937	0.109886624	0.36632937	0.109886624	0.36632937	0.109886624	0.36632937	0.109886624	0.36632937	0.109886624	0.36632937	0.109886624	-1.004	0.0196	-9.8991	0.9037	-9.8991	0.8729	A+	A+	
MATH	4	116320	5	C-G	1	13796	0.425920557	0.081835315	0.425920557	0.081835315	0.425920557	0.081835315	0.425920557	0.081835315	0.425920557	0.081835315	0.425920557	0.081835315	0.4822	0.0198	9.9011	1.1296	9.9012	1.2111	A+	A+	
MATH	4	324855	5	A-F	1	13796	0.407219484	0.115911859	0.407219484	0.115911859	0.407219484	0.115911859	0.407219484	0.115911859	0.407219484	0.115911859	0.407219484	0.115911859	1.0243	0.0208	9.8511	1.1	9.9014	1.3739	A+	A+	
MATH	4	423990	5	A-T	1	13796	0.535957669	0.114236301	0.535957669	0.114236301	0.535957669	0.114236301	0.535957669	0.114236301	0.535957669	0.114236301	0.535957669	0.114236301	-0.7505	0.0202	-6.3791	0.9456	-7.2691	0.8748	A+	A+	
MATH	4	396838	5	C-G	1	13796	0.58779066	0.132791134	0.58779066	0.132791134	0.58779066	0.132791134	0.58779066	0.132791134	0.58779066	0.132791134	0.58779066	0.132791134	-1.9961	0.0225	-2.9091	0.8993	-7.2492	1.1031	A+	A+	
MATH	4	171640	5	A-F	1	13796	0.58779066	0.132791134	0.58779066	0.132791134	0.58779066	0.132791134	0.58779066	0.132791134	0.58779066	0.132791134	0.58779066	0.132791134	-0.3879	0.0197	0.7711	1.0063	-1.909	0.9716	A+	A+	
MATH	4	979532	6	C-G	1	13825	0.356003036	0.1042089331	0.356003036	0.1042089331	0.356003036	0.1042089331	0.356003036	0.104208933													

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Error	Infitt	Mean Square	Outfit	Mean Square	Female/White/Hispanic	Male/Black/Hispanic	White/Black/Hispanic	DIF Code			
MATH	5	541593	0	A-F	2	122900	0.3754353313	0.168828316	0.3037919710	0.3735442010	0.1644524	0.004670464	0.1826197482	-0.19484782	-0.09556933	0.281697482	-0.06614698	-0.7579	0.0067	9.9012	1.1772	9.9013	1.2654	A+	A+	A+	A+	A+		
MATH	5	566472	0	A-F	2	122900	0.615793328	0.09056957	0.615793328	0.12916192	0.161049634	0.002888527	0.551780872	-0.13981457	0.551780872	0.321997588	-0.278923669	-0.8991	0.0066	9.8991	0.8669	9.8992	1.1772	9.9013	1.2654	A+	A+	A+	A+	A+
MATH	5	589406	0	A-T	2	122900	0.723515053	0.070105777	0.724857167	0.107448576	0.1001129699	0.001529699	0.550346106	-0.224269435	0.550346106	-0.224269435	-0.347763328	-0.8246	0.0069	9.8992	0.7858	9.8993	1.2762	9.9013	1.2654	A+	A+	A+	A+	A+
MATH	5	449913	0	A-T	2	122900	0.479365338	0.238136697	0.119441458	0.906010252	0.001440195	0.001440195	0.406709839	0.406709839	0.406709839	-0.144715195	-0.240331383	-0.168823384	0.1471	0.0065	9.9011	1.0615	9.9011	1.0589	A+	A+	A+	A+	A+	
MATH	5	990144	0	A-T	2	122900	0.629267697	0.100301000	0.126956876	0.18014882	0.001693326	0.001693326	0.458138829	0.458138829	0.458138829	-0.224941418	-0.224941418	-0.224941418	-0.365	0.0066	9.8991	1.0034	9.8992	1.0589	A+	A+	A+	A+	A+	
MATH	5	321580	0	D-M	1	122900	0.66546786	0.24363377	0.66546786	0.120626526	0.18472498	0.00103336	0.458138829	0.458138829	0.458138829	-0.224941418	-0.224941418	-0.224941418	-0.8609	0.0069	9.8991	0.9594	9.8992	1.0589	A+	A+	A+	A+	A+	
MATH	5	968894	1	B-O	1	13979	0.510623077	0.069962006	0.7078832535	0.510623077	0.338007011	0.001144574	0.354930682	0.354930682	0.354930682	-0.276303413	-0.276303413	-0.276303413	-0.6286	0.0067	9.8991	0.8763	9.8992	0.7715	A+	A+	A+	A+	A+	
MATH	5	488233	1	A-F	2	13979	0.341869948	0.341869948	0.186708634	0.212676157	0.555383075	0.002146076	0.248259677	0.248259677	0.248259677	0.016946574	0.248259677	-0.138479302	1.4302	0.0215	9.9012	1.2259	9.9016	1.5866	A+	A+	A+	A+	A+	
MATH	5	24616	1	A-T	2	13979	0.625396927	0.208380450	0.406824525	0.116388869	0.655398097	0.002022453	0.4652987791	0.4652987791	0.4652987791	-0.38343776	-0.2230881718	-0.179686474	0.6441	0.0198	9.8992	0.9242	9.8992	0.7619	A+	A+	A+	A+	A+	
MATH	5	344485	1	A-T	2	13979	0.71469347	0.083983118	0.71469347	0.101232263	0.074049526	0.001144574	0.438820043	0.438820043	0.438820043	-0.19408178	-0.19408178	-0.19408178	-1.1158	0.0212	9.8991	0.9729	9.8992	1.0589	A+	A+	A+	A+	A+	
MATH	5	362938	1	A-T	2	13979	0.609759584	0.041705415	0.115095867	0.807535888	0.351214115	0.001703038	0.478271887	0.478271887	0.478271887	-0.221979841	-0.221979841	-0.221979841	-1.5657	0.0231	9.8992	0.8421	9.8993	0.6519	A+	A+	A+	A+	A+	
MATH	5	875849	1	D-M	2	13979	0.631017956	0.067172187	0.107804564	0.191688616	0.126719344	0.002780217	0.538991583	0.538991583	0.538991583	-0.271742017	-0.271742017	-0.271742017	-0.4745	0.0198	9.8991	0.8834	9.8992	0.7955	A+	A+	A+	A+	A+	
MATH	5	571832	1	A-F	2	13979	0.328778883	0.311395665	0.328778883	0.144144789	0.213391516	0.00121611	0.254946476	-0.113511609	0.254946476	-0.239228472	0.046681177	1.169	0.0207	9.9012	1.2419	9.9014	1.448	A+	A+	A+	A+	A+		
MATH	5	490676	2	C-G	2	13668	0.385498276	0.326309628	0.115452151	0.385498276	0.167837284	0.004898916	0.281232474	0.281232474	0.281232474	-0.049336935	-0.192717882	0.81232474	0.8868	0.0202	9.9012	1.2214	9.9013	1.335	A+	A+	A+	A+	A+	
MATH	5	230736	2	A-T	2	13668	0.73468247	0.09868306	0.09868306	0.75468247	0.044922447	0.00139018	0.462769176	0.462769176	0.462769176	-0.265123051	-0.252077473	-0.252077473	-1.4471	0.0218	9.8991	0.9002	9.8992	0.7643	A+	A+	A+	A+	A+	
MATH	5	840085	2	C-G	2	13668	0.339259584	0.33831621	0.339259584	0.191688616	0.126719344	0.002780217	0.140787597	0.140787597	0.140787597	0.056434296	0.140787597	-0.17099365	1.1446	0.0207	9.9014	1.3888	9.9016	1.6324	A+	A+	A+	A+	A+	
MATH	5	833663	2	A-T	2	13668	0.374158619	0.278387474	0.374158619	0.174621911	0.208410181	0.00059056	0.398073295	0.398073295	0.398073295	-0.256304591	-0.063103562	-0.168103122	0.9442	0.0203	7.9411	1.0713	9.9012	1.1575	A+	A+	A+	A+	A+	
MATH	5	166605	2	A-F	2	13668	0.371378402	0.080187299	0.371378402	0.112379280	0.422592918	0.00102429	0.225860154	0.225860154	0.225860154	-0.221092027	0.225860154	-0.202175875	0.9599	0.0203	9.9013	1.2871	9.9014	1.4374	A+	A+	A+	A+	A+	
MATH	5	460677	2	A-F	2	13668	0.73468247	0.09868306	0.09868306	0.75468247	0.044922447	0.00139018	0.563330041	0.563330041	0.563330041	-0.353539136	-0.232771926	-0.193247476	-0.1171	0.0196	9.8991	0.8604	9.8992	0.8141	A+	A+	A+	A+	A+	
MATH	5	174469	2	A-F	2	13668	0.6953451	0.30816506	0.30816506	0.6953451	0.30816506	0.001975471	0.513483364	0.513483364	0.513483364	-0.230369066	-0.349688815	-0.201850478	-0.9754	0.0212	9.8991	0.8500	9.8992	0.7187	A+	A+	A+	A+	A+	
MATH	5	615044	2	B-O	2	13668	0.50228772	0.119476149	0.170763589	0.119476149	0.102582872	0.001529699	0.419925622	0.419925622	0.419925622	-0.260504761	-0.175668399	-0.168259269	-0.2339	0.0197	9.9011	1.3165	9.9019	1.8999	A+	A+	A+	A+	A+	
MATH	5	64138	2	B-O	2	13668	0.488220661	0.101038823	0.32491952	0.488220661	0.083113843	0.00059056	0.481302795	0.481302795	0.481302795	-0.238225986	-0.283388782	0.481302795	0.329	0.0196	9.8991	0.9134	9.8992	0.7659	A+	A+	A+	A+	A+	
MATH	5	704592	2	D-M	2	13668	0.496707638	0.26096576	0.063944981	0.177860697	0.496707638	0.000585309	0.570921067	0.570921067	0.570921067	-0.452726957	-0.156521953	-0.123866256	0.2845	0.0196	9.8991	0.8695	9.8992	0.8295	A+	A+	A+	A+	A+	
MATH	5	207187	2	D-M	2	13668	0.629354112	0.142156863	0.091673983	0.142156863	0.026354112	0.000951127	0.481988737	0.481988737	0.481988737	-0.283767874	-0.192717882	-0.192717882	-0.3666	0.0199	9.8991	0.9353	9.8992	0.9013	A+	A+	A+	A+	A+	
MATH	5	927117	2	A-F	2	13668	0.6953451	0.30816506	0.30816506	0.6953451	0.30816506	0.00170618	0.415267107	0.415267107	0.415267107	-0.1830588591	-0.152677473	-0.152677473	-0.7867	0.0206	9.8991	0.9797	9.8992	0.9013	A+	A+	A+	A+	A+	
MATH	5	570730	3	A-T	2	13555	0.50228772	0.119476149	0.170763589	0.119476149	0.102582872	0.001529699	0.519731404	0.519731404	0.519731404	-0.178205631	-0.23611551	-0.276010155	0.2383	0.0195	9.8991	0.9134	9.8992	0.8786	A+	A+	A+	A+	A+	
MATH	5	64138	3	D-M	2	13555	0.35130948	0.263887864	0.35130948	0.174621911	0.208410181	0.00059056	0.331155217	0.331155217	0.331155217	-0.092594384	0.331155217	-0.079513692	1.0601	0.0205	9.9011	1.3083	9.9012	1.233	A+	A+	A+	A+	A+	
MATH	5	140291	3	D-M	2	13555	0.356547399	0.356547399	0.31644607	0.133087422	0.190923588	0.00191811	0.223589941	0.223589941	0.223589941	-0.232589941	-0.08053437	-0.158763902	1.0138	0.0204	9.9013	1.2524	9.9014	1.4069	A+	A+	A+	A+	A+	
MATH	5	242004	3	D-M	2	13555	0.68564666	0.102701672	0.152488956	0.68564666	0.03188602	0.001623017	0.495685127	0.495685127	0.495685127	-0.324620041	-0.23428205	-0.145549469	-0.5558	0.0201	9.8991	0.8984	9.8992	0.7849	A+	A+	A+	A+	A+	
MATH	5	855351	3	A-F	2	13555	0.61464541	0.067207672	0.361164541	0.61464541	0.403198008	0.001401697	0.448187345	0.448187345	0.448187345	-0.18373733	0.448187345	-0.35566335	0.268001071	0.9863	0.0204	9.8991	0.993	9.8992	0.861	A+	A+	A+	A+	A+
MATH	5	970475	3	B-O	2	13555	0.215666212	0.484470675	0.182294591	0.215666212	0.144389499	0.00180376	0.110545711	0.110545711	0.110545711	-0.133404221	-0.133404221	-0.126745091	1.9157	0.0235	9.9013	1.3165	9.9019	1.8999	A+	A+	A+	A+	A+	
MATH	5	565138	3	C-G	2	13555	0.342668646	0.133751383	0.180228698	0.234946846	0.113390533	0.000590180	0.123341962	0.123341962	0.123341962	-0.191552041	-0.242062599	-0.2341962	1.7744	0.0229	9.9013	1.3083	9.9012	1.2269	A+	A+	A+	A+	A+	
MATH	5	891253	3	A-T	2	13555	0.33456289	0.202139432	0.165105127	0.296790852	0.33456289	0.00180376	0.381049061	0.381049061	0.381049061	-0.232543287	-0.160171906	-0.052748113	1.1465	0.0207	4.2511	1.0424	9.9012	1.835	A+	A+	A+	A+	A+	
MATH	5	898429	3	B-O	2	13555	0.68564666	0.102701672	0.152488956	0.68564666	0.03188602	0.001623017	0.416873014	0.416873014	0.416873014	-0.190338605	0.416873014	-0.186751879	-0.6362	0.0202	9.8991	0.9779	9.9012	1.0266	A+	A+	A+	A+	A+	
MATH	5	931088	3	A-F	2	13552	0.783622719	0.08685109	0.141583885	0.783622719	0.079605213	0.001958672	0.50894806	0.50894806	0.50894806	-0.032166133	-0.182269520	-0.182269520	0.4867	0.0196	9.9012	1.1718	9.9012	1.2187	A+	A+	A+	A+	A+	
MATH	5	185131	3	A-T	2	13552	0.74194024	0.061527112	0.110662072	0.74194024	0.03194024	0.00132923	0.466401345	0.466401345	0.466401345	-0.239176657	-0.269607611	-0.212700821	-0.10178	0.0213	9.8991	0.9959	9.8992	0.8143	A+	A+</				

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Estimate	IRT Error	Infilt	Mean Square	Infilt	Mean Square	Outfit	Mean Square	Outfit	Male/Female	White/Black	Hispanic	Black/White	Hispanic	Code	Diff	Code		
MATH	7	245976	0	D-S	2	123256	0.58269768	0.152714864	0.191244604	0.216190171	0.391396768	0.000117734	0.37929403	-0.213928348	-0.15252258	-0.107163689	-0.173791089	0.05815	0.0066	9.0011	1.0534	9.0011	1.089	0.0066	9.0011	1.0534	9.0011	1.089	0.0066	9.0011	1.0534	9.0011	1.089			
MATH	7	245976	0	A-N	1	123256	0.58269768	0.152714864	0.191244604	0.216190171	0.391396768	0.000117734	0.37929403	-0.213928348	-0.15252258	-0.107163689	-0.173791089	0.05815	0.0066	9.0011	1.0534	9.0011	1.089	0.0066	9.0011	1.0534	9.0011	1.089	0.0066	9.0011	1.0534	9.0011	1.089			
MATH	7	250621	0	C-G	2	123256	0.510109041	0.237280319	0.164073649	0.142629973	0.108205686	0.00119764	0.490901383	0.490901383	0.300451738	-0.300451738	-0.266241874	-0.173791089	-0.4244	0.0064	-9.8991	0.9226	-9.8991	0.8688	-0.4244	0.0064	-9.8991	0.9226	-9.8991	0.8688	-0.4244	0.0064	-9.8991	0.9226	-9.8991	0.8688
MATH	7	250621	0	A-N	1	123256	0.510109041	0.237280319	0.164073649	0.142629973	0.108205686	0.00119764	0.490901383	0.490901383	0.300451738	-0.300451738	-0.266241874	-0.173791089	-0.4244	0.0064	-9.8991	0.9226	-9.8991	0.8688	-0.4244	0.0064	-9.8991	0.9226	-9.8991	0.8688	-0.4244	0.0064	-9.8991	0.9226	-9.8991	0.8688
MATH	7	813992	0	A-R	2	123256	0.400864867	0.287669566	0.157022782	0.152755241	0.400864867	0.001038489	0.44872111	0.077945557	-0.228630625	-0.278912513	0.44872111	0.5984	0.0066	-2.609	0.9924	-2.399	0.9903	0.5984	0.0066	-2.609	0.9924	-2.399	0.9903	0.5984	0.0066	-2.609	0.9924	-2.399	0.9903	
MATH	7	848699	0	A-R	2	123256	0.671223334	0.111787234	0.140017524	0.150179633	0.000384943	0.000894849	0.3388757495	0.3388757495	0.226939185	-0.120340713	-0.2040713	0.44872111	-0.2362	0.0064	9.0011	1.0804	9.0011	1.1155	-0.2362	0.0064	9.0011	1.0804	9.0011	1.1155	-0.2362	0.0064	9.0011	1.0804	9.0011	1.1155
MATH	7	848699	0	A-N	1	123256	0.671223334	0.111787234	0.140017524	0.150179633	0.000384943	0.000894849	0.3388757495	0.3388757495	0.226939185	-0.120340713	-0.2040713	0.44872111	-0.2362	0.0064	9.0011	1.0804	9.0011	1.1155	-0.2362	0.0064	9.0011	1.0804	9.0011	1.1155	-0.2362	0.0064	9.0011	1.0804	9.0011	1.1155
MATH	7	873994	0	A-N	2	123256	0.473940304	0.141029597	0.217401181	0.165492958	0.000770754	0.00170754	0.483974986	0.483974986	0.247950656	-0.483974986	-0.242514657	-0.805	0.0066	-9.8991	0.9107	-9.8992	0.8385	-0.805	0.0066	-9.8991	0.9107	-9.8992	0.8385	-0.805	0.0066	-9.8991	0.9107	-9.8992	0.8385	
MATH	7	873994	0	A-N	1	123256	0.473940304	0.141029597	0.217401181	0.165492958	0.000770754	0.00170754	0.483974986	0.483974986	0.247950656	-0.483974986	-0.242514657	-0.805	0.0066	9.0011	1.0742	9.0011	1.0956	-0.805	0.0066	9.0011	1.0742	9.0011	1.0956	-0.805	0.0066	9.0011	1.0742	9.0011	1.0956	
MATH	7	15675	0	B-E	2	123256	0.898666519	0.226747582	0.489866619	0.168032388	0.111945869	0.002847732	0.44081864	0.44081864	0.085838323	0.40081864	-0.219940766	-0.249285608	0.0402	0.0064	9.0011	1.0353	8.34	1.0325	0.0402	0.0064	9.0011	1.0353	8.34	1.0325	0.0402	0.0064	9.0011	1.0353	8.34	1.0325
MATH	7	37960	0	A-R	2	123256	0.52980788	0.1735737	0.52980788	0.00076225	0.00076225	0.489023914	0.489023914	0.153656201	0.489023914	-0.227732439	-0.229930189	0.489023914	-0.70732	0.0064	-9.8991	0.9328	-9.8991	0.8923	-0.70732	0.0064	-9.8991	0.9328	-9.8991	0.8923	-0.70732	0.0064	-9.8991	0.9328	-9.8991	0.8923
MATH	7	86576	0	C-G	2	123256	0.54592907	0.250949244	0.134858979	0.525459207	0.087563075	0.00859999	0.372749694	0.372749694	0.134756805	-0.134756805	-0.189845985	-0.0665	0.0064	9.0011	1.0629	9.0011	1.0733	-0.0665	0.0064	9.0011	1.0629	9.0011	1.0733	-0.0665	0.0064	9.0011	1.0629	9.0011	1.0733	
MATH	7	86576	0	A-N	1	123256	0.54592907	0.250949244	0.134858979	0.525459207	0.087563075	0.00859999	0.372749694	0.372749694	0.134756805	-0.134756805	-0.189845985	-0.0665	0.0064	9.0011	1.0629	9.0011	1.0733	-0.0665	0.0064	9.0011	1.0629	9.0011	1.0733	-0.0665	0.0064	9.0011	1.0629	9.0011	1.0733	
MATH	7	89273	0	A-R	2	123256	0.643491595	0.157517688	0.181224443	0.151551373	0.148643594	0.00233366	0.586604146	0.586604146	-0.268725782	-0.25710686	-0.225757782	0.586604146	0.3316	0.0065	-9.8992	0.8107	-9.8992	0.8012	0.3316	0.0065	-9.8992	0.8107	-9.8992	0.8012	0.3316	0.0065	-9.8992	0.8107	-9.8992	0.8012
MATH	7	89273	0	A-N	1	123256	0.643491595	0.157517688	0.181224443	0.151551373	0.148643594	0.00233366	0.586604146	0.586604146	-0.268725782	-0.25710686	-0.225757782	0.586604146	0.3316	0.0065	9.0011	1.0335	9.0011	1.0601	0.3316	0.0065	9.0011	1.0335	9.0011	1.0601	0.3316	0.0065	9.0011	1.0335	9.0011	1.0601
MATH	7	295397	0	B-E	1	123256	0.474021549	0.112865905	0.168624651	0.143149218	0.1474021549	0.00949244	0.427752029	0.427752029	-0.34201625	-0.109821972	-0.088839313	0.427752029	-0.46	0.0065	9.0011	1.0335	9.0011	1.0601	-0.46	0.0065	9.0011	1.0335	9.0011	1.0601	-0.46	0.0065	9.0011	1.0335	9.0011	1.0601
MATH	7	48576	0	A-R	2	123256	0.619593787	0.28191731	0.056045953	0.494975983	0.155953787	0.00373207	0.491745884	0.491745884	0.328071052	-0.236377808	-0.175298214	0.491745884	-0.6306	0.0064	-9.8991	0.9206	-9.8991	0.8704	-0.6306	0.0064	-9.8991	0.9206	-9.8991	0.8704	-0.6306	0.0064	-9.8991	0.9206	-9.8991	0.8704
MATH	7	990597	0	D-S	2	123256	0.645969689	0.124838397	0.157606693	0.260871682	0.155969689	0.00527358	0.412158354	0.412158354	0.14158354	-0.14158354	-0.242650210	-0.184819131	0.3155	0.0065	9.0011	1.0406	9.0011	1.0491	0.3155	0.0065	9.0011	1.0406	9.0011	1.0491	0.3155	0.0065	9.0011	1.0406	9.0011	1.0491
MATH	7	990597	0	A-N	1	123256	0.645969689	0.124838397	0.157606693	0.260871682	0.155969689	0.00527358	0.412158354	0.412158354	0.14158354	-0.14158354	-0.242650210	-0.184819131	0.3155	0.0065	9.0011	1.0406	9.0011	1.0491	0.3155	0.0065	9.0011	1.0406	9.0011	1.0491	0.3155	0.0065	9.0011	1.0406	9.0011	1.0491
MATH	7	614644	0	A-R	2	123256	0.560392821	0.189159148	0.560392821	0.163359187	0.08346044	0.00256377	0.40963321	0.40963321	-0.107906723	0.40963321	-0.2615489	-0.22615345	-0.229	0.0064	9.0011	1.0091	6.861	1.0291	-0.229	0.0064	9.0011	1.0091	6.861	1.0291	-0.229	0.0064	9.0011	1.0091	6.861	1.0291
MATH	7	614644	0	A-N	1	123256	0.560392821	0.189159148	0.560392821	0.163359187	0.08346044	0.00256377	0.40963321	0.40963321	-0.107906723	0.40963321	-0.2615489	-0.22615345	-0.229	0.0064	9.0011	1.0091	6.861	1.0291	-0.229	0.0064	9.0011	1.0091	6.861	1.0291	-0.229	0.0064	9.0011	1.0091	6.861	1.0291
MATH	7	652588	0	B-E	2	123256	0.584888362	0.095594761	0.091524956	0.584888362	0.22646362	0.00652329	0.464189767	0.464189767	-0.224651106	-0.234055554	0.464189767	-0.2248711403	-0.6409	0.0065	-9.8992	0.8733	-4.229	0.9782	-0.6409	0.0065	-9.8992	0.8733	-4.229	0.9782	-0.6409	0.0065	-9.8992	0.8733	-4.229	0.9782
MATH	7	652588	0	A-N	1	123256	0.584888362	0.095594761	0.091524956	0.584888362	0.22646362	0.00652329	0.464189767	0.464189767	-0.224651106	-0.234055554	0.464189767	-0.2248711403	-0.6409	0.0065	9.0011	0.9419	9.0011	0.9782	-0.6409	0.0065	9.0011	0.9419	9.0011	0.9782	-0.6409	0.0065	9.0011	0.9419	9.0011	0.9782
MATH	7	818813	0	C-G	1	123256	0.361905303	0.221141364	0.361905303	0.18639904	0.227120789	0.00652329	0.46962393	0.46962393	-0.16146234	0.46962393	-0.270949883	-0.124252791	0.8763	0.0068	-6.679	0.9788	1.761	1.008	0.8763	0.0068	-6.679	0.9788	1.761	1.008	0.8763	0.0068	-6.679	0.9788	1.761	1.008
MATH	7	680759	0	B-E	2	123256	0.596469657	0.085156098	0.090251185	0.232970403	0.059066497	0.00062829	0.434871417	0.434871417	0.271280539	-0.2329122083	-0.162969346	0.434871417	-0.415	0.0064	-9.8991	0.9782	-9.8991	0.9455	-0.415	0.0064	-9.8991	0.9782	-9.8991	0.9455	-0.415	0.0064	-9.8991	0.9782	-9.8991	0.9455
MATH	7	680759	0	A-N	1	123256	0.596469657	0.085156098	0.090251185	0.232970403	0.059066497	0.00062829	0.434871417	0.434871417	0.271280539	-0.2329122083	-0.162969346	0.434871417	-0.415	0.0064	9.0011	1.0329	9.0011	1.0416	-0.415	0.0064	9.0011	1.0329	9.0011	1.0416	-0.415	0.0064	9.0011	1.0329	9.0011	1.0416
MATH	7	933012	0	D-S	2	123256	0.645762802	0.08912345	0.15772802	0.157762802	0.194015823	0.00096871	0.309444621	0.309444621	-0.230060278	-0.221108647	0.309444621	-0.201568488	0.2526	0.0064	9.0011	1.1226	9.0011	1.1983	0.2526	0.0064	9.0011	1.1226	9.0011	1.1983	0.2526	0.0064	9.0011	1.1226	9.0011	1.1983
MATH	7	933012	0	A-N	1	123256	0.645762802	0.08912345	0.15772802	0.157762802	0.194015823	0.00096871	0.309444621	0.309444621	-0.230060278	-0.221108647	0.309444621	-0.201568488	0.2526	0.0064	9.00															

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Error	Infitt Mean Square	Outfit Mean Square	Male/Female DIF Code	White/Hispanic Black DIF Code	White/Hispanic DIF Code		
MATH	7	970575	1	A-R	2	14165	0.504129898	0.140769502	0.148881750	0.203741617	0.054421988	0.000153124	0.476383803	-0.244753387	-0.202018997	-0.202018997	0.476383803	0.0021	0.0189	-8.349	0.9531	-7.4391	0.9165	A+	A-	
MATH	7	637376	2	A-R	2	13642	0.75326199	0.098006107	0.775326199	0.070957338	0.504421988	0.000493818	0.424723129	-0.182866613	0.424723129	-0.182866613	0.424723129	-1.455	0.022	-9.4091	0.9021	-5.8891	0.8598	A-	A-	
MATH	7	796550	2	B-E	2	13642	0.60577628	0.243076728	0.243076728	0.243076728	0.243076728	0.001905879	0.419474015	-0.087028397	0.419474015	-0.087028397	0.419474015	0.7957	0.0203	1.571	1.0168	5.3111	1.0725	A-	A-	
MATH	7	114500	2	D-S	2	13642	0.541269609	0.100425158	0.100425158	0.126227826	0.23068465	0.000659727	0.457760667	-0.216577409	-0.180175978	0.457760667	-0.216577409	-0.157	0.0193	-4.259	0.9682	-3.239	0.9597	A-	A-	
MATH	7	636713	2	C-G	2	13642	0.45000733	0.393930509	0.45000733	0.097566339	0.57176367	0.00806333	0.499468693	-0.349868689	0.499468693	-0.349868689	0.499468693	0.3087	0.0195	-7.9691	0.9359	-5.4491	0.9378	A-	A-	
MATH	7	541714	2	C-G	2	13642	0.95294351	0.440477936	0.279292483	0.133118131	0.112705883	0.001159273	0.428593971	-0.133870996	0.428593971	-0.133870996	0.428593971	-0.133870996	1.565	0.0213	9.9014	1.3837	9.9016	1.57	A+	A+
MATH	7	729984	2	B-E	2	13642	0.40539085	0.40539085	0.27247471	0.12122856	0.198358202	0.01026242	0.447897425	-0.047897425	0.447897425	-0.047897425	0.447897425	1.643	0.0198	-1.569	0.9863	-0.859	0.9896	A+	A+	
MATH	7	425134	2	A-R	2	13642	0.465767483	0.139642281	0.139642281	0.198504618	0.193959843	0.001319455	0.281846469	-0.131816705	0.281846469	-0.131816705	0.281846469	0.2274	0.0194	9.9012	1.1858	9.9012	1.209	A+	A+	
MATH	7	147304	2	A-R	2	13642	0.409837667	0.147192494	0.409837667	0.197551679	0.243858899	0.000952399	0.197899797	-0.073100679	0.197899797	-0.073100679	0.197899797	0.5195	0.0198	9.9013	1.2995	9.9014	1.4242	A+	A+	
MATH	7	256510	2	A-N	1	13642	0.458290573	0.16786395	0.458290573	0.090529248	0.281776866	0.01246152	0.507211943	-0.152771145	0.507211943	-0.152771145	0.507211943	0.2659	0.0194	-9.5391	0.9244	-8.1591	0.9081	A+	A-	
MATH	7	956437	2	A-R	2	13642	0.348925993	0.348925993	0.174094908	0.376275993	0.087543823	0.001466061	0.420106994	-0.15564552	0.420106994	-0.15564552	0.420106994	0.6409	0.022	1.321	1.0119	4.3311	1.0551	A+	A+	
MATH	7	477693	2	A-R	2	13642	0.452049755	0.254947955	0.254947955	0.249890045	0.249890045	0.003445243	0.480832412	-0.180832412	0.480832412	-0.180832412	0.480832412	1.4297	0.0222	9.9012	1.2376	9.9016	1.6168	A+	A+	
MATH	7	182705	2	C-G	2	13642	0.404560903	0.1980648	0.404560903	0.237184196	0.11270928	0.001791842	0.3695626	-0.2630717	0.3695626	-0.2630717	0.3695626	0.3373	0.0195	9.8811	1.0839	7.4211	1.089	A-	A-	
MATH	7	637123	2	B-E	2	13680	0.600219298	0.0688859649	0.600219298	0.153263158	0.174049708	0.00804904	0.489120163	-0.163020772	0.489120163	-0.163020772	0.489120163	-0.4378	0.0195	-8.8991	0.9138	-9.0891	0.8751	A-	A-	
MATH	7	972295	3	C-G	2	13680	0.33245614	0.241959004	0.33245614	0.16739766	0.01461988	0.00023392	0.248670449	-0.060624385	0.248670449	-0.060624385	0.248670449	0.976	0.0206	9.9012	1.2827	9.9014	1.3549	A+	A+	
MATH	7	590985	3	A-N	1	13680	0.62949292	0.128874269	0.128874269	0.110233918	0.075365179	0.001169591	0.494913325	-0.250890902	0.494913325	-0.250890902	0.494913325	0.6409	0.0218	1.321	1.0119	4.3311	1.0551	A+	A+	
MATH	7	27012	3	C-G	1	13680	0.382947377	0.164619883	0.164619883	0.376292456	0.228333333	0.001754386	0.360404104	-0.150858887	0.360404104	-0.150858887	0.360404104	1.6872	0.02	6.7011	1.0619	8.9111	1.1175	A+	A+	
MATH	7	103152	3	D-S	2	13680	0.4016818713	0.102187178	0.102187178	0.232391813	0.170833333	0.00123392	0.42102928	-0.42102928	0.42102928	-0.42102928	0.42102928	0.5263	0.0198	2.741	1.0241	3.691	1.0452	A+	A+	
MATH	7	448791	3	B-E	2	13680	0.556263158	0.127997076	0.127997076	0.176535088	0.252632121	0.00102392	0.461332546	-0.229360382	0.461332546	-0.229360382	0.461332546	-0.2092	0.0193	-8.889	0.9706	-5.1591	0.9349	A+	A+	
MATH	7	545317	3	D-S	2	13680	0.179385965	0.179385965	0.13421026	0.511184211	0.000950292	0.26293386	0.150195239	0.06239386	0.150195239	0.06239386	0.150195239	2.0174	0.0248	9.9013	1.2817	9.9022	2.0232	A+	A+	
MATH	7	938997	3	B-E	2	13680	0.634950292	0.128874269	0.128874269	0.110233918	0.075365179	0.001169591	0.494913325	-0.250890902	0.494913325	-0.250890902	0.494913325	0.7947	0.0202	4.531	1.0429	5.4011	1.0734	A+	A+	
MATH	7	302542	3	C-G	1	13680	0.221710526	0.342982456	0.342982456	0.221710526	0.127704678	0.00155088	0.07341605	-0.009872738	0.07341605	-0.009872738	0.07341605	1.8858	0.0231	9.9014	1.3585	9.9019	1.9355	A+	A+	
MATH	7	203048	3	A-R	2	13680	0.247587719	0.190277778	0.247587719	0.23647608	0.322587719	0.00277778	0.076023018	-0.15448365	0.076023018	-0.15448365	0.076023018	1.659	0.0223	9.9014	1.3874	9.9018	1.8247	A+	A+	
MATH	7	793001	3	A-N	1	13680	0.463640351	0.181871345	0.181871345	0.643640351	0.044078947	0.29385965	0.00730994	0.477356524	-0.37175834	0.477356524	-0.37175834	0.503	0.0198	-8.8991	0.9185	-8.7091	0.8649	A+	A-	
MATH	7	834924	3	A-R	2	13680	0.657675439	0.110818713	0.657675439	0.114254386	0.115277778	0.00124269	0.496237075	-0.24862454	0.496237075	-0.24862454	0.496237075	0.7446	0.0199	-8.8991	0.8938	-8.8992	0.8216	A+	A-	
MATH	7	842465	4	C-G	2	13684	0.634950292	0.055623294	0.055623294	0.134674670	0.134674670	0.00146156	0.517197587	-0.224656648	0.517197587	-0.224656648	0.517197587	1.4644	0.0222	9.9012	1.1724	9.9014	1.3867	A+	A+	
MATH	7	662245	4	C-G	2	13684	0.627406678	0.08082422	0.08082422	0.148056124	0.101879026	0.00582422	0.362797943	-0.191053634	0.362797943	-0.191053634	0.362797943	0.8045	0.0199	2.221	1.0177	4.7611	1.0846	A+	A+	
MATH	7	773517	4	C-G	2	13684	0.382271266	0.25862321	0.382271266	0.25862321	0.316793343	0.000584624	0.297918309	-0.133849643	0.297918309	-0.133849643	0.297918309	0.6867	0.0204	9.9012	1.1623	9.9012	1.2406	A+	A-	
MATH	7	429557	4	A-N	1	13684	0.3455293774	0.29511546	0.29511546	0.119555568	0.263469746	0.004923774	0.542616232	-0.020967332	0.542616232	-0.020967332	0.542616232	0.8826	0.0204	9.9011	1.1881	9.9013	1.3466	A+	A-	
MATH	7	812640	4	C-G	2	13684	0.336159018	0.19694538	0.336159018	0.175021923	0.336159018	0.00190029	0.34712106	-0.233774529	0.34712106	-0.233774529	0.34712106	0.9349	0.0205	9.9011	1.1022	9.9012	1.1817	A+	A-	
MATH	7	109828	4	D-S	2	13684	0.19694538	0.19694538	0.237795966	0.336159018	0.00135405	0.000865654	0.027895671	-0.027895671	0.027895671	-0.027895671	0.027895671	1.8563	0.024	9.9014	1.4339	9.9022	2.2102	A+	A-	
MATH	7	172572	4	B-E	2	13684	0.418444899	0.31121634	0.418444899	0.100774627	0.00138468	0.00086451	0.465121893	-0.198516307	0.465121893	-0.198516307	0.465121893	0.4837	0.0196	-7.799	0.9597	-3.019	0.965	A+	A-	
MATH	7	838657	4	D-S	2	13684	0.316793343	0.261107863	0.316793343	0.348336563	0.328125	0.00740531	0.362797943	-0.191053634	0.362797943	-0.191053634	0.362797943	1.048	0.0196	-7.759	0.9768	-7.799	0.9904	A+	A-	
MATH	7	181498	4	A-N	1	13684	0.345580896	0.314089448	0.345580896	0.255700088	0.082651272	0.00442324	0.484001257	-0.327362498	0.484001257	-0.327362498	0.484001257	0.7976	0.0197	-7.2191	0.9452	-4.5091	0.9475	A+	A-	
MATH	7	68185	4	A-R	2	13684	0.286173633	0.286173633	0.302323882	0.193729904	0.21594563	0.001023093	0.457372574	-0.123623491	0.457372574	-0.123623491	0.457372574	1.2343	0.0214	9.9013	1.3035	9.9016	1.5855	A+	A-	
MATH	7	812660	4	A-N	1	13684	0.504204278	0.131467407	0.504204278	0.254862440	0.038132617	0.00146156	0.517197587	-0.224656648	0.517197587	-0.224656648	0.517197587	0.0575	0.0192	-8.8991	0.9203	-9.8991	0.8688	A+	A-	
MATH	7	762576	4	B-E	2	13684	0.381321251	0.155656242	0.155656242	0.142794205	0.3774335	0.00124232	0.262097588	-0.113955167	0.262097588	-0.113955167	0.262097588	0.6824	0.0199	9.9012	1.2424	9.9013	1.2824	A+	A-	
MATH	7	591504	5	C-G	1	13632	0.23635563	0.160173911	0.23635563	0.328125	0.00740531	0.00036568	0.457460022	-0.258340986	0.457460022	-0.258340986	0.457460022	0.4519	0.0196	-7.759	0.9768	-7.799	0.9904	A+	A-	
MATH	7	929316	5	C-G	1	13632	0.44415526	0.154269566	0.44415526	0.2688527	0.494331526	0.004904411	0.484001257	-0.327362498	0.484001257	-0.327362498	0.484001257	0.7976	0.0197	-7.2191	0.9452	-4.5091	0.9475	A+	A-	
MATH	7	196788	5	B-E	2	13632	0.59251761	0.105853873	0.59251761	0.2277946	0.066094484	0.00586854	0.457372574	-0.123623491	0.457372574	-0.123623491	0.457372574									

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Error	Infitt	Mean Square	Outfit	Mean Square	Male/Female	White/Black	White/Hispanic	Black/White	Black/Hispanic	Diff Code	Diff Code	
MATH	7	27993	7	A-R	2	13604	0.489294619	0.229932782	0.110849752	0.192964619	0.110849752	0.192964619	0.382613413	-0.071678377	-0.071678377	-0.192718713	0.382613413	1.1332	0.0211	0.541	1.0056	8.0411	1.1306	A+	A+	A+	A+	A+	A+		
MATH	7	892833	7	A-N	2	13604	0.465965892	0.18942958	0.129226698	0.213090989	0.465965892	0.001470156	0.334321447	-0.088591357	-0.175136041	-0.174875861	0.334321447	0.2209	0.0193	0.9011	1.0197	9.9011	1.1353	A+	A+	A+	A+	A+	A+		
MATH	7	88975	8	B	1	13648	0.73275147	0.414291911	0.338291332	0.14405041	0.372875147	0.103182537	0.091576625	-0.143826646	-0.001617725	-0.177399451	0.237460254	0.6954	0.0199	9.9012	1.2024	9.9012	1.2642	A+	A+	A+	A+	A+	A+		
MATH	7	640719	8	A-R	2	13648	0.260624267	0.211679367	0.276670574	0.248890038	0.260624267	0.001978312	0.050539225	-0.052772563	-0.011686755	-0.027909605	0.090559225	1.3518	0.0218	9.9013	1.3284	9.9016	1.6365	A+	A+	A+	A+	A+	A+		
MATH	7	810346	8	C-G	2	13648	0.350087925	0.350087925	0.272567409	0.25	0.125659437	0.001245604	0.206462512	-0.206462512	-0.012404117	-0.080946209	-0.171392433	0.8328	0.0202	9.9012	1.2368	9.9013	1.381	A+	A+	A+	A+	A+	A+		
MATH	7	718180	8	D-S	2	13648	0.475320737	0.219812467	0.575307377	0.320120164	0.082209848	0.000512896	0.385380582	-0.2239384632	0.353805822	0.353805822	-0.109304500	-0.1885321221	0.1702	0.0192	9.6311	1.0751	7.9011	1.0887	A-	A-	A-	A-	A-	A-	
MATH	7	718251	8	A-R	2	13648	0.715123209	0.475320737	0.707314267	0.634158851	0.15123209	0.006594371	0.385380582	-0.2239384632	0.353805822	0.353805822	-0.109304500	-0.1885321221	3.1698	0.0354	7.7112	1.2178	9.9014	3.3553	A+	A+	A+	A+	A+	A+	
MATH	7	878716	8	C-G	2	13648	0.294768464	0.360052753	0.209710505	0.294768464	0.133204331	0.001318875	0.223889476	0.036473694	-0.197088678	-0.197088678	0.247307708	-0.082845655	1.1384	0.021	9.9012	1.1865	9.9014	1.3709	A+	A+	A+	A+	A+	A+	
MATH	7	759045	8	D-S	2	13648	0.237164338	0.401524033	0.152526574	0.207356389	0.123710633	0.001090662	0.231861301	0.051812897	-0.16977195	-0.151996396	0.231861301	1.0584	0.0224	9.9012	1.1513	9.9014	1.3935	A+	A+	A+	A+	A+	A+		
MATH	7	571007	8	A-R	2	13648	0.318434936	0.334545413	0.318434936	0.334545413	0.00183177	0.056754701	0.056754701	0.056754701	0.056754701	0.056754701	0.056754701	0.056754701	0.9889	0.0206	9.9014	1.3948	9.9016	1.6082	A+	A+	A+	A+	A+	A+	
MATH	7	930048	8	C-G	2	13648	0.377784291	0.255949386	0.377784291	0.255949386	0.00138875	0.421797363	0.421797363	0.421797363	0.421797363	0.421797363	0.421797363	0.421797363	0.6662	0.0198	9.9012	1.2346	9.9013	1.3252	A+	A+	A+	A+	A+	A+	
MATH	7	307026	8	D-S	2	13648	0.533387263	0.066965919	0.703546029	0.123241301	0.150415102	0.00103875	0.452835663	-0.209648412	0.209648412	0.209648412	0.209648412	0.209648412	1.0669	0.0203	0.8991	0.908	8.5991	0.8504	B-	B-	B-	B-	B-	B-	
MATH	7	330334	8	B	1	13648	0.184760684	0.184276084	0.367451028	0.184760684	0.001318875	0.066234739	0.066234739	0.066234739	0.066234739	0.066234739	0.066234739	1.1336	0.0244	9.9013	1.2951	9.9019	1.9039	A+	A+	A+	A+	A+	A+		
MATH	7	752355	8	A-N	1	13648	0.456886746	0.212705158	0.456886746	0.177315358	0.184760684	0.000956231	0.232585948	-0.113439379	0.432695581	-0.241466641	-0.207648325	2.904	0.0193	9.9011	1.2889	9.8999	-1.809	9.8903	A+	A+	A+	A+	A+	A+	
MATH	7	980770	9	D-S	2	13598	0.641197235	0.077364318	0.215105163	0.641197235	0.065597882	0.00514782	0.486759917	-0.204069189	-0.298304268	0.486759917	-0.229069227	-0.6685	0.0197	-8.9991	0.8996	-8.9892	-0.8992	0.8238	A-	A-	A-	A-	A-	A-	
MATH	7	337313	9	B-E	2	13598	0.379982325	0.272172378	0.148845418	0.379982325	0.196352405	0.001544945	0.447296462	-0.277951449	-0.164033576	0.447296462	-0.105823103	0.6851	0.027	-5.659	0.9507	-1.529	0.981	A-	A-	A-	A-	A-	A-		
MATH	7	65627	9	A-R	2	13598	0.714075599	0.081703192	0.707616257	0.714075599	0.12663677	0.00735462	0.447296462	-0.277951449	-0.164033576	0.447296462	-0.105823103	1.0824	0.0209	-8.9991	0.9148	-5.2991	0.8978	A+	A+	A+	A+	A+	A+		
MATH	7	499318	9	C-G	2	13598	0.286218562	0.195322862	0.286218562	0.195322862	0.002573908	0.046867727	-0.122464726	0.046867727	-0.122464726	0.046867727	-0.122464726	1.1396	0.0214	9.9011	1.4373	9.9017	1.6954	A+	A+	A+	A+	A+	A+		
MATH	7	745960	9	B-E	2	13598	0.999854292	0.399852952	0.232029255	0.209295485	0.156934843	0.001323724	0.323585948	-0.232585948	0.323585948	-0.232585948	0.323585948	0.6563	0.0198	9.9011	1.1213	9.9012	1.1639	A+	A+	A+	A+	A+	A+		
MATH	7	632578	9	A-R	2	13598	0.298646826	0.408336842	0.448742462	0.193999118	0.205194162	0.000956231	0.246877284	-0.122464726	0.046867727	-0.122464726	0.046867727	1.1396	0.0224	9.9011	1.1468	9.9014	1.418	A+	A+	A+	A+	A+	A+		
MATH	7	593143	9	C-G	2	13598	0.307177526	0.228930725	0.307177526	0.258052655	0.204000588	0.00103103	0.270210421	-0.033723874	0.270210421	-0.033723874	0.270210421	1.0857	0.021	9.9012	1.1618	9.9013	1.2882	A-	A-	A-	A-	A-	A-		
MATH	7	718574	9	A-N	2	13598	0.439844095	0.193263715	0.439844095	0.223842044	0.02015002	0.000448942	0.421797363	-0.209648412	0.209648412	0.209648412	0.209648412	1.1794	0.0213	9.9012	1.2156	9.9013	1.2886	A-	A-	A-	A-	A-	A-		
MATH	7	227571	9	A-R	2	13598	0.820215002	0.199958756	0.172378021	0.423242004	0.001544945	0.084164678	-0.079017881	-0.19374816	-0.19374816	-0.19374816	-0.19374816	1.7923	0.0238	9.9013	1.3185	9.9018	1.807	A-	A-	A-	A-	A-	A-		
MATH	8	56362	0	B-F	2	12135	0.49068538	0.138632717	0.221706951	0.49068538	0.180529113	0.00642848	0.316883778	-0.146362017	-0.185240503	-0.316883778	-0.084379985	0.114	0.0065	9.9011	1.494	9.9012	1.1945	A-	A-	A-	A-	A-	A-		
MATH	8	80896	0	C-G	2	12135	0.151432588	0.151432588	0.151432588	0.151432588	0.000956231	0.367004410	-0.214017079	-0.174059756	-0.113566108	-0.167720487	-0.113010608	0.3137	0.0066	9.9011	1.0772	9.9011	1.1069	A-	A-	A-	A-	A-	A-		
MATH	8	640271	0	A-N	1	12135	0.477116331	0.071056497	0.731116331	0.252472055	0.01789187	0.00675815	0.473441413	-0.207842687	0.473441413	-0.207842687	0.473441413	-1.3888	0.0071	-8.9991	0.9083	-8.9892	-0.8992	0.8338	A-	A-	A-	A-	A-	A-	
MATH	8	752098	0	B-E	2	12135	0.718003874	0.079894507	0.092751473	0.718003874	0.180838474	0.000304941	0.400914564	-0.227293202	-0.193676721	-0.199145133	0.400914564	-1.2071	0.0069	-8.999	0.9588	-5.929	0.9604	A-	A-	A-	A-	A-	A-		
MATH	8	752098	0	B-E	2	12135	0.718003874	0.079894507	0.092751473	0.718003874	0.180838474	0.000304941	0.400914564	-0.227293202	-0.193676721	-0.199145133	0.400914564	-1.2071	0.0069	-8.999	0.9588	-5.929	0.9604	A-	A-	A-	A-	A-	A-		
MATH	8	819103	0	A-N	1	12135	0.580304094	0.273284708	0.580304094	0.085490584	0.062807633	0.000486257	0.506696014	-0.291632089	-0.273284708	-0.273284708	-0.273284708	-1.9405	0.008	-8.9992	0.8455	-8.9994	-0.8992	0.6272	A-	A-	A-	A-	A-	A-	
MATH	8	106170	0	B-F	2	12135	0.391940495	0.19784069	0.731940495	0.391940495	0.08738628	0.006775813	0.396064106	-0.138174812	0.396064106	-0.138174812	0.396064106	-1.3121	0.0071	-8.999	0.9624	-8.9991	0.9239	A-	A-	A-	A-	A-	A-		
MATH	8	646065	0	D-S	2	12135	0.395458854	0.196265635	0.101671715	0.548688464	0.15119343	0.00030206	0.432786209	-0.19966326	-0.257974316	-0.196197126	-0.257974316	-0.9423	0.0065	5.641	1.0174	4.191	1.0179	A-	A-	A-	A-	A-	A-		
MATH	8	732317	0	A-N	1	12135	0.656018461	0.129599868	0.102328265	0.656018461	0.01051668	0.000780781	0.429727783	-0.204224628	-0.20006526	-0.249829758	-0.204224628	-0.9423	0.0067	-8.9992	0.9729	-8.9899	-0.8992	0.6777	A-	A-	A-	A-	A-	A-	
MATH	8	934607	0	B-F	2	12135	0.55864675	0.55864675	0.142662876	0.159228582	0.140371698	0.001706201	0.48596035	-0.48596035	0.254675488	-0.27510101	-0.143882034	-0.3957	0.0065	-8.9991	0.9361	-8.9991	0.9093	A-	A-	A-	A-	A-	A-		
MATH	8	998102	0	C-G	2	12135	0.489248974	0.489248974	0.184711748	0.192261095	0.131569621	0.000475254	0.419871374	-0.195027446	-0.240349009	-0.118194993	0.0859	0.0065	8.5991	1.0229	9.9011	1.1079	9.9019	1.0479	A-	A-	A-	A-	A-	A-	
MATH	8	113133	0	B-F	2	12135	0.483957638	0.150096639	0.126797919	0.524720587	0.0946298	0.00576915	0.511025083	-0.307842723	-0.182465823	0.511025083	-0.209568137	-0.1693	0.0065	-8.9991	0.9113	-8.9991	0.8911	0.8911	0.8778	A-	A-	A-	A-	A-	A-
MATH	8	904565	0	B-F	2	12135	0.46036222	0.747006222	0.747006222	0.05094985	0.020226249	0.000956231	0.446361358	-0.227792508	-0.227792508	-0.227792508	-0.227792508	-1.3702	0.0071	-8.9991	0.8924	-8.9992	-0.8992	0.8085	A-	A-	A-	A-	A-	A-	
MATH	8	718510	0	B-F	2	12135	0.699212923	0.071880453	0.11804519	0.699212923	0.016262296	0.000975514	0.5																		

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Error	Infitt	Mean Square	Outfit	Mean Square	Outfit	Male/White/Black/Hispanic	Diff Code	Diff Code
MATH	8	230188	5	BE	2	13418	0.15141893203	0.1604561004	0.5111400256	0.278431957	0.0048964078	0.0002981107	0.3960696764	-0.1342928532	-0.224285832	-0.212893942	-0.212893942	-0.3183	0.0199	6.9111	1.0547	5.4611	1.0718	A+	A-	A-	A-
MATH	8	875975	5	BF	2	13418	0.184893203	0.172007577	0.117975853	0.418393023	0.0288934551	0.001266955	0.333522613	-0.2208095	0.3260208896	0.333522613	-0.019881622	-0.529	0.0199	9.9011	1.296	9.9012	1.1826	A+	A-	A-	A-
MATH	8	828975	5	AF	2	13418	0.15550901774	0.059091074	0.159189149	0.138396184	0.19373305	0.001117901	0.384210911	0.384210911	0.384210911	-0.163441265	-0.15130196	-0.3248	0.0199	6.7011	1.0524	6.4211	1.0898	A-	A-	A-	A-
MATH	8	897147	5	BF	2	13418	0.1435489964	0.187956476	0.413335818	0.21314652	0.001193248	0.000894921	0.351674166	-0.216851121	0.351674166	-0.2021000532	-0.106858619	0.3846	0.0199	9.9011	1.0954	9.9011	1.147	A+	A-	A-	A-
MATH	8	673149	6	BE	1	13409	0.0239981654	0.383175479	0.293981654	0.167872325	0.153323853	0.000894921	0.227384677	-0.102099439	0.227384677	-0.117905499	-0.023920275	1.0363	0.0214	9.9012	1.2024	9.9014	1.4319	A+	A+	A+	A+
MATH	8	101955	6	D	2	13409	0.1946495323	0.176740777	0.417864523	0.22813036	0.137054016	0.001938996	0.352532334	-0.162795004	0.352532334	-0.095296885	-0.184198114	0.3414	0.0198	9.6511	1.0837	9.9011	1.3166	A+	A+	A+	A+
MATH	8	274707	6	C	2	13409	0.349005666	0.201730181	0.216464328	0.265120404	0.138490566	0.000894921	0.266934905	-0.105847907	0.266934905	-0.07471917	0.266934905	0.6766	0.0204	9.9012	1.1897	9.9011	1.3166	A+	A+	A+	A+
MATH	8	504469	6	D	2	13409	0.369005892	0.135207096	0.261540756	0.231784622	0.169903592	0.000694948	0.363733804	-0.224245089	0.363733804	-0.144525724	0.363733804	0.6018	0.0203	6.8111	1.0717	9.9012	1.1527	A+	A-	A-	A-
MATH	8	507766	6	BE	1	13409	0.588261615	0.588261615	0.135953464	0.152733239	0.1423305894	0.000671191	0.344284827	-0.152364828	-0.192527226	-0.144301458	-0.5326	0.0196	9.9011	1.0815	8.5111	1.1267	A+	A-	A-	A-	
MATH	8	718240	6	C	2	13409	0.348198971	0.134238198	0.312924155	0.20105899	0.348198971	0.00208815	0.354932781	-0.191085649	0.354932781	-0.20832318	0.354932781	0.7178	0.0205	6.0211	1.078	9.9012	1.1511	A+	A-	A-	A-
MATH	8	404416	6	C	2	13409	0.307940047	0.267730629	0.340899048	0.219703184	0.168618002	0.001566112	0.387741628	-0.157272933	0.387741628	-0.095957696	-0.163216018	0.7592	0.0206	1.2711	1.0232	8.1411	1.1229	A+	A+	A+	A+
MATH	8	136410	6	C	2	13409	0.30834447	0.30934447	0.17816392	0.17816392	0.17816392	0.00969498	0.167591555	-0.15841523	0.167591555	-0.138625058	0.167591555	0.9432	0.0211	9.9013	1.3052	9.9015	1.4685	A+	A+	A+	A+
MATH	8	627929	6	BF	2	13409	0.312700425	0.312700425	0.339472088	0.195838616	0.149601014	0.001798943	0.202438945	-0.055167955	-0.097350258	-0.077341032	0.202438945	0.9328	0.0211	9.9012	1.2334	9.9014	1.4424	A+	A-	A-	A-
MATH	8	762958	6	BF	2	13409	0.414273995	0.344053173	0.115966888	0.141093228	0.001193228	0.000894921	0.187837156	0.1113106133	-0.24983617	0.187837156	-0.194465022	0.3581	0.0198	9.9013	1.3004	9.9014	1.4085	A+	A-	A-	A-
MATH	8	260710	6	A	2	13409	0.445962441	0.445962441	0.33710761	0.121560146	0.093519278	0.001267805	0.476425288	-0.156235688	-0.26838898	-0.252346921	0.476425288	0.1946	0.0196	-7.0791	0.9435	-5.6491	0.9326	A-	A-	A-	A-
MATH	8	800428	6	BE	2	13409	0.347091912	0.271310314	0.154899565	0.493701991	0.134378732	0.001566112	0.380970918	-0.118583436	-0.199213557	0.380970918	-0.183610414	0.6359	0.0197	5.6611	1.0472	4.8711	1.1008	A+	A-	A-	A-
MATH	8	224031	7	BE	2	13399	0.358161057	0.156354952	0.358161057	0.174760192	0.128577595	0.001566112	0.260059946	-0.093377781	0.260059946	-0.185005051	0.260059946	0.259	0.0202	9.9012	1.1563	9.9013	1.2953	A+	A-	A-	A-
MATH	8	586379	7	BF	2	13399	0.408015524	0.408015524	0.258374901	0.242480074	0.089260393	0.001997222	0.291039625	-0.291039625	-0.09624568	-0.144525724	0.291039625	0.4083	0.0198	9.9012	1.1507	9.9012	1.1979	A+	A-	A-	A-
MATH	8	362071	7	BF	2	13399	0.510369434	0.098383002	0.149855051	0.10569434	0.239723482	0.000625032	0.373493567	-0.14750781	-0.121501969	-0.201409487	0.373493567	0.273	0.0196	7.8111	1.0639	8.1311	1.0972	A+	A-	A-	A-
MATH	8	864714	7	A	2	13399	0.53254653	0.53254653	0.20165684	0.145682514	0.09836555	0.001044854	0.48840782	0.48840782	0.22824861	-0.231277701	0.48840782	-0.3383	0.0194	-8.9911	0.932	-9.5991	0.8863	A+	A+	A+	A+
MATH	8	208731	7	BE	2	13399	0.398164042	0.24546608	0.241659825	0.398164042	0.113068139	0.000820957	0.205713734	-0.122938654	-0.078224055	0.205713734	-0.040444788	0.4444	0.0198	9.9012	1.244	9.9013	1.3203	A+	A-	A-	A-
MATH	8	332176	7	D	2	13399	0.222106127	0.222106127	0.261512053	0.290767968	0.23282673	0.000895589	0.112888164	-0.1042070904	0.262434913	-0.093278103	0.112888164	1.495	0.0231	9.9013	1.3123	9.9012	2.2007	A+	A-	A-	A-
MATH	8	473299	7	C	2	13399	0.254198074	0.254198074	0.229270841	0.180386596	0.334129413	0.000895589	0.119697537	0.119697537	-0.103863455	-0.199070399	0.119697537	1.276	0.0221	9.9013	1.2885	9.9016	1.6225	A+	A-	A-	A-
MATH	8	461647	7	BF	2	13399	0.324651093	0.385401896	0.131875513	0.156280319	0.324651093	0.001044854	0.340743742	0.050386757	-0.245941675	-0.274492491	0.340743742	0.8465	0.0207	5.6711	1.0554	9.9012	1.1779	A+	A-	A-	A-
MATH	8	880674	7	BE	1	13399	0.442125446	0.442125446	0.187103515	0.215016046	0.155160833	0.000232897	0.271363163	-0.126933796	-0.040226956	-0.187422763	0.271363163	0.2168	0.0195	9.9012	1.1779	9.9012	1.2208	A-	A-	A-	A-
MATH	8	836889	7	BF	2	13399	0.45698977	0.177028136	0.343139537	0.245669947	0.177028136	0.001716546	0.435391069	-0.067669094	0.065164077	0.435391069	-0.182843876	0.482	0.0201	0.081	1.0007	4.1211	1.0563	A+	A+	A+	A+
MATH	8	207405	7	D	2	13399	0.42735292	0.357563997	0.225987014	0.247331919	0.16732592	0.000895589	0.018185897	-0.17652462	-0.093388006	0.018185897	-0.08185897	-0.8234	0.0201	-8.9911	0.8757	-9.8992	0.8265	A+	A+	A+	A+
MATH	8	995738	7	BF	2	13399	0.597200875	0.259720802	0.259720802	0.354915862	0.124904935	0.000895589	0.124904935	-0.022602008	-0.143617987	0.124904935	1.2401	0.022	9.9013	1.2629	9.9016	1.6665	A+	A-	A-	A-	
MATH	8	505895	8	BF	1	13453	0.510369434	0.098383002	0.149855051	0.10569434	0.239723482	0.000625032	0.403132423	-0.244128213	-0.126718659	0.403132423	-0.193951121	-0.1263	0.0195	6.071	1.0883	4.2711	1.0575	A+	A+	A+	A+
MATH	8	589730	8	D	2	13453	0.395673827	0.395673827	0.153051364	0.270422954	0.17735821	0.00208132	0.435391069	-0.067669094	0.065164077	0.435391069	-0.182843876	0.482	0.0201	0.081	1.0007	4.1211	1.0563	A+	A+	A+	A+
MATH	8	185945	8	A	2	13453	0.446071502	0.133286828	0.133286828	0.446071502	0.118263594	0.006257166	0.005996463	-0.28892825	0.458189064	-0.13757653	-0.174242004	0.2058	0.0212	5.1411	1.0535	8.6311	1.148	A+	A-	A-	A-
MATH	8	544111	8	D	2	13453	0.240981956	0.196684754	0.196684754	0.37419163	0.233162613	0.000229996	0.368477871	-0.1919188639	-0.071497347	0.368477871	-0.162971094	0.5913	0.0218	9.9011	1.0818	9.9012	1.1502	A+	A-	A-	A-
MATH	8	11680	8	BE	2	13453	0.37419163	0.196684754	0.196684754	0.37419163	0.233162613	0.000229996	0.368477871	-0.1919188639	-0.071497347	0.368477871	-0.162971094	0.5913	0.0218	9.9011	1.0818	9.9012	1.1502	A+	A-	A-	A-
MATH	8	425792	8	C	2	13453	0.276958603	0.232215863	0.232215863	0.276958603	0.187913147	0.001431411	0.045155814	-0.204904935	-0.140540151	-0.134999944	0.045155814	1.692	0.0203	9.9014	1.3854	9.9012	2.0277	A+	A-	A-	A-
MATH	8	505636	8	BF	2	13453	0.25822004	0.248758418	0.248758418	0.25822004	0.193036640	0.001044854	0.235551519	-0.239245354	0.235551519	-0.130559283	0.235551519	1.2889	0.0223	9.9012	1.1588	9.9016	1.5966	A+	A-	A-	A-
MATH	8																										

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Estimate	IRT Error	Infitt	Mean Square	Outfit Square	Male/ Female DIF Code	White/ Hispanic Code	Black DIF Code	White/ Hispanic DIF Code	
SCIENCE	4	135907	0	A	2	123673	0.1566493899	0.18777445	0.07601495	0.167570933	0.001091588	0.445465428	-0.27815234	0.45465428	-0.185359273	-0.185359273	0.8223	0.0085	-9.899	0.9643	-9.899	0.9643	-9.899	0.9643	-9.899	0.9643	
SCIENCE	4	954145	0	A	2	123673	0.1832162234	0.045732668	0.0432162234	0.054320969	0.065107178	0.00130182	0.338431781	-0.204851789	-0.186903148	-0.186903148	-0.186903148	-0.8947	0.0063	3.671	1.0719	9.9011	9.9011	9.9011	9.9011	9.9011	1.1294
SCIENCE	4	119004	0	A	2	123673	0.0726504473	0.0871108746	0.0726504473	0.104609538	0.0019811303	0.14231108	0.5173679	-0.288917679	0.51573679	-0.24543679	-0.24543679	-1.908	0.0072	-9.8991	0.9096	-9.8992	0.9096	-9.8992	0.9096	-9.8992	0.9096
SCIENCE	4	890974	0	A	2	123673	0.078504144	0.081222255	0.070629806	0.7875504144	0.0538088669	0.0014031108	0.449966647	-0.244818109	0.449966647	-0.19132484	-0.241735438	0.4882	0.0066	-9.8991	0.9096	-9.8992	0.9096	-9.8992	0.9096	-9.8992	0.9096
SCIENCE	4	219556	0	B	2	123673	0.167222807	0.07085621	0.617822807	0.194990014	0.113282608	0.001520138	0.434846965	-0.305266441	-0.228057592	-0.190045721	-0.190045721	-0.5717	0.0077	-6.729	0.972	-6.6691	0.947	-6.6691	0.947	-6.6691	0.947
SCIENCE	4	469488	0	B	2	123673	0.0785320967	0.04817543	0.065690051	0.108026813	0.785320967	0.00574095	0.434846965	-0.305266441	-0.228057592	-0.190045721	-0.190045721	-0.5717	0.0077	-6.729	0.972	-6.6691	0.947	-6.6691	0.947	-6.6691	0.947
SCIENCE	4	468413	0	B	2	123673	0.08480267	0.562337778	0.052148319	0.08238581	0.190148319	0.00081667	0.35264822	-0.193626841	-0.35264822	-0.158826827	-0.158826827	0.7833	0.0065	9.9011	1.0859	9.9011	1.0859	9.9011	1.0859	9.9011	1.1122
SCIENCE	4	88329	0	C	2	123673	0.0798177452	0.055429428	0.055429428	0.056511931	0.087828386	0.00052558	0.366083331	-0.266083331	-0.201771685	-0.189714168	-0.189714168	-0.6381	0.0078	-9.8992	0.8429	-9.8992	0.8429	-9.8992	0.8429	-9.8992	0.8429
SCIENCE	4	799275	0	C	2	123673	0.089840143	0.030984936	0.034914654	0.089840143	0.030984936	0.001196704	0.409199922	-0.3840757011	-0.2727013328	0.491999222	-0.261174338	-1.5426	0.0059	-9.8992	0.8067	-9.8994	0.8067	-9.8994	0.8067	-9.8994	0.8067
SCIENCE	4	379901	0	C	2	123673	0.093463165	0.043396699	0.021775165	0.028397468	0.903463165	0.001018816	0.376556228	-0.248338764	-0.184083352	-0.184083352	-0.184083352	-1.6108	0.0101	-9.8991	0.906	-9.8992	0.906	-9.8992	0.906	-9.8992	0.906
SCIENCE	4	464360	0	C	2	123673	0.00643633	0.074680811	0.038027702	0.800643633	0.084933656	0.000654953	0.469452682	-0.2620212152	-0.253067314	-0.253067314	-0.2620212152	-0.6327	0.0078	-9.8991	0.9146	-9.8992	0.9146	-9.8992	0.9146	-9.8992	0.9146
SCIENCE	4	169340	0	C	2	123673	0.08480267	0.804848269	0.10005451	0.04666374	0.054466674	0.0047370446	0.474370446	-0.247370446	-0.247370446	-0.247370446	-0.247370446	-0.7008	0.0079	-9.8991	0.9146	-9.8992	0.9146	-9.8992	0.9146	-9.8992	0.9146
SCIENCE	4	68413	0	C	2	123673	0.083706476	0.036706476	0.036107139	0.083706476	0.036107139	0.001948687	0.511711253	-0.177711253	-0.229426339	-0.229426339	-0.229426339	-0.7378	0.0064	9.9011	1.1111	9.9012	1.1111	9.9012	1.1111	9.9012	1.1111
SCIENCE	4	425069	0	C	2	123673	0.0858581623	0.040638996	0.04029137	0.0599002369	0.8538581623	0.001379992	0.535687443	-0.217735658	-0.217735658	-0.217735658	-0.217735658	-1.125	0.0088	-9.8992	0.8358	-9.8994	0.8358	-9.8994	0.8358	-9.8994	0.8358
SCIENCE	4	167782	0	D	2	123673	0.27334988	0.043234983	0.084553621	0.827334988	0.043234988	0.000805854	0.532756584	-0.30534916	-0.290987579	0.52756584	-0.268211324	-0.8977	0.0083	-9.8991	0.8609	-9.8993	0.8609	-9.8993	0.8609	-9.8993	0.8609
SCIENCE	4	896437	0	D	2	123673	0.04174097	0.04174097	0.04174097	0.14210469	0.094499204	0.00159291	0.489337325	-0.243676516	-0.243676516	-0.243676516	-0.243676516	0.0012	0.007	-9.8991	0.9065	-9.8992	0.9065	-9.8992	0.9065	-9.8992	0.9065
SCIENCE	4	936445	0	D	2	123673	0.062841666	0.158029643	0.104655018	0.612421058	0.105407001	0.00173037	0.4857529271	-0.202408588	-0.239397326	0.4857529271	-0.239397326	0.4185	0.0066	-8.899	0.9665	-8.8991	0.9665	-8.8991	0.9665	-8.8991	0.9665
SCIENCE	4	137510	0	D	2	123673	0.053409809	0.0502992	0.069594939	0.845309809	0.032494795	0.00076241	0.371892897	-0.204805773	-0.204805773	-0.204805773	-0.177251384	-1.0227	0.0085	-9.2929	0.9849	-9.8992	0.9849	-9.8992	0.9849	-9.8992	0.9849
SCIENCE	4	893425	0	D	2	123673	0.055555942	0.112813629	0.565555942	0.0938647847	0.225045079	0.001609842	0.302283906	-0.170441758	-0.222325973	-0.222325973	-0.177251384	0.7097	0.0065	9.9011	1.1493	9.9012	1.1493	9.9012	1.1493	9.9012	1.2027
SCIENCE	4	606263	0	D	2	123673	0.742514534	0.102787189	0.742514534	0.074535266	0.76184778	0.002239777	0.548446617	-0.252823835	0.548446617	-0.311516447	-0.285188834	-0.2106	0.0072	-9.8992	0.8411	-9.8993	0.8411	-9.8993	0.8411	-9.8993	0.8411
SCIENCE	4	693873	0	D	2	123673	0.041509464	0.057079399	0.065883948	0.032852765	0.841509464	0.001026902	0.467254187	-0.2496090973	-0.250429179	-0.269978954	-0.269978954	-0.9044	0.0065	-9.8991	0.8531	-9.8992	0.8531	-9.8992	0.8531	-9.8992	0.8531
SCIENCE	4	993393	0	D	2	123673	0.0582342144	0.135348864	0.135348864	0.123106303	0.582342144	0.001439279	0.356958176	-0.149598539	-0.165913553	-0.195583631	-0.195583631	0.6354	0.0063	9.9011	1.0889	9.9011	1.0889	9.9011	1.0889	9.9011	1.1118
SCIENCE	4	945070	0	D	2	123673	0.052873459	0.135397379	0.097426277	0.52873459	0.235306009	0.001649511	0.322819626	-0.102700146	-0.166242607	-0.166242607	-0.177373384	-0.9138	0.0064	9.9011	1.1111	9.9012	1.1111	9.9012	1.1111	9.9012	1.1614
SCIENCE	4	872677	0	D	2	123673	0.0535377164	0.095073298	0.095073298	0.1152123042	0.192708568	0.001095376	0.4645711496	-0.219737339	-0.246299032	-0.246299032	-0.19745811	-0.6305	0.0074	-8.819	0.9622	-8.8991	0.9622	-8.8991	0.9622	-8.8991	0.9622
SCIENCE	4	831170	0	D	2	123673	0.6535377164	0.095073298	0.095073298	0.1152123042	0.192708568	0.001095376	0.4645711496	-0.219737339	-0.246299032	-0.246299032	-0.19745811	-0.6305	0.0074	-8.819	0.9622	-8.8991	0.9622	-8.8991	0.9622	-8.8991	0.9622
SCIENCE	4	740133	0	C	2	123673	0.663224794	0.663224794	0.663150405	0.099245591	0.171072101	0.001309906	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195
SCIENCE	4	609269	0	B	2	123673	0.850735407	0.027855716	0.066417084	0.850735407	0.027855716	0.001317459	0.474821697	-0.237633927	0.474821697	-0.26168917	-0.238760622	-0.7912	0.0081	-9.8991	0.9082	-9.8992	0.9082	-9.8992	0.9082	-9.8992	0.9082
SCIENCE	4	471824	0	B	2	123673	0.743452492	0.011518094	0.063364849	0.125451796	0.067068882	0.00120479	0.404593938	-0.175815658	-0.405939384	-0.199746342	-0.221478819	-0.4996	0.0066	7.531	1.0215	-0.399	0.9982	-0.399	0.9982	-0.399	0.9982
SCIENCE	4	793858	0	B	2	123673	0.760736352	0.06860197	0.096334843	0.73601352	0.087078562	0.001746541	0.376123756	-0.254861462	-0.268845282	-0.268845282	-0.268845282	-0.2621	0.0073	-9.8991	0.9417	-9.8991	0.9417	-9.8991	0.9417	-9.8991	0.9417
SCIENCE	4	473051	0	A	2	123673	0.0535377164	0.095073298	0.095073298	0.1152123042	0.192708568	0.001095376	0.4645711496	-0.219737339	-0.246299032	-0.246299032	-0.19745811	-0.6305	0.0074	-8.819	0.9622	-8.8991	0.9622	-8.8991	0.9622	-8.8991	0.9622
SCIENCE	4	831170	0	D	2	123673	0.6535377164	0.095073298	0.095073298	0.1152123042	0.192708568	0.001095376	0.4645711496	-0.219737339	-0.246299032	-0.246299032	-0.19745811	-0.6305	0.0074	-8.819	0.9622	-8.8991	0.9622	-8.8991	0.9622	-8.8991	0.9622
SCIENCE	4	740133	0	C	2	123673	0.663224794	0.663224794	0.663150405	0.099245591	0.171072101	0.001309906	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195	0.397478195
SCIENCE	4	609269	0	B	2	123673	0.850735407	0.027855716	0.066417084	0.850735407	0.027855716	0.001317459	0.474821697	-0.237633927	0.474821697	-0.26168917	-0.238760622	-0.7912	0.0081	-9.8991	0.9082	-9.8992	0.9082	-9.8992	0.9082	-9.8992	0.9082
SCIENCE	4	471824	0	B	2	123673	0.743452492	0.011518094	0.063364849	0.125451796	0.067068882	0.00120479	0.404593938	-0.175815658	-0.405939384	-0.199746342	-0.221478819	-0.4996	0.0066	7.531	1.0215	-0.399	0.9982	-0.399	0.9982	-0.399	0.9982
SCIENCE	4	793858	0	B	2	123673	0.760736352	0.06860197	0.096334843	0.73601352	0.087078562	0.001746541	0.376123756	-0.254861462	-0.268845282	-0.268845282	-0.268845282	-0.2621	0.0073	-9.8991	0.9417	-9.8991	0.9417	-9.8991	0.9417	-9.8991	0.9417
SCIENCE	4	473051	0	A	2																						

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Estimate	IRT Error	Infitt	Mean Square	Outfit	Mean Square	Outfit	Male/Black	Female/White	Hispanic	Black/White	Diff Code	Diff Code
SCIENCE	4	291850	4	A	2	10186	0.647064598	0.1161398	0.0903200	0.141861378	0.003141567	0.439825818	-0.223614207	-0.262209035	-0.171442441	0.2987	0.0232	-2.089	0.9787	-2.889	0.9529	A+	A-							
SCIENCE	4	291851	4	A	3	10186	0.454515276	0.143923032	0.106126055	0.445415276	0.299921461	0.003436089	0.253112196	-0.127498855	-0.210817264	0.231112996	0.0234	0.0234	9.0112	1.544	9.013	1.2565	A-	A-						
SCIENCE	4	455696	4	A	2	10186	0.719793049	0.0603793049	0.118613782	0.118613782	0.0677353049	0.528717586	0.528717586	-0.303829863	-0.270435627	-0.246387744	0.252871586	0.1266	0.0237	-8.991	0.8784	-8.992	0.8058	A+	A-					
SCIENCE	4	456794	4	A	2	10186	0.449145887	0.449145887	0.114372668	0.265069704	0.1602023562	0.001959484	0.254997782	0.254997782	-0.201867588	0.020567335	-0.18757784	1.3211	0.0223	9.012	1.703	9.013	1.2899	A+	A-					
SCIENCE	4	713229	4	A	2	10186	0.411643432	0.151580601	0.17160809	0.411643432	0.260455527	0.003436089	0.221403556	-0.18219692	-0.122707769	0.221403556	0.07684263	1.5132	0.0225	9.012	1.178	9.013	1.3411	A-	A-					
SCIENCE	4	655135	4	C	2	10186	0.616925191	0.051148635	0.121998337	0.158948368	0.061692519	0.202552523	0.378914839	-0.295207107	-0.187721218	-0.326127779	0.378914839	0.2176	0.0234	4.451	1.0476	6.321	1.1133	A-	A-					
SCIENCE	4	421029	4	B	2	10186	0.522580102	0.522580102	0.171835043	0.154329472	0.144610249	0.004221448	0.213199695	0.213199695	-0.064355917	-0.156427334	-0.052598592	0.9494	0.0234	9.012	1.235	9.013	1.3151	A+	A+					
SCIENCE	4	225579	4	C	2	10186	0.662379373	0.125368192	0.1089731	0.662379373	0.100235618	0.001767131	0.488566277	-0.214840246	-0.283788812	0.488566277	-0.224784188	-0.0919	0.0234	-7.291	0.9429	-8.2591	0.8635	A+	A-					
SCIENCE	4	77677	5	A	2	10277	0.714884627	0.714884627	0.089670137	0.179332046	0.028896789	0.002238007	0.324261004	0.324261004	-0.198677738	-0.150529189	-0.19724964	0.2139	0.0245	8.3411	1.1023	7.0412	1.1591	A-	A-					
SCIENCE	4	827286	5	B	2	10277	0.64405955	0.64405955	0.05303104	0.16639097	0.13126398	0.003016444	0.38310569	0.38310569	-0.298704165	-0.193505788	-0.119683821	0.342	0.0232	4.9111	1.051	6.9211	1.1207	A-	A-					
SCIENCE	4	894186	5	A	2	10277	0.697382905	0.697382905	0.093201693	0.112678797	0.003892186	0.285434443	-0.172834757	-0.426344443	-0.172834757	-0.228624988	-0.149884419	0.0324	0.0224	-2.139	0.9759	-1.509	0.9699	A+	A-					
SCIENCE	4	894321	5	A	2	10277	0.665271762	0.129690808	0.094882116	0.107424346	0.001946609	0.539573968	0.539573968	-0.244099599	-0.318464266	-0.148662634	0.2182	0.0235	-8.991	0.8727	-8.992	0.7961	A-	A-						
SCIENCE	4	900062	5	B	2	10277	0.3160409945	0.100126496	0.133396604	0.662060913	0.093348059	0.003308358	0.492926579	-0.217492717	-0.232069067	-0.201472949	0.2363	0.0234	-1.359	0.9887	-1.649	0.9708	A+	A-						
SCIENCE	4	976185	5	B	2	10277	0.3160409945	0.100126496	0.133396604	0.662060913	0.093348059	0.003308358	0.492926579	-0.217492717	-0.232069067	-0.201472949	0.2363	0.0234	-1.359	0.9887	-1.649	0.9708	A+	A-						
SCIENCE	4	47672	5	A	3	10277	0.302130972	0.143931359	0.230612046	0.302130972	0.191061983	0.002335312	0.162197741	-0.250190932	-0.097209113	0.162197741	0.113882219	2.1464	0.0239	9.012	1.178	9.016	1.6038	A+	A-					
SCIENCE	4	824144	5	A	3	10277	0.959868625	0.196458911	0.599688625	0.113749149	0.086984553	0.001654179	0.285434443	-0.172834757	-0.426344443	-0.172834757	-0.228624988	-0.149884419	0.0324	0.0224	-2.139	0.9759	-1.509	0.9699	A+	A-				
SCIENCE	4	894321	5	A	2	10277	0.665271762	0.129690808	0.094882116	0.107424346	0.001946609	0.539573968	0.539573968	-0.244099599	-0.318464266	-0.148662634	0.2182	0.0235	-8.991	0.8727	-8.992	0.7961	A-	A-						
SCIENCE	4	929332	5	B	2	10277	0.309720736	0.287340664	0.309720736	0.22146541	0.10161594	0.009341247	0.254948578	-0.049160756	-0.254948578	-0.098908292	2.1022	0.0238	8.0411	1.0824	9.9012	1.1642	A-	A-						
SCIENCE	4	315694	6	A	2	10271	0.74884627	0.734884627	0.08158894	0.083730893	0.04333074	0.083816157	0.001948466	0.454674031	-0.254856703	-0.181467688	-0.226625920	0.4401	0.0228	-4.229	0.959	-5.8691	0.9138	A-	A-					
SCIENCE	4	116193	6	A	2	10297	0.75776458	0.125206898	0.113625328	0.084005019	0.524390988	0.005244246	0.434333819	-0.232056362	-0.45496381	-0.258467594	0.434333819	-0.2674	0.0252	-1.899	0.9753	-2.4191	0.9464	A-	A-					
SCIENCE	4	260625	6	A	2	10271	0.888423717	0.030084705	0.888423717	0.040015578	0.033005555	0.00778892	0.439927475	-0.247382006	0.439927475	-0.249431223	-0.246364194	-1.4716	0.0334	-5.8091	0.8755	-6.9793	0.7188	A+	A-					
SCIENCE	4	347817	6	A	2	10271	0.821618185	0.127839564	0.07862915	0.110407945	0.027816185	0.001155568	0.018995529	-0.1827620819	-0.274694387	-0.089244548	0.8173	0.0223	6.7411	1.0618	6.3411	1.0853	A+	A+						
SCIENCE	4	302808	6	A	2	10271	0.852107877	0.057443287	0.852107877	0.049326716	0.3781873625	0.001655146	0.517151845	-0.284595688	0.517151845	-0.285788626	-0.269814922	-1.0983	0.03	7.9692	0.8302	-8.993	0.6731	A-	A-					
SCIENCE	4	161790	6	A	3	10271	0.620582222	0.158893973	0.620582222	0.134545398	0.082367832	0.001849669	0.45674031	-0.254856703	-0.181467688	-0.226625920	0.4401	0.0228	-4.229	0.959	-5.8691	0.9138	A-	A-						
SCIENCE	4	427132	7	A	2	10297	0.74884627	0.734884627	0.08158894	0.083730893	0.04333074	0.083816157	0.001948466	0.454674031	-0.254856703	-0.181467688	-0.226625920	0.4401	0.0228	-4.229	0.959	-5.8691	0.9138	A-	A-					
SCIENCE	4	68043	7	C	2	10297	0.68545246	0.104690687	0.68545246	0.071768476	0.134505196	0.003204817	0.4857254	-0.24177113	0.4857254	-0.24528941	-0.245127669	1.249	0.0237	-3.691	0.9301	-7.6191	0.8703	B+	A-					
SCIENCE	4	845186	7	A	2	10297	0.623696038	0.099349325	0.623696038	0.074819426	0.186753423	0.01945227	0.414215185	-0.239754885	0.414215185	-0.246707674	-0.157057701	0.4518	0.0229	0.731	1.0073	1.611	1.0524	A+	A+					
SCIENCE	4	972753	7	A	2	10297	0.347188502	0.347188502	0.347188502	0.19918428	0.144349837	0.00291347	0.156333771	0.156333771	-0.030791917	-0.026011661	-0.218476349	1.8906	0.0229	9.012	1.2325	9.015	1.0247	A+	A+					
SCIENCE	4	303139	7	A	2	10297	0.19996911	0.19996911	0.524390988	0.06466544	0.19996911	0.002719239	0.13856662	-0.037072833	-0.037072833	-0.13856662	2.04	0.0233	9.012	1.2321	9.015	1.5285	A+	A+						
SCIENCE	4	869119	7	A	2	10297	0.542939088	0.101400921	0.542939088	0.223657376	0.192746528	0.002427892	0.343626373	-0.274513127	-0.303626373	-0.09227337	-0.140765609	0.802	0.0222	7.8311	1.0718	7.9811	1.0514	A+	A+					
SCIENCE	4	916977	7	D	2	10297	0.48866603	0.18121783	0.194037098	0.48866603	0.17283189	0.002330776	0.3681106	-0.118914706	-0.1517907	0.3681106	-0.154732537	1.3624	0.0222	6.9511	1.0608	9.4511	1.131	A-	A-					
SCIENCE	4	835250	7	D	2	10297	0.70564282	0.214237156	0.145810019	0.270564282	0.366902981	0.00233366	0.06530795	-0.103522848	-0.240318799	-0.066350795	-0.256027974	2.3921	0.0243	9.014	1.4435	9.9022	1.2765	A+	A+					
SCIENCE	4	858881	7	C	2	10297	0.629102029	0.139458095	0.629102029	0.088763718	0.072524055	0.00901371	0.517151845	-0.284595688	0.517151845	-0.285788626	-0.269814922	-1.0983	0.03	7.9692	0.8302	-8.993	0.6731	A-	A-					
SCIENCE	4	767237	8	A	2	10297	0.67864427	0.141788871	0.073807905	0.67864427	0.19996911	0.002719239	0.13856662	-0.037072833	-0.037072833	-0.13856662	2.04	0.0233	9.012	1.2321	9.015	1.5285	A+	A+						
SCIENCE	4	509641	8	A	2	10297	0.352358779	0.143273151	0.194037098	0.352358779	0.141622986	0.003494627	0.356766633	-0.161932643	-0.168049811	0.356766633	-0.142546369	0.9162	0.0223	7.9811	1.0735	9.6611	1.1326	A-	A-					
SCIENCE	4	542818	8	A	2	10302	0.7788786571	0.089367508	0.089367508	0.089367508	0.089367508	0.002330776	0.3681106	-0.118914706	-0.1517907	0.3681106	-0.154732537	1.3624	0.0222	6.9511	1.0608	9.4511	1.131	A-	A-					
SCIENCE	4	19247	8	B	2	10302	0.790137837	0.790137837	0.072995535	0.044845661	0.083576005	0.008250825	0.481250436	-0.259557489	-0.266507302	-0.253291194	-0.5806	0.0267	-5.891	0.9164	-7.2892	0.8092	A+	A-						
SCIENCE	4	439430	8	A	2	10302	0.08794409	0.071151233	0.08794409	0.119491361	0.096583188	0.00262808	0.530581946	-0.269493946	-0.274524426	-0.263857714	-0.263857714	-1.0033	0.0243	-8.991	0.861	-9.892	0.7792	A+	A-					
SCIENCE	4	245719	8	A	2	10302	0.476606484	0.070277616	0.476606484	0.388953601	0.095930009	0.00106193	0.34762351	-0.28497361	-0.34762351	-0.291271823	1.2147	0.0222	6.8411	1.0811	9.9012	1.4331	1.1292	A+	A+					
SCIENCE	4	509641	8	B	2	10302	0.352358779	0.143273151	0.194037098	0.352358779	0.141622986	0.003494627	0.356766633	-0.161932643	-0.168049811	0.356766633	-0.142546369	0.9162	0.0223	7.9811	1.0735	9.6611	1.1326	A-	A-					
SCIENCE	4	323563	8	A	2	10302	0.505338769	0.238497379	0.119491361	0.505																				

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Estimate	IRT Error	Infitt	Mean Square	Outfit Square	Male/ F/D Code	White/ Black Code	Hispanic Code	White/ Black Code	Hispanic Code	DIF Code					
SCIENCE	8	21591	0	A	2	1205-48	0.666896174	0.093539503	0.081851233	0.001318977	0.414788306	-0.101112288	0.414788306	-0.293695564	-0.238288292	-0.24214	-0.238288292	-0.24214	0.0068	-1.689	0.9948	1.621	1.0078	A-	A-	A-	A-	A-	A-				
SCIENCE	8	21592	0	A	2	1205-48	0.551680658	0.072834058	0.044189866	0.018524393	0.000414773	0.403136538	-0.227925904	-0.227925904	-0.227925904	-0.227925904	-0.227925904	-0.227925904	-0.227925904	0.0068	-1.689	0.9948	1.621	1.0078	A-	A-	A-	A-	A-	A-			
SCIENCE	8	130250	0	A	2	1205-48	0.633425735	0.131326267	0.131326267	0.131326267	0.131326267	0.131326267	0.131326267	0.131326267	0.131326267	0.131326267	0.131326267	0.131326267	0.131326267	0.0067	-8.991	0.8788	-9.8992	0.8121	A-	A-	A-	A-	A-	A-			
SCIENCE	8	130250	0	A	2	1205-48	0.619655582	0.109732223	0.200933240	0.088570196	0.000774954	0.443505653	-0.240425303	-0.206132181	0.443505653	-0.222864511	-0.1403	0.0067	-8.991	0.8788	-9.8992	0.8121	A-	A-	A-	A-	A-	A-	A-	A-			
SCIENCE	8	321117	1	A	2	10670	0.471883786	0.103748828	0.227179007	0.19343955	0.471883786	0.02905342	0.42354488	-0.2311116	-0.121533793	-0.217087362	0.42354488	-0.2311116	0.0221	0.261	1.0023	3.321	1.0439	A-	A-	A-	A-	A-	A-	A-	A-		
SCIENCE	8	171965	1	B	2	10670	0.6095932802	0.016719439	0.6095932802	0.016719439	0.6095932802	0.016719439	0.6095932802	0.016719439	0.6095932802	0.016719439	0.6095932802	0.016719439	0.6095932802	0.016719439	0.0236	-7.2651	0.9213	-7.6791	0.8581	A+	A+	A+	A+	A+	A+		
SCIENCE	8	171965	1	B	2	10670	0.7279896097	0.08162137	0.7279896097	0.08162137	0.7279896097	0.08162137	0.7279896097	0.08162137	0.7279896097	0.08162137	0.7279896097	0.08162137	0.7279896097	0.08162137	0.0244	-8.892	0.8329	-8.893	0.6977	A+	A+	A+	A+	A+	A+		
SCIENCE	8	528486	1	A	2	10670	0.471415118	0.25126523	0.293908154	0.247141518	0.204873477	0.001686973	1.8745	0.0248	9.0011	1.4536	9.0022	2.2181	0.0248	9.0011	1.4536	9.0022	2.2181	A-	A-	A-	A-	A-	A-	A-	A-		
SCIENCE	8	381712	1	A	2	10670	0.498125586	0.498125586	0.117244611	0.166541706	0.123589503	0.002343018	0.356750239	0.356750239	0.2644177	-0.263515751	0.022411884	0.356750239	0.356750239	0.0241	9.0011	1.0303	9.0011	1.1396	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	445263	1	B	2	10670	0.507591378	0.507591378	0.149297095	0.168791003	0.1710403	0.002436739	0.389949889	0.389949889	0.232153525	-0.208883279	-0.081002636	0.389949889	0.389949889	0.0221	6.3311	1.0602	5.281	1.0692	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	100934	1	A	2	10670	0.621462043	0.112274131	0.136176195	0.122741311	0.621462043	0.001499531	0.482930729	0.482930729	0.242628261	-0.242628261	0.0482930729	0.482930729	0.482930729	0.0227	4.729	0.953	-4.1191	0.9378	A+	A+	A+	A+	A+	A+	A+	A+	
SCIENCE	8	202961	1	A	2	10670	0.573383318	0.098313027	0.573383318	0.098313027	0.573383318	0.098313027	0.573383318	0.098313027	0.573383318	0.098313027	0.573383318	0.098313027	0.573383318	0.098313027	0.0223	2.211	1.0214	0.811	1.0113	A+	A+	A+	A+	A+	A+	A+	A+
SCIENCE	8	423013	1	B	3	10670	0.520431115	0.520431115	0.143392629	0.129147412	0.204592315	0.0016956	0.448075892	0.448075892	0.2174730941	-0.2174730941	-0.120849359	0.448075892	0.448075892	0.0221	1.531	1.0144	2.821	1.0367	A+	A+	A+	A+	A+	A+	A+	A+	
SCIENCE	8	368012	1	C	3	10670	0.510777882	0.510777882	0.1210677882	0.1210677882	0.510777882	0.1210677882	0.510777882	0.1210677882	0.510777882	0.1210677882	0.510777882	0.1210677882	0.510777882	0.1210677882	0.0221	9.0012	1.2084	9.0013	1.2698	A-	A-	A-	A-	A-	A-	A-	A-
SCIENCE	8	133767	1	C	2	10670	0.497469541	0.188755515	0.139643861	0.169165886	0.497469541	0.003561387	0.462829481	0.462829481	0.260885043	-0.197529636	-0.151982931	0.462829481	0.462829481	0.0221	-3.489	0.9679	-2.109	0.9731	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	165478	1	D	2	10670	0.355014058	0.355014058	0.204048874	0.204048874	0.355014058	0.204048874	0.355014058	0.204048874	0.355014058	0.204048874	0.355014058	0.204048874	0.355014058	0.0228	9.0012	1.2053	9.0014	1.445	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	295687	2	A	2	9960	0.648192771	0.130522088	0.348192771	0.25120482	0.26375502	0.00180732	0.491969125	0.491969125	0.30754968	-0.2509290813	-0.194996125	0.491969125	0.491969125	0.0241	-6.3291	0.93	-8.0191	0.8617	A+	A+	A+	A+	A+	A+	A+	A+	
SCIENCE	8	69133	2	A	2	9960	0.348192771	0.130522088	0.348192771	0.25120482	0.26375502	0.00180732	0.491969125	0.491969125	0.30754968	-0.2509290813	-0.194996125	0.491969125	0.491969125	0.0241	-6.3291	0.93	-8.0191	0.8617	A+	A+	A+	A+	A+	A+	A+	A+	
SCIENCE	8	909646	2	C	2	9960	0.683032129	0.175100402	0.075100402	0.075100402	0.683032129	0.001706827	0.376258296	0.376258296	0.189589552	-0.193002103	-0.141775924	0.376258296	0.376258296	0.0248	6.5711	1.0644	5.241	1.0715	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	683012	2	C	2	9960	0.474791165	0.547791165	0.168172691	0.183333333	0.081927271	0.001208343	0.480753992	0.480753992	0.206515257	-0.295698857	0.480753992	0.480753992	0.0256	-5.9691	1.0243	-6.0991	0.8637	A-	A-	A-	A-	A-	A-	A-	A-		
SCIENCE	8	187712	2	C	2	9960	0.844277108	0.844277108	0.048635454	0.052519158	0.059939759	0.001405622	0.515291918	0.515291918	0.28915644	-0.309675117	-0.240905652	0.515291918	0.515291918	0.0248	0.03	-8.8492	0.8344	-8.8994	0.6143	A-	A-	A-	A-	A-	A-	A-	A-
SCIENCE	8	539757	2	A	2	9960	0.186044177	0.240965855	0.186044177	0.240965855	0.186044177	0.002309327	0.546311123	0.546311123	0.268865533	-0.2881304	-0.27582752	0.546311123	0.546311123	0.0249	-8.8991	0.8653	-9.8992	0.7544	A+	A+	A+	A+	A+	A+	A+	A+	
SCIENCE	8	295554	2	A	2	9960	0.60562249	0.190166744	0.068483373	0.052108434	0.805262249	0.001606426	0.548341089	0.548341089	0.2623442755	-0.282900286	-0.0548341089	0.548341089	0.548341089	0.0279	-8.8992	0.8194	-9.8993	0.6888	A+	A+	A+	A+	A+	A+	A+	A+	
SCIENCE	8	140928	2	B	2	9960	0.954819278	0.139156627	0.695481928	0.139156627	0.954819278	0.00180433	0.421087765	0.421087765	0.245623871	-0.3362442755	-0.224003286	0.421087765	0.421087765	0.0245	-4.141	1.0494	3.131	1.0622	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	681017	3	A	2	9976	0.576684042	0.129510826	0.129510826	0.129510826	0.576684042	0.0012004812	0.386257202	0.386257202	0.245623871	-0.3362442755	-0.224003286	0.386257202	0.386257202	0.0229	-0.229	0.9612	-3.8191	0.9485	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	623195	3	B	2	9976	0.143692863	0.413692863	0.249498737	0.143692863	0.413692863	0.00180433	0.282453698	0.282453698	0.219717509	-0.082453698	-0.292615002	0.282453698	0.282453698	0.0244	9.0013	1.2782	9.0018	1.8112	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	915711	3	A	2	9976	0.510324779	0.25872093	0.510324779	0.140336074	0.23757658	0.00104571	0.32607421	0.32607421	0.32607421	0.32607421	0.32607421	0.32607421	0.0226	9.0011	1.0736	9.0012	1.1665	A-	A-	A-	A-	A-	A-	A-	A-		
SCIENCE	8	542477	3	A	2	9976	0.434242181	0.085304731	0.434242181	0.360966639	0.11627907	0.002260525	0.256846088	0.256846088	0.219717509	-0.082453698	-0.292615002	0.256846088	0.256846088	0.0227	9.0012	1.1879	9.0013	1.2894	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	15763	3	C	2	9976	0.575481155	0.169005613	0.13542502	0.575481155	0.169005613	0.00102406	0.407409555	0.407409555	0.188542719	-0.218417893	-0.074099535	0.407409555	0.407409555	0.0229	-5.5691	0.9467	-6.2191	0.9173	A+	A+	A+	A+	A+	A+	A+	A+	
SCIENCE	8	786702	3	A	2	9976	0.379566319	0.106154771	0.081495889	0.379566319	0.106154771	0.00180433	0.564441956	0.564441956	0.313676116	-0.30230293	-0.05441956	0.564441956	0.564441956	0.0252	-8.8992	0.8327	-9.8993	0.6888	A+	A+	A+	A+	A+	A+	A+	A+	
SCIENCE	8	639938	3	B	2	9976	0.358660786	0.20471951	0.358660786	0.20471951	0.358660786	0.001403368	0.439232335	0.439232335	0.111928184	-0.307912369	-0.249357399	0.439232335	0.439232335	0.0235	9.0011	1.2294	9.0013	1.2582	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	688633	3	B	2	9976	0.143692863	0.413692863	0.249498737	0.143692863	0.413692863	0.0012004812	0.386257202	0.386257202	0.245623871	-0.3362442755	-0.224003286	0.386257202	0.386257202	0.0244	9.0013	1.2782	9.0018	1.8112	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	542477	3	A	2	9976	0.510324779	0.25872093	0.510324779	0.140336074	0.23757658	0.00104571	0.32607421	0.32607421	0.32607421	0.32607421	0.32607421	0.32607421	0.0226	9.0011	1.0736	9.0012	1.1665	A-	A-	A-	A-	A-	A-	A-	A-		
SCIENCE	8	115763	3	C	2	9976	0.541082598	0.121291099	0.180332799	0.244486768	0.541082598	0.002205293	0.32167069	0.32167069	0.176800419	-0.180914355	-0.070694925	0.32167069	0.32167069	0.0227	9.0011	1.1102	9.0012	1.1596	A-	A-	A-	A-	A-	A-	A-	A-	
SCIENCE	8	588308	4	A	2	10002	0.786427111	0.063387323																									

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Error	Infitt Mean Square	Outfit Mean Square	Male/White/Black/Hispanic	Female/White/Black/Hispanic	Code	DF	Code	DF
SCIENCE	8	161945	6	A		2	0.365104846	0.17055593	0.1351445982	0.001705629	0.2196797213	-0.232162212	-0.01000258	-0.07114244	1.2669	0.0232	9.9012	1.1801	9.9014	1.3725	A-	A+					
SCIENCE	8	967	0.448178991	0.199056888	0.388917899	0.087689375	0.001605297	0.348764493	-0.165833799	-0.348764493	-0.240303559	0.8332	0.0237	6.1011	1.0566	6.1011	1.1333	A+	A+								
SCIENCE	8	9967	0.538643524	0.12400923	0.162043324	0.150396308	0.00180596	0.363418461	-0.182023026	0.363418461	-0.170471894	0.2689	0.0228	8.0511	1.0788	7.7611	1.0666	A+	A+								
SCIENCE	8	9967	0.23976944	0.216514498	0.0682526136	0.629376594	0.000501655	0.293704796	-0.027121951	-0.2811005225	0.293704796	-0.20896282	-0.1048	0.0233	9.9012	1.1622	9.9012	1.2441	A+	A+							
SCIENCE	8	638114	6	A		2	0.67783686	0.277971727	0.247416474	0.20477576	0.267783686	0.001304304	0.076748948	0.01714836	-0.064823577	-0.028625291	0.076748948	1.8221	0.0249	9.9013	1.287	9.9018	1.7065	A+	A+		
SCIENCE	8	78152	7	A		2	1.0008	0.57194245	0.0891328697	0.231314948	0.169964029	0.019398721	0.353246033	0.353246033	-0.027607163	-0.0749800182	-0.179433753	0.5567	0.0225	7.3111	1.0669	6.5811	1.0838	A+	A+		
SCIENCE	8	295993	7	C		2	1.0008	0.54566275	0.164568345	0.1307961815	0.14761615	0.014488801	0.402536764	-0.192378861	-0.206731014	0.402536764	-0.159774273	0.3068	0.0226	3.01	1.0027	-1.089	0.9861	A+	A+		
SCIENCE	8	647007	7	A		2	1.0008	0.474620304	0.074620304	0.089622697	0.098621103	0.335031974	0.011199041	0.386655514	0.386655514	-0.305749483	-0.242194885	-0.064493924	0.6908	0.0228	2.301	1.0206	4.5011	1.0575	A+	A+	
SCIENCE	8	859843	7	A		2	1.0008	0.401478817	0.307953637	0.401478817	0.24728217	0.1074040767	0.001119904	0.226605504	-0.1130325518	-0.2326605304	-0.132407344	1.0638	0.0228	9.9012	1.1684	9.9013	1.1375	A+	A+		
SCIENCE	8	343930	7	A		2	1.0008	0.205435651	0.201838259	0.427158273	0.205435651	0.161970424	0.002997602	0.041174577	-0.083420586	0.115303059	0.041174577	-0.103820374	2.2193	0.0268	9.9012	1.1933	9.9021	2.0654	A+	A+	
SCIENCE	8	247821	7	B		3	1.0008	0.820079599	0.309523157	0.171805359	0.290767386	0.020075939	0.001998401	0.175142159	0.0042547714	-0.248858343	-0.032376966	0.175142159	1.7328	0.0245	9.9011	1.1339	9.9015	1.5427	A+	A+	
SCIENCE	8	627268	7	C		2	1.0008	0.243900056	0.213922462	0.213922462	0.180448841	0.001239802	0.093965156	-0.073448484	0.093965156	0.0732737012	-0.107390704	1.9229	0.0253	9.9012	1.2057	9.9018	1.7549	A+	A+		
SCIENCE	8	492525	7	A		2	1.0008	0.315744702	0.207134293	0.315744702	0.26151508	0.001985611	0.090300049	-0.051774804	0.090300049	0.061868884	-0.156120101	1.5255	0.0238	9.9013	1.3019	9.9016	1.645	A+	A+		
SCIENCE	8	197973	7	B		2	1.0008	0.422556195	0.204536371	0.107410359	0.362489209	0.422556195	0.001398881	0.378191006	-0.117447864	-0.247478604	-0.118398909	0.9551	0.0226	-0.119	0.9989	4.0011	1.0552	A+	A+		
SCIENCE	8	167949	7	C		2	1.0008	0.47941647	0.157673861	0.258493205	0.133892886	0.447941647	0.001238961	0.315262384	-0.181398618	-0.089485019	-0.143654441	0.315262384	0.8257	0.0225	9.9011	1.0947	9.9011	1.451	A+	A+	
SCIENCE	8	965651	7	A		2	1.0008	0.466127098	0.466127098	0.221021381	0.158573141	0.152078337	0.001298961	0.355157144	-0.122487585	-0.2183108	-0.122487585	0.7336	0.0225	4.181	1.0376	7.0311	1.0916	A+	A+		
SCIENCE	8	689893	7	A		2	1.0008	0.373007968	0.203386454	0.255976096	0.373007968	0.164641434	0.002091633	0.378817013	-0.219271718	0.378817013	-0.283780171	-0.054739871	1.386	0.0225	4.181	1.0369	3.311	1.0423	A+	A+	
SCIENCE	8	203110	8	A		2	1.0040	0.666832669	0.083266932	0.106832669	0.144422231	0.166683269	0.002190333	0.517365515	-0.3110952484	-0.279836969	-0.198035354	0.517365515	-0.3134	0.0238	-9.791	1.0207	-9.3892	0.8429	A+	A+	
SCIENCE	8	206765	8	D		2	1.0040	0.516633466	0.147410359	0.516633466	0.194521912	0.138446215	0.002390438	0.293395845	-0.112045177	0.293395845	-0.180024191	-0.092833695	0.5019	0.0226	9.9012	1.1589	9.9012	1.1955	A+	A+	
SCIENCE	8	604638	8	A		2	1.0040	0.9615538	0.116733068	0.9615538	0.88557769	0.097908367	0.00328653	0.542074974	-0.309669114	0.542074974	-0.236591538	-0.211589848	-0.4812	0.0243	-8.891	0.867	-8.892	0.7939	A+	A+	
SCIENCE	8	976054	8	A		2	1.0040	0.61655386	0.19810757	0.61655386	0.61653386	0.002191235	0.493990903	-0.29313674	-0.286298711	-0.29313674	-0.039990803	1.2292	0.0237	-6.791	0.9286	-7.0691	0.8821	A+	A+		
SCIENCE	8	448393	8	A		2	1.0040	0.373007968	0.203386454	0.255976096	0.373007968	0.164641434	0.002091633	0.378817013	-0.219271718	0.378817013	-0.283780171	-0.054739871	1.386	0.0225	4.181	1.0369	3.311	1.0423	A+	A+	
SCIENCE	8	413489	8	C		2	1.0040	0.289741036	0.289741036	0.106832669	0.144422231	0.166683269	0.002190333	0.517365515	-0.3110952484	-0.279836969	-0.198035354	0.517365515	-0.3134	0.0238	-9.791	1.0207	-9.3892	0.8429	A+	A+	
SCIENCE	8	728840	8	C		2	1.0040	0.815792988	0.085159363	0.71752988	0.084063745	0.110756972	0.001693227	0.554017143	-0.293352798	0.554017143	-0.163904503	-0.157685968	1.6961	0.0247	-8.892	0.8496	-8.892	0.7611	A+	A+	
SCIENCE	8	505044	8	D		2	1.0040	0.43665386	0.187051793	0.152390438	0.43665386	0.21713147	0.001792829	0.26467444	-0.102740649	0.237709494	0.26467444	-0.0336585	0.8965	0.0226	9.9012	1.162	9.9013	1.2571	A+	A+	
SCIENCE	8	728840	8	C		2	1.0040	0.43665386	0.187051793	0.152390438	0.43665386	0.21713147	0.001792829	0.26467444	-0.102740649	0.237709494	0.26467444	-0.0336585	0.8965	0.0226	9.9012	1.162	9.9013	1.2571	A+	A+	
SCIENCE	8	684157	9	A		2	1.0014	0.701817456	0.20800788	0.848232475	0.701817456	0.404343519	0.001238183	0.490473684	-0.258724261	-0.307573966	0.490473684	-0.263068074	-0.5336	0.0244	-7.019	0.9208	-6.7291	0.8728	B+	A+	
SCIENCE	8	812433	9	C		2	1.0014	0.480527262	0.480527262	0.141501897	0.193429199	0.18445976	0.002095181	0.3473216015	-0.22034721	-0.22034721	-0.099749468	0.6544	0.0225	9.9011	1.0104	9.9012	1.1631	A+	A+		
SCIENCE	8	676059	9	B		2	1.0014	0.46754297	0.46754297	0.174355902	0.174355902	0.002296785	0.34000777	-0.228614355	-0.131399304	-0.079953788	0.7197	0.0225	7.9911	1.0733	8.8411	1.1183	A+	A+			
SCIENCE	8	396192	9	B		2	1.0014	0.43019723	0.43019723	0.192031736	0.192031736	0.001298183	0.46754297	-0.228614355	-0.131399304	-0.079953788	0.7197	0.0225	7.9911	1.0733	8.8411	1.1183	A+	A+			
SCIENCE	8	459083	9	C		2	1.0014	0.569502696	0.569502696	0.192031736	0.192031736	0.001298183	0.46754297	-0.228614355	-0.131399304	-0.079953788	0.7197	0.0225	7.9911	1.0733	8.8411	1.1183	A+	A+			
SCIENCE	8	205064	8	A		2	1.0014	0.238765728	0.098761734	0.238765728	0.3954466375	0.263531057	0.002097064	0.83337863	-0.199979985	0.83337863	-0.104369983	1.9911	0.0256	9.9012	1.212	9.9018	1.8391	A+	A+		
SCIENCE	8	634157	9	A		2	1.0014	0.701817456	0.20800788	0.848232475	0.701817456	0.404343519	0.001238183	0.490473684	-0.258724261	-0.307573966	0.490473684	-0.263068074	-0.5336	0.0244	-7.019	0.9208	-6.7291	0.8728	B+	A+	
SCIENCE	8	812433	9	C		2	1.0014	0.480527262	0.480527262	0.141501897	0.193429199	0.18445976	0.002095181	0.3473216015	-0.22034721	-0.22034721	-0.099749468	0.6544	0.0225	9.9011	1.0104	9.9012	1.1631	A+	A+		
SCIENCE	8	443486	9	B		2	1.0023	0.61956031	0.61956031	0.106656202	0.106656202	0.001997204	0.304340797	-0.081604061	-0.167753953	0.304340797	-0.121966218	0.9791	0.0237	9.4611	1.0864	9.9012	1.859	A+	A+		
SCIENCE	8	434369	10	A		2	1.0023	0.41740577	0.41740577	0.187468822	0.187468822	0.001596328	0.249574606	-0.205714243	-0.132067882	0.249574606	-0.079953788	1.0094	0.0227	9.9012	1.1926	9.9013	1.3064	A+	A+		
SCIENCE	8	454852	10	A		2	1.0023	0.502943231	0.502943231	0.112940237	0.112940237	0.001297017	0.361754727	-0.264485523	-0.079344997	0.361754727	-0.23977746	0.5708	0.0225	6.2111	1.0875	5.8911	1.0768	A+	A+		
SCIENCE	8	521956	10	A		2	1.0023	0.418008858	0.418008858	0.112940237	0.112940237	0.001297017	0.361754727	-0.264485523	-0.079344997	0.361754727	-0.23977746	0.5708	0.0225	6.2111	1.0875	5.8911	1.0768	A+	A+		
SCIENCE	8	33708	10	A		2	1.0023	0.797066746	0.797066746	0.085159363	0.797066746	0.68941435	0.00189564	0.546026282	-0.287461911	-0.287461911	-0.167753953	-1.1272	0.0272	-9.892	0.8334	-9.895	0.6675	B+	A+		
SCIENCE	8	678549	10	B		2	1.0023	0.459243739	0.459243739	0.145066647	0.145066647	0.001995181	0.393648404	-0.188792327	-0.132067882	0.393648404	-0.079953788	0.7993	0.0226	1.921	1.0174	4.4411	1.0594	A+	A+		
SCIENCE	8	446683	10	A		2	1.0023	0.41740577	0.41740577	0.187468822	0.187468822	0.001596328	0.249574606	-0.205714243	-0.132067882	0.249574606	-0.079953788	1.0094	0.0227	9.9012	1.1926	9.9013	1.3064</				

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	IRT Difficulty Estimate	IRT Difficulty Error	Infit Mean Square	Outfit Mean Square	Male/ Female DIF Code	White/ Black DIF Code	White/ Hispanic DIF Code	
SCIENCE	8	731233	12 A		2	9942	0.559947697	0.10732247	0.117280225	0.212633273	0.559947697	0.002414001	0.442941713	-0.289819951	-0.253220322	-0.112923196	0.442941713	0.02545	0.0227	-3.509	0.9676	-3.919	0.9508	A+	A-
SCIENCE	8	561207	12 C		2	9942	0.287366727	0.287366727	0.310802655	0.226312613	0.172902836	0.001709918	0.191845741	0.191845741	-0.028837307	-0.027754743	-0.155487374	1.678	0.0243	9.5411	1.1083	9.9015	1.478	A-	A-
SCIENCE	8	815285	12 B		2	9942	0.350130758	0.285656809	0.257895796	0.350130758	0.103198552	0.001810501	0.225195223	0.037137312	-0.128828678	0.225195223	-0.209557216	1.3262	0.0233	9.9011	1.1272	9.9014	1.351	A+	A+
SCIENCE	8	621351	12 D		2	9942	0.18668276	0.200563267	0.378092939	0.18668276	0.232247033	0.001408167	-0.112729198	0.042423154	0.065394891	-0.112729198	-0.0046582	2.3421	0.0276	9.9014	1.3656	9.9026	2.5897	A+	A+
SCIENCE	8	534160	12 D		2	9942	0.483101992	0.117280225	0.133675317	0.483101992	0.263327298	0.001911084	0.321861312	-0.312374074	-0.212940736	0.321861312	0.034298787	0.6422	0.0225	9.9011	1.1022	9.9012	1.1519	A+	A+
SCIENCE	8	413858	12 D		3	9942	0.407966204	0.2003621	0.407966204	0.249547375	0.139609736	0.002011668	0.153309687	-0.067766003	0.153309687	-0.029461744	-0.096374823	1.0226	0.0227	9.9013	1.2639	9.9014	1.3973	A+	A+

Multiple-Choice Online Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
P-Value	P-Value
Prop A	Proportion A
Prop B	Proportion B
Prop C	Proportion C
Prop D	Proportion D
Prop Omits	Proportion Omits
Point Biserial	Point Biserial
Corr A	Correlation A
Corr B	Correlation B
Corr C	Correlation C
Corr D	Correlation D

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.OMits	Prop.Biserial	Corr.A	Corr.B	Corr.C	Corr.D
ELA	3	819161	0	1	950	0.1516842105	0.12	0.115789474	0.516842105	0.244210526	0.003157895	0.356096081	-0.243199633	-0.202180948	0.356096081	-0.073987392	
ELA	3	663947	0	1	950	0.838947368	0.066315789	0.838947368	0.059526316	0.044210526	0	0.460751053	-0.274033101	0.460751053	-0.1620219	-0.262008661	
ELA	3	212191	0	3	950	0.489473684	0.124210526	0.489473684	0.234736842	0.148421053	0.0003157895	0.356073423	-0.17718785	0.356073423	-0.154083775	-0.158250124	
ELA	3	478561	0	2	950	0.411578947	0.176842105	0.411578947	0.041157894	0.2	0.004210526	0.32708298	-0.111873019	-0.180943718	0.32708298	-0.110915475	
ELA	3	789592	0	2	950	0.813684211	0.052631579	0.813684211	0.0737894737	0.737894737	0.00105263	0.492601438	-0.233812625	-0.295799684	-0.252522298	-0.492601438	
ELA	3	270909	0	2	950	0.13684211	0.056824105	0.13684211	0.063631579	0.063157895	0.00105263	0.46336472	-0.243337741	0.46336472	-0.279409703	-0.219902743	
ELA	3	17040	0	2	950	0.342105263	0.311578947	0.169473684	0.342105263	0.174736842	0.002105263	0.406055897	-0.125793666	-0.125793666	-0.125659349	0.406055897	
ELA	3	33208	0	2	950	0.46105263	0.28	0.170526316	0.46105263	0.087368421	0.00105263	0.427301001	-0.229676801	-0.189052692	0.427301001	-0.136639546	
ELA	3	533119	0	2	950	0.762105263	0.762105263	0.12	0.070526316	0.047368421	0	0.339426352	0.339426352	-0.00110832	-0.244672361	-0.246067839	
ELA	3	754338	0	2	950	0.543157895	0.12	0.1463157895	0.207368421	0.523157895	0.003157895	0.393155076	-0.247172337	-0.20240315	-0.100269535	0.393155076	
ELA	3	665863	0	2	950	0.49473684	0.261052632	0.14	0.49473684	0.49473684	0.002105263	0.34516877	-0.159555547	-0.169843972	-0.122561397	0.34516877	
ELA	3	212287	0	2	950	0.426315789	0.426315789	0.229473684	0.157894737	0.183157895	0.003157895	0.313424197	0.313424197	0.313424197	0.313424197	-0.300382994	
ELA	3	78040	0	2	950	0.48421053	0.181052632	0.248421053	0.248421053	0.22	0.002105263	0.257047829	-0.198682071	-0.122262248	0.257047829	-0.122130929	
ELA	3	750040	0	2	950	0.352631579	0.181052632	0.352631579	0.281052632	0.203157895	0.002105263	0.314778129	-0.15330108	0.314778129	-0.09265472	-0.122687429	
ELA	3	229862	0	2	950	0.63157895	0.623157895	0.087368421	0.24	0.0663157895	0.003157895	0.279507801	-0.225666809	-0.0949816	-0.140378019	-0.0949816	
ELA	3	779889	0	3	950	0.646315789	0.646315789	0.065263158	0.137894737	0.129473684	0.00105263	0.438962398	-0.438962398	-0.178826931	-0.193535892	-0.272590893	
ELA	3	423076	0	3	950	0.832631579	0.069473684	0.061052632	0.036842105	0.632631579	0	0.387530436	-0.215100672	-0.234744227	-0.179280209	0.387530436	
ELA	3	161439	0	2	950	0.47368421	0.727368421	0.0747368421	0.13684211	0.084210526	0	0.403767299	0.403767299	-0.263838147	-0.16244865	-0.285339134	
ELA	3	379727	0	A-K	2	950	0.458947368	0.124210526	0.173684211	0.458947368	0.243157895	0.456186777	-0.173199676	-0.237863383	-0.184586777	-0.186686669	
ELA	3	757091	0	A-K	2	950	0.487368421	0.206315789	0.487368421	0.487368421	0.002105263	0.489614639	-0.21147876	-0.181600232	-0.259290515	0.489614639	
ELA	3	573972	0	A-K	2	950	0.573684211	0.114736842	0.124210526	0.173684211	0.573684211	0.444502881	-0.169173984	-0.186730694	-0.267346756	0.444502881	
ELA	3	850031	0	A-V	2	950	0.682105263	0.127368421	0.682105263	0.068421053	0.12	0.002105263	0.526778059	-0.296180913	0.526778059	-0.257468697	
ELA	3	566466	0	A-V	2	950	0.702105263	0.702105263	0.104210526	0.097894737	0.093684211	0.002105263	0.568418827	-0.368486049	-0.214409813	-0.283337042	
ELA	3	115802	0	A-V	2	950	0.653684211	0.114736842	0.653684211	0.126315789	0.102105263	0.003157895	0.508648268	-0.2506042	0.508648268	-0.18321029	
ELA	3	357251	0	B-C	2	950	0.476842105	0.186315789	0.207368421	0.476842105	0.127368421	0.002105263	0.506306717	-0.215521156	-0.255189594	0.506306717	
ELA	3	742578	0	A-K	2	950	0.610526316	0.610526316	0.176842105	0.108421053	0.104210526	0	0.430716907	0.430716907	-0.165151711	-0.219571992	
ELA	3	466106	0	B-V	2	950	0.56	0.214736842	0.130526316	0.093684211	0.56	0.001052632	0.510693267	-0.182144725	-0.254227961	-0.30889361	
ELA	3	87340	0	B-K	2	950	0.387368421	0.257894737	0.181052632	0.170526316	0.387368421	0.003157895	0.378686127	-0.112861961	-0.160995784	-0.378686127	
ELA	3	778474	0	A-K	2	950	0.496842105	0.496842105	0.194736842	0.115789474	0.001052632	0.446375972	0.446375972	0.222873952	-0.184053804	0.378686127	
ELA	3	115849	0	A-V	2	950	0.63684211	0.206315789	0.63684211	0.218947368	0.058421053	0.273701447	-0.134230407	-0.273701447	-0.011483002	-0.206315789	
ELA	3	251343	0	A-V	2	950	0.68421053	0.121052632	0.142105263	0.68421053	0.062363158	0.003157895	0.568469845	-0.309602134	-0.317349238	0.568469845	
ELA	3	323999	0	A-V	2	950	0.689473684	0.111578947	0.075789474	0.122105263	0.689473684	0.001052632	0.517214125	-0.269611834	-0.257979746	-0.265246451	
ELA	3	539708	0	A-K	1	950	0.826315789	0.826315789	0.062105263	0.068421053	0.001052632	0.352551803	-0.352551803	-0.099930458	-0.211928072	-0.26327065	
ELA	3	235168	0	A-K	2	950	0.582105263	0.116842105	0.582105263	0.163157895	0.136842105	0.001052632	0.445517058	-0.202479921	0.445517058	-0.275313078	
ELA	3	658644	0	A-K	2	950	0.661052632	0.661052632	0.158947368	0.097894737	0.081052632	0.418325593	-0.418325593	-0.215761154	-0.201019579	-0.210988716	
ELA	3	855441	0	A-K	2	950	0.504210526	0.215789474	0.143157895	0.134736842	0.504210526	0.252917285	-0.09592725	-0.071146716	-0.18713115	0.252917285	
ELA	3	437359	0	A-K	2	950	0.46315789	0.292631579	0.171578947	0.346315789	0.185263158	0.307460001	-0.088640054	0.206383524	0.307460001	-0.068916183	
ELA	3	698424	0	B-V	2	950	0.610526316	0.010526316	0.143157895	0.143157895	0.460150993	0.460150993	-0.250818381	0.460550593	-0.198764773	-0.213719196	
ELA	3	15191	0	B-V	2	950	0.556842105	0.153684211	0.190526316	0.097894737	0.556842105	0.001052632	0.482139007	-0.22796991	-0.205298822	-0.256421	
ELA	3	652242	0	B-C	1	950	0.636842105	0.636842105	0.121052632	0.132631579	0.107368421	0.002105263	0.577496245	-0.2564331	-0.364640377	-0.22567458	
ELA	3	632407	0	B-C	2	950	0.666315789	0.666315789	0.124210526	0.091578947	0.112631579	0.005263158	0.433497483	-0.433497483	-0.139961377	-0.238702295	
ELA	3	406520	0	B-C	3	950	0.63157895	0.251578947	0.363157895	0.155789474	0.228421053	0.001052632	0.145618193	-0.119414867	0.145618193	-0.102141675	
ELA	3	990325	0	B-C	3	950	0.461052632	0.266315789	0.127894737	0.461052632	0.113684211	0.001052632	0.354472151	-0.071817251	-0.171607355	0.354472151	
ELA	3	67007	0	B-C	3	950	0.546315789	0.126315789	0.135789474	0.135789474	0.546315789	0.236042849	-0.20316792	-0.23608885	-0.38825883	0.41662849	
ELA	3	132002	1	A-K	2	424	0.474056604	0.191037736	0.74056604	0.091981132	0.242924327	0	0.236042849	-0.104453904	-0.236042849	-0.121085148	
ELA	3	548556	1	A-K	2	424	0.65301887	0.07074717	0.129716981	0.146226115	0.65301887	0	0.523676221	-0.244948449	-0.262132963	-0.278336833	
ELA	3	203781	1	A-K	2	424	0.422169811	0.422169811	0.125	0.11566038	0.337264151	0	0.456130649	0.456130649	-0.79512005	-0.260073368	
ELA	3	391412	1	A-K	3	424	0.26415094	0.33490566	0.226415094	0.195745717	0.24924528	0	0.122785661	0.099919595	0.122785661	-0.195108641	
ELA	3	174609	1	A-K	3	424	0.384433962	0.242924528	0.172169811	0.384433962	0.200471698	0	0.307595337	-0.112819224	-0.113462967	0.307595337	
ELA	3	898144	1	A-V	2	424	0.712264151	0.12264151	0.089622642	0.094339623	0.10415094	0.002358491	0.54203304	-0.54203304	-0.24486396	-0.273683213	
ELA	3	77547	1	A-V	2	424	0.684905566	0.155660377	0.132075472	0.103773585	0.608490566	0	0.502319882	-0.20219179	-0.272160957	-0.228116434	
ELA	3	479887	1	A-V	2	424	0.568396236	0.21939623	0.110849057	0.568396236	0.101415094	0	0.485366534	-0.205048941	-0.260513492	0.485366534	
ELA	3	380543	1	A-V	2	424	0.622641509	0.120283019	0.622641509	0.159943396	0.106132075	0	0.568268802	-0.249335323	0.568268802	-0.232865623	
ELA	3	764186	1	D	2	424	0.235849057	0.257075472	0.235849057	0.287735849	0.216981132	0.002358491	0.11763783	-0.076366797	0.11763783	-0.054826234	
ELA	3	226289	2	A-C	2	262	0.654648855	0.095419847	0.148854962	0.654648855	0.095419847	0.003816794	0.458255758	-0.200937666	-0.27156879	0.458255758	
ELA	3	866289	2	A-C	2	262	0.454198473	0.28242748	0.083694666	0.454198473	0.179388913	0	0.473170765	-0.116380766	-0.252384445	0.473170765	
ELA	3	446691	2	A-K	2	262	0.305343511	0.309160305	0.20610687	0.17938913	0.305343511	0	0.258142364	0.021657433	-0.027743835	-0.306701211	
ELA	3	379938	2	A-K	2	262	0.404580153	0.17175725	0.110687023	0.404580153	0.06129709						

Cont	Gr	ID	Form	Std	DOE	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.E	Prop.Omits	Point Bisection	Corr.A	Corr.B	Corr.C	Corr.D	
ELA	4	259286	0	D	1	1105	0.46569697	0.18393939	0.109848485	0.227272727	0.46569697	0.003787879	0.37532646	-0.18532296	-0.093431732	0.37532646	-0.093431732	0.37532646	
ELA	4	259286	0	D	1	1105	0.794570136	0.08959276	0.063348416	0.052488688	0.794570136	0	0.412021701	-0.23709784	-0.221575359	-0.20076966	-0.412021701	-0.23709784	-0.221575359
ELA	4	707413	0	D	2	1105	0.555656109	0.159276018	0.083257919	0.555656109	0.200904977	0.000904977	0.429162963	-0.253047812	-0.273484386	-0.182562963	-0.108227292	-0.253047812	-0.273484386
ELA	4	894918	0	D	2	1105	0.35746606	0.535746606	0.275113122	0.09321267	0.095022624	0.000904977	0.268430224	0.268430224	0.068640488	-0.16713636	-0.256178216	-0.16713636	-0.256178216
ELA	4	379242	0	D	2	1105	0.478733032	0.229054299	0.478733032	0.027149321	0.063444349	0.000714932	0.409542384	-0.134004887	-0.409542384	-0.196950723	-0.196950723	-0.409542384	-0.196950723
ELA	4	434445	0	D	2	1105	0.462444349	0.095022624	0.343891403	0.091402715	0.462444349	0.002739819	0.351858114	-0.2224678	-0.2224678	-0.325552319	-0.309211005	-0.351858114	-0.325552319
ELA	4	924031	0	A-K	2	1105	0.557466063	0.115837104	0.557466063	0.104072398	0.220814448	0.001809955	0.421261022	-0.264623418	-0.264623418	-0.219595168	-0.219595168	-0.264623418	-0.219595168
ELA	4	270476	0	A-V	2	1105	0.680542986	0.680542986	0.12398911	0.113122172	0.081447922	0.000904977	0.457923382	-0.457923382	-0.457923382	-0.200212292	-0.200212292	-0.457923382	-0.200212292
ELA	4	301560	0	A-V	1	1105	0.609954751	0.162895928	0.609954751	0.075113122	0.151312217	0.000904977	0.488801736	-0.225460727	-0.488801736	-0.287151067	-0.287151067	-0.488801736	-0.287151067
ELA	4	600299	0	A-K	2	1105	0.608144796	0.608144796	0.125791855	0.178280343	0.086877468	0.000904977	0.445219733	-0.445219733	-0.239711402	-0.146809206	-0.285560916	-0.146809206	-0.285560916
ELA	4	469276	0	A-K	2	1105	0.70678733	0.074208145	0.176470569	0.70678733	0.101357826	0	0.542494126	-0.30192339	-0.40192339	-0.270833264	-0.542494126	-0.30192339	-0.270833264
ELA	4	941572	0	A-K	2	1105	0.415384615	0.12760181	0.177375566	0.276923077	0.415384615	0.002714932	0.265256025	-0.157142078	-0.121051053	-0.06587339	-0.265256025	-0.157142078	-0.06587339
ELA	4	195938	0	A-K	2	1105	0.514932127	0.155656109	0.187330314	0.138461538	0.514932127	0.00361991	0.339639362	-0.170421275	-0.160720719	-0.11758817	-0.339639362	-0.170421275	-0.11758817
ELA	4	397224	0	A-K	2	1105	0.84348914	0.10167421	0.84348914	0.033486161	0.019905217	0.00361991	0.331279835	-0.221664962	-0.331279835	-0.173337771	-0.155875599	-0.331279835	-0.155875599
ELA	4	178051	0	A-K	2	1105	0.533031674	0.333031674	0.181904052	0.181904052	0.230769231	0.000904977	0.265540007	-0.265540007	-0.134052639	-0.144820231	-0.023698031	-0.134052639	-0.144820231
ELA	4	230521	0	B-C	3	1105	0.533031674	0.333031674	0.181904052	0.181904052	0.230769231	0.000904977	0.265540007	-0.265540007	-0.134052639	-0.144820231	-0.023698031	-0.134052639	-0.144820231
ELA	4	196406	0	B-K	2	1105	0.436199095	0.261538462	0.114027149	0.185202662	0.436199095	0.002714932	0.33793752	-0.050719032	-0.261275047	-0.152357577	-0.33793752	-0.050719032	-0.261275047
ELA	4	180439	0	B-K	3	1105	0.412696883	0.278733032	0.138461538	0.242895928	0.412696883	0.002714932	0.418439497	-0.051333168	-0.226133009	-0.26524243	-0.418439497	-0.051333168	-0.226133009
ELA	4	818797	0	A-K	3	1105	0.460633484	0.460633484	0.06633484	0.121266968	0.242895928	0.00361991	0.436473064	-0.171470257	-0.171470257	-0.092481685	-0.315323033	-0.171470257	-0.092481685
ELA	4	667164	0	B-C	2	1105	0.595475113	0.135746606	0.146606335	0.185202662	0.595475113	0.00361991	0.602918437	-0.326660541	-0.290041786	-0.602918437	-0.326660541	-0.290041786	-0.602918437
ELA	4	986540	0	A-K	3	1105	0.556561086	0.556561086	0.113122172	0.209094977	0.125791855	0.00361991	0.509332092	-0.096410178	-0.30654594	-0.28883826	-0.509332092	-0.096410178	-0.30654594
ELA	4	515089	0	A-V	2	1105	0.490497738	0.490497738	0.18280543	0.13755661	0.18280543	0.002714932	0.452154297	-0.314773718	-0.325178932	-0.199338558	-0.226700552	-0.314773718	-0.199338558
ELA	4	135559	0	A-K	2	1105	0.5760181	0.108597285	0.5760181	0.097938009	0.114027149	0.00361991	0.461840394	-0.264126084	-0.149385503	-0.461840394	-0.264126084	-0.149385503	-0.461840394
ELA	4	817363	0	A-K	3	1105	0.554751131	0.091402715	0.554751131	0.291402715	0.086233484	0.00361991	0.465425803	-0.156775803	-0.288931669	-0.292611626	-0.465425803	-0.156775803	-0.288931669
ELA	4	740766	0	A-K	3	1105	0.648868778	0.171945701	0.648868778	0.075888235	0.595475113	0.00361991	0.602918437	-0.326660541	-0.290041786	-0.602918437	-0.326660541	-0.290041786	-0.602918437
ELA	4	303136	0	D	2	1105	0.653393665	0.0760181	0.194570136	0.113122172	0.653393665	0.00361991	0.461840394	-0.264126084	-0.149385503	-0.461840394	-0.264126084	-0.149385503	-0.461840394
ELA	4	627202	0	B-C	2	1105	0.514932127	0.155656109	0.187330314	0.138461538	0.514932127	0.00361991	0.339639362	-0.170421275	-0.160720719	-0.11758817	-0.339639362	-0.170421275	-0.11758817
ELA	4	131059	0	B-K	1	1105	0.80542986	0.045248869	0.80542986	0.098632579	0.052488688	0.000904977	0.410317584	-0.227258935	-0.410317584	-0.202871393	-0.247258935	-0.410317584	-0.202871393
ELA	4	937362	0	B-K	2	1105	0.41990502	0.190995023	0.180995023	0.180995023	0.190995023	0.000904977	0.312525884	-0.240098828	-0.0329198	-0.312525884	-0.112756511	-0.312525884	-0.112756511
ELA	4	747110	0	B-K	2	1105	0.618099548	0.104977376	0.968832579	0.121628043	0.618099548	0.00361991	0.312752583	-0.170255743	-0.244667438	-0.071506069	-0.312752583	-0.170255743	-0.244667438
ELA	4	394985	0	B-K	2	1105	0.5140977376	0.504977376	0.121628043	0.171828043	0.5140977376	0.000904977	0.462227439	-0.462227439	-0.149183629	-0.234539684	-0.462227439	-0.149183629	-0.234539684
ELA	4	244249	0	A-K	2	1105	0.7239819	0.130316742	0.053393665	0.7239819	0.091402715	0.000904977	0.52690868	-0.27145735	-0.27145735	-0.195015551	-0.52690868	-0.27145735	-0.195015551
ELA	4	24907	0	A-K	2	1105	0.485972851	0.142081448	0.142081448	0.289592792	0.485972851	0.000904977	0.436729882	-0.22953936	-0.202961287	-0.140559606	-0.436729882	-0.22953936	-0.202961287
ELA	4	399871	0	A-K	2	1105	0.576470588	0.576470588	0.116742081	0.152941176	0.576470588	0.002714932	0.514221301	-0.12166018	-0.21166018	-0.265056944	-0.250110328	-0.514221301	-0.21166018
ELA	4	499400	0	A-V	2	1105	0.284162896	0.249773756	0.076923038	0.357466063	0.284162896	0.000904977	0.485014898	-0.349314217	-0.210546498	-0.005485442	-0.485014898	-0.349314217	-0.210546498
ELA	4	470457	0	A-K	2	1105	0.671493213	0.671493213	0.096832579	0.168325792	0.671493213	0.00361991	0.498256762	-0.498256762	-0.262653715	-0.3040775	-0.215044639	-0.498256762	-0.262653715
ELA	4	970823	0	A-K	2	1105	0.561085973	0.102262443	0.153846154	0.561085973	0.180995475	0.001809955	0.417678348	-0.199216816	-0.195015551	-0.417678348	-0.199216816	-0.195015551	-0.417678348
ELA	4	948883	0	D	2	1105	0.390045249	0.34841629	0.122171946	0.390045249	0.13755661	0.001809955	0.252581695	-0.055746116	-0.122171946	-0.140559606	-0.436729882	-0.055746116	-0.122171946
ELA	4	192089	1	D	2	1105	0.512572534	0.205029014	0.512572534	0.170212766	0.112185687	0	0.414813545	-0.148284527	-0.414813545	-0.30719744	-0.101473554	-0.414813545	-0.30719744
ELA	4	207310	1	B-K	2	1105	0.394584139	0.235976789	0.195357834	0.172147002	0.394584139	0.001934236	0.336962504	-0.083209169	-0.249464618	-0.071987482	-0.336962504	-0.083209169	-0.249464618
ELA	4	881814	1	B-C	3	517	0.30754352	0.30754352	0.16827853	0.22016042	0.322017408	0	0.326403659	-0.326403659	-0.153234743	-0.224555743	-0.007021071	-0.326403659	-0.153234743
ELA	4	971899	1	B-C	2	517	0.392649903	0.210831721	0.392649903	0.228239845	0.16827853	0	0.312365387	-0.086400203	-0.312365387	-0.085408355	-0.21772067	-0.312365387	-0.085408355
ELA	4	653970	1	B-V	2	517	0.390715667	0.15860735	0.243713733	0.390715667	0.205029014	0.001934236	0.263468404	-0.20268053	-0.149855536	-0.263468404	-0.030242574	-0.263468404	-0.149855536
ELA	4	337721	1	B-V	2	517	0.415860735	0.415860735	0.255319149	0.179883946	0.147001934	0.001934236	0.260333573	-0.260333573	-0.059005333	-0.129494238	-0.156048619	-0.260333573	-0.059005333
ELA	4	493398	1	B-K	1	517	0.363636364	0.284326893	0.363636364	0.13926499	0.212765957	0	0.257099586	-0.0016866	-0.257099586	-0.29136107	-0.053852773	-0.257099586	-0.29136107
ELA	4	580163	1	B-K	1	517	0.442940039	0.147001934	0.18762089	0.220502901	0.442940039	0.001934236	0.423774548	-0.197941673	-0.154886692	-0.187457963	-0.423774548	-0.197941673	-0.154886692
ELA	4	888653	1	B-K	3	517	0.3268858	0.249516441	0.303675048	0.3268858	0.119922631	0	0.175793934	-0.122937303	-0.3520696	-0.175793934	-0.140349532	-0.175793934	-0.140349532
ELA	4	528334	1																

Cont	Gr	ID	Form	Std	DOE	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.Omits	Point-Biserial	Corr.A	Corr.B	Corr.C	Corr.D
ELA	4	652481	3-B-C	2	298	0.5	0.204697987	0.1571718121	0.134222188	0.0033555705	0.355835201	-0.19266127	-0.217307485	-0.043972643			
ELA	4	201645	3-B-K	1	298	0.503355705	0.194650872	0.16442953	0.127516779	0.503355705	0.010067114	0.397805584	-0.093964402	-0.162838866	-0.268101833	0.397805584	
ELA	4	980224	3-B-K	1	298	0.439597315	0.181208054	0.127516779	0.251677852	0.439597315	0.003355705	0.516223250	-0.233008216	-0.245825077	-0.19476327	0.516223250	
ELA	4	686224	3-B-K	1	298	0.32885906	0.265100671	0.32885906	0.204697987	0.197987867	0.003355705	0.380965005	-0.040637884	0.380965005	-0.274509407	-0.142919778	
ELA	4	689600	0-D	2	1589	0.422818792	0.218120805	0.184563758	0.171114093	0.003355705	0.248468659	-0.104298920	-0.082214896	-0.106570381	-0.106570381		
ELA	4	507208	0-D	1	1589	0.479546885	0.319068597	0.101321586	0.479546885	0.00188798	0.00188798	0.489083177	-0.235320688	-0.220409802	0.489083177	-0.222177017	
ELA	4	892130	0-D	1	1589	0.565135305	0.565135305	0.220264317	0.033354511	0.18061674	0.000629327	0.223167712	0.223167712	0.102892953	-0.185874739	-0.089608094	
ELA	4	540828	0-D	2	1589	0.655129012	0.111930812	0.111930812	0.111930812	0.655129012	0.000629327	0.482476647	-0.271208823	-0.206148031	-0.238989606	0.482476647	
ELA	4	947394	0-A-K	2	1589	0.079880428	0.144115796	0.709880428	0.077113908	0.074889668	0.0534209706	0.534209706	-0.314762353	0.534209706	-0.265069354	-0.242776043	
ELA	4	563981	0-A-K	2	1589	0.382630585	0.102580239	0.099433606	0.41726243	0.382630585	0.000629327	0.332070579	-0.304469314	-0.271480534	0.026514955	0.332070579	
ELA	4	585555	0-A-K	2	1589	0.693517936	0.091881687	0.13782253	0.073001888	0.693517936	0.00377596	0.605858856	-0.291385382	-0.04155382	-0.324870581	-0.296990499	
ELA	4	527783	0-A-V	2	1589	0.738829452	0.738829452	0.079924481	0.089553807	0.099433606	0.001258653	0.454541752	-0.004541752	0.2883510173	-0.258646552	-0.303452247	
ELA	4	702790	0-B-V	1	1589	0.501373317	0.276903713	0.13027061	0.501373317	0.08747664	0.00377596	0.410928086	-0.100843076	-0.275315652	0.410928086	-0.203790847	
ELA	4	872098	0-B-V	1	1589	0.487098804	0.291378225	0.088755053	0.487098804	0.13215859	0.000629327	0.479921935	-0.318673724	-0.137011571	0.479921935	-0.163505445	
ELA	4	540731	0-B-V	2	1589	0.686595343	0.686595343	0.119572058	0.119572058	0.686595343	0.00146633	0.51989783	0.51989783	-0.248854154	-0.3286205	-0.200665187	
ELA	4	188757	0-B-K	3	1589	0.528005035	0.259282568	0.528005035	0.096232033	0.121460038	0.000629327	0.46483439	-0.197621806	0.46483439	-0.23282961	-0.235311163	
ELA	4	691136	0-B-C	3	1589	0.302076778	0.266834411	0.72434594	0.257394858	0.302076778	0.000629327	0.324847403	-0.086420271	-0.138577726	-0.134061938	0.324847403	
ELA	4	569136	0-B-C	2	1589	0.801762115	0.652234471	0.064754146	0.096232033	0.801762115	0.000629327	0.536223812	-0.286774439	-0.287807072	-0.29079232	0.536223812	
ELA	4	131905	0-B-C	2	1589	0.613593455	0.613593455	0.100692259	0.100692259	0.613593455	0.000629327	0.489732784	-0.489732784	-0.236421936	-0.26502186	-0.198506584	
ELA	4	507731	0-B-V	2	1589	0.626179987	0.200755192	0.099433606	0.626179987	0.071743235	0.00188798	0.402869175	-0.132075394	-0.276714964	0.402869175	-0.223387118	
ELA	4	260541	0-D	2	1589	0.315921963	0.315921963	0.22152297	0.207048458	0.254247955	0.001258653	0.268324613	0.268324613	0.096126219	-0.113255105	-0.088689723	
ELA	4	871301	0-D	2	1589	0.427605412	0.117054751	0.064191315	0.076148521	0.427605412	0.000629327	0.451230584	-0.29942141	-0.247615847	-0.212708891	-0.412364848	
ELA	4	945813	0-D	2	1589	0.583385777	0.069225928	0.195720579	0.151667716	0.583385777	0.000629327	0.412305654	-0.250418958	-0.151626461	-0.221750235	0.412305654	
ELA	4	646625	0-D	2	1589	0.514159849	0.319068597	0.064191315	0.514159849	0.100629327	0.002517306	0.552626824	-0.418468018	-0.193168579	0.552626824	-0.106040564	
ELA	4	184350	0-D	3	1589	0.630585274	0.169918188	0.630585274	0.094398989	0.103838892	0.001258653	0.416117986	-0.320711337	0.416117986	-0.166508023	-0.099617791	
ELA	4	741512	0-D	3	1589	0.488986784	0.158905008	0.488986784	0.187539333	0.164254248	0.000629327	0.265051866	-0.081975156	0.265051866	-0.137348236	-0.130090599	
ELA	4	678958	0-D	3	1589	0.509125236	0.141159489	0.509125236	0.178099434	0.170547514	0.000629327	0.47077943	-0.127400097	0.47077943	-0.186990902	-0.283270089	
ELA	4	582770	0-D	3	1589	0.509754563	0.167400881	0.205789805	0.116425428	0.509754563	0.000629327	0.358730068	-0.095087779	-0.201478055	0.358730068	-0.191871839	
ELA	4	925111	0-D	2	1589	0.514159849	0.154185022	0.146633103	0.138451857	0.554971366	0.001258653	0.513337838	-0.169235919	-0.285994462	-0.263640243	0.513337838	
ELA	4	548725	0-D	2	1589	0.660163625	0.074260541	0.156073002	0.660163625	0.108873505	0.000629327	0.456644385	-0.226710428	-0.223643005	0.456644385	-0.240627728	
ELA	4	570611	0-D	2	1589	0.444933921	0.234109503	0.152923689	0.444933921	0.167400881	0.000629327	0.371809645	-0.241948106	-0.170662076	0.371809645	-0.053993616	
ELA	4	690531	0-D	2	1589	0.494021397	0.071743235	0.065499689	0.494021397	0.368159373	0.000629327	0.421892867	-0.252753123	-0.237979925	-0.21892867	-0.178534623	
ELA	4	395958	0-D	3	1589	0.686595343	0.686595343	0.14159849	0.039647577	0.13215859	0.00377596	0.409828188	-0.242475063	-0.2400475063	-0.212750235	0.409828188	
ELA	4	560763	0-A-V	2	1589	0.533668974	0.206419132	0.533668974	0.113908118	0.143486849	0.002517306	0.438335612	-0.236425421	0.438335612	-0.211355005	-0.114809436	
ELA	4	676311	0-A-V	2	1589	0.455632473	0.455632473	0.206419132	0.118313405	0.1522929704	0.0044405286	0.239425232	0.239425232	0.09491042	-0.259029465	-0.096786978	
ELA	4	328863	0-A-V	2	1589	0.583385777	0.12382651	0.202013845	0.583385777	0.083700441	0.002517306	0.556939929	-0.308357349	-0.261365289	-0.259029465	-0.266889597	
ELA	4	145199	0-A-K	2	1589	0.598499616	0.162366268	0.108873505	0.598499616	0.126494651	0.00377596	0.542589975	-0.270712911	-0.203478744	0.542589975	-0.29313969	
ELA	4	680396	0-A-K	2	1589	0.405286344	0.092511013	0.405286344	0.313404657	0.185022026	0.00377596	0.3572178	-0.262576295	0.3572178	-0.018185151	-0.219588397	
ELA	4	850606	0-B-K	2	1589	0.512271869	0.151271869	0.151271869	0.161770511	0.434047026	0.000629327	0.331539084	-0.221817927	-0.077678674	-0.156970697	0.331539084	
ELA	4	537718	0-B-K	2	1589	0.463752675	0.105726872	0.261799874	0.195091252	0.439276369	0.000629327	0.360356202	-0.258168896	-0.068838221	-0.172838727	0.360356202	
ELA	4	761208	0-B-C	3	1589	0.308999371	0.308999371	0.281938326	0.234109503	0.174952801	0.001258653	0.364651319	-0.15886879	-0.208789503	0.364651319	-0.269909162	
ELA	4	878450	0-B-V	2	1589	0.635193455	0.183763373	0.635193455	0.04343537	0.001258653	0.388636088	-0.170676922	-0.200079626	0.388636088	-0.248129899	-0.254256513	
ELA	4	594561	0-A-K	3	1589	0.58653241	0.187539333	0.059786029	0.162995595	0.58653241	0.003146633	0.467965282	-0.209040762	-0.24448106	-0.236631338	0.467965282	
ELA	4	602700	0-A-K	3	1589	0.3446759	0.151038389	0.213971051	0.41346759	0.421900564	0.002517306	0.213652229	-0.124326469	-0.146695182	0.213652229	0.000762716	
ELA	4	516204	0-A-K	3	1589	0.424795469	0.22125297	0.217474701	0.129011957	0.424795469	0.006293266	0.430441143	-0.149268178	-0.154828852	0.430441143	-0.09441143	
ELA	4	483459	0-B-V	1	1589	0.782252989	0.134675897	0.06500944	0.782252989	0.045311517	0.001258653	0.364651319	-0.15886879	-0.208789503	0.364651319	-0.269909162	
ELA	4	577866	0-B-C	3	1589	0.59332914	0.59332914	0.145373745	0.100692259	0.59332914	0.001258653	0.503776035	-0.251929593	-0.251929593	-0.235243886	-0.254256513	
ELA	4	945451	0-B-V	2	1589	0.596601636	0.157960982	0.103838892	0.596601636	0.13971051	0.00188798	0.437243343	-0.209922274	-0.297499539	0.437243343	-0.141317598	
ELA	4	198740	0-B-V	2	1589	0.54940214	0.260541221	0.54940214	0.084329767	0.105726872	0.00188798	0.520342109	-0.285773271	-0.226018486	-0.277581371	0.520342109	
ELA	4	537751	0-B-C	3	1589	0.433606042	0.148521082	0.215229704	0.201384519	0.433606042	0.001258653	0.341491299	-0.188526444	-0.098406846	-0.15215521	0.341491299	
ELA	4	983390	0-B-V	2	1589	0.62051605	0.62051605	0.056639396	0.203901825	0.077407174	0.001258653	0.25502774	-0.216192824	-0.16192824	-0.033059401	-0.215045518	
ELA	4	985964	1-D	2	742	0.477088949	0.184636119	0.176549865	0.160377358	0.477088949	0.001347709	0.337757308	-0.241443051	-0.166236248	-0.152136221	0.337757308	
ELA	4	967032	1-A-V	2	742	0.680592292	0.09703504	0.130727763	0.090296496	0.680592292	0.001347709	0.520342109	-0.285773271	-0.226018486	-0.277581371	0.520342109	
ELA	4	394512	1-A-V	1	742	0.842318059	0.049865229</										

Cont	Gr	ID	Form	Stk	DOK	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.OMits	Prop.Biserial	Corr.A	Corr.B	Corr.C	Corr.D
ELA	5	40164	3-A	4	2	431	0.1496519722	0.125290023	0.194885592	0.180974478	0.002320186	0.328330015	0.328330015	-0.170337291	0.130920384	-0.051575129	-0.1434563371
ELA	5	942818	3-A	4	3	431	0.343834741	0.157772622	0.431554524	0.343834741	0.067285383	0	0.125966278	-0.170337291	0.130920384	0.125966278	-0.249745185
ELA	5	495948	3-A	4	3	431	0.401392111	0.242199304	0.171693750	0.183294664	0.099769211	0.002320186	0.462757308	-0.084598049	-0.312883959	-0.131372202	0.42673708
ELA	5	755019	3-A	4	3	431	0.551976228	0.129930394	0.192575406	0.175767981	0.039179811	0	0.380053843	-0.161880294	-0.215838145	0.380053843	-0.160761014
ELA	5	9611172	3-A	4	3	431	0.3366589327	0.204176334	0.366589327	0.204176334	0.095212761	0	0.152313514	-0.055168800	0.152313514	-0.055168800	-0.266086589
ELA	5	111717	3-A	4	2	431	0.709976798	0.099767981	0.709976798	0.099767981	0.127610209	0	0.502075248	-0.178820007	0.502075248	-0.178820007	-0.2781146328
ELA	5	290428	3-A	4	2	431	0.49187935	0.49187935	0.125290023	0.234338747	0.148491879	0	0.137925374	0.137925374	0.137925374	0.137925374	-0.071909555
ELA	5	389702	3-A	4	3	431	0.807424594	0.104408853	0.034807284	0.053364269	0.807424594	0	0.492706182	-0.312476702	-0.198898455	-0.277091902	0.492706182
ELA	5	141680	3-A	4	3	431	0.417633411	0.259860789	0.417633411	0.259860789	0.139211137	0.00070028	0.28716229	-0.08351401	0.28716229	-0.08351401	-0.11123948
ELA	6	592331	O-B	2	2856	0.63249972	0.62429972	0.150660224	0.0931373755	0.1313020251	0.00070028	0.476498898	-0.226116001	-0.283146302	-0.283146302	-0.19711858	0.476498898
ELA	6	843228	O-B	2	2856	0.354691877	0.348039216	0.16981797	0.12640056	0.354691877	0.00105042	0.27326037	0.015778057	-0.127071949	-0.268150166	0.27326037	0.015778057
ELA	6	462657	O-B	2	2856	0.315757031	0.12429972	0.449292972	0.315757031	0.107492997	0.00070028	0.300205586	-0.126981867	0.300205586	-0.126981867	0.300205586	-0.126981867
ELA	6	521426	O-B	2	2856	0.767507003	0.767507003	0.052170868	0.12710084	0.052170868	0.00035014	0.519845098	-0.198405098	0.519845098	-0.198405098	0.519845098	-0.198405098
ELA	6	347483	O-B	2	2856	0.74056218	0.74056218	0.072128882	0.055672269	0.74056218	0.0017507	0.468607237	-0.15097275	0.468607237	-0.15097275	0.468607237	-0.15097275
ELA	6	254211	O-B	2	2856	0.890056022	0.035014006	0.039919566	0.890056022	0.039919566	0.00105042	0.487184618	-0.267582864	0.487184618	-0.267582864	0.487184618	-0.267582864
ELA	6	15828	O-B	2	2856	0.651260504	0.089285714	0.651260504	0.150210084	0.108193377	0.00105042	0.441063869	-0.287372555	0.441063869	-0.287372555	0.441063869	-0.287372555
ELA	6	937196	O-B	2	2856	0.734943978	0.734943978	0.084383754	0.090686275	0.084383754	0.00105042	0.415473698	0.415473698	0.415473698	0.415473698	0.415473698	0.415473698
ELA	6	829607	O-B	2	2856	0.712288515	0.091036415	0.712288515	0.165266166	0.148109244	0.00140056	0.362264965	-0.298509598	0.362264965	-0.298509598	0.362264965	-0.298509598
ELA	6	208867	O-B	2	2856	0.661414566	0.095238095	0.182422969	0.06962493	0.661414566	0.00035014	0.438494027	-0.179392628	0.438494027	-0.179392628	0.438494027	-0.179392628
ELA	6	07352	O-B	2	2856	0.51927941176	0.049719888	0.068627451	0.51927941176	0.049719888	0.00070028	0.459436558	-0.231104545	0.459436558	-0.231104545	0.459436558	-0.231104545
ELA	6	146033	O-B	2	2856	0.632703081	0.632703081	0.086134454	0.054798319	0.086134454	0.00070028	0.490049234	0.490049234	0.490049234	0.490049234	0.490049234	0.490049234
ELA	6	641585	O-B	2	2856	0.585084034	0.103641457	0.585084034	0.175070028	0.132044482	0.00070028	0.471717965	-0.249591923	0.471717965	-0.249591923	0.471717965	-0.249591923
ELA	6	849814	O-B	2	2856	0.400210084	0.2482493	0.242647059	0.400210084	0.108543417	0.00035014	0.28058534	-0.097320188	0.28058534	-0.097320188	0.28058534	-0.097320188
ELA	6	731787	O-B	2	2856	0.543417367	0.179971989	0.151610644	0.12464986	0.543417367	0.00035014	0.339739462	-0.205130504	0.339739462	-0.205130504	0.339739462	-0.205130504
ELA	6	584841	O-A	2	2856	0.519607843	0.519607843	0.118697479	0.148459384	0.210084034	0.001315261	0.337273496	0.337273496	0.337273496	0.337273496	0.337273496	0.337273496
ELA	6	114984	O-A	2	2856	0.603291317	0.170868347	0.12710084	0.603291317	0.09688796	0.0017507	0.402192022	-0.222754288	0.402192022	-0.222754288	0.402192022	-0.222754288
ELA	6	594215	O-A	2	2856	0.51254902	0.225490196	0.147408964	0.112394958	0.51254902	0.00245098	0.406708979	-0.076526936	0.406708979	-0.076526936	0.406708979	-0.076526936
ELA	6	744219	O-A	2	2856	0.49698599	0.49698599	0.194677871	0.107843137	0.194677871	0.00280112	0.380034828	-0.380034828	0.380034828	-0.380034828	0.380034828	-0.380034828
ELA	6	642109	O-A	2	2856	0.768907563	0.06197479	0.768907563	0.06337535	0.103641457	0.00210084	0.44593481	-0.206423583	0.44593481	-0.206423583	0.44593481	-0.206423583
ELA	6	803652	O-A	2	2856	0.490896359	0.161414566	0.221638655	0.490896359	0.12429972	0.0017507	0.40106703	-0.125290339	0.40106703	-0.125290339	0.40106703	-0.125290339
ELA	6	868171	O-A	2	2856	0.453431373	0.116246499	0.237044818	0.193277311	0.453431373	0	0.228874744	-0.108773129	0.228874744	-0.108773129	0.228874744	-0.108773129
ELA	6	489998	O-D	2	2856	0.710084034	0.241596659	0.710084034	0.029061625	0.018557423	0.00070028	0.273729536	-0.16023015	0.273729536	-0.16023015	0.273729536	-0.16023015
ELA	6	825538	O-D	2	2856	0.959383375	0.137955182	0.959383375	0.105742297	0.1529133725	0.00105042	0.519026265	-0.292214648	0.519026265	-0.292214648	0.519026265	-0.292214648
ELA	6	352347	O-D	2	2856	0.668417367	0.668417367	0.037114846	0.04376570	0.248894958	0.0017507	0.429103201	-0.206412069	0.429103201	-0.206412069	0.429103201	-0.206412069
ELA	6	280473	O-D	2	2856	0.581823249	0.06165826	0.0661676471	0.581823249	0.210084034	0.00105042	0.3752501	-0.232785577	0.3752501	-0.232785577	0.3752501	-0.232785577
ELA	6	172029	O-D	2	2856	0.81372549	0.071778711	0.021358543	0.0931373255	0.81372549	0	0.445895152	-0.267445889	0.445895152	-0.267445889	0.445895152	-0.267445889
ELA	6	501850	O-D	2	2856	0.74598319	0.037464986	0.74598319	0.021708863	0.194677871	0.00035014	0.258746109	-0.184615064	0.258746109	-0.184615064	0.258746109	-0.184615064
ELA	6	841026	O-D	2	2856	0.635504202	0.125	0.027478992	0.635504202	0.167016807	0	0.220270245	-0.056490305	0.220270245	-0.056490305	0.220270245	-0.056490305
ELA	6	129897	O-D	2	2856	0.43977575	0.195028011	0.219187675	0.43977575	0.144257103	0.0017507	0.300613337	-0.14789737	0.300613337	-0.14789737	0.300613337	-0.14789737
ELA	6	729762	O-D	2	2856	0.655462185	0.06967871	0.12640056	0.148109244	0.655462185	0.0005042	0.323085576	-0.207151645	0.323085576	-0.207151645	0.323085576	-0.207151645
ELA	6	223795	O-B	2	2856	0.56092437	0.330882353	0.054621849	0.052521008	0.56092437	0.00105042	0.42518434	-0.189263556	0.42518434	-0.189263556	0.42518434	-0.189263556
ELA	6	631531	O-B	2	2856	0.478641457	0.152310924	0.478641457	0.204341373	0.164215686	0.00140056	0.253049894	-0.174649535	0.253049894	-0.174649535	0.253049894	-0.174649535
ELA	6	448411	O-B	2	2856	0.646008403	0.646008403	0.086837474	0.198879552	0.0665216611	0.0017507	0.434453227	-0.434453227	0.434453227	-0.434453227	0.434453227	-0.434453227
ELA	6	447870	O-B	2	2856	0.461484594	0.461484594	0.295168067	0.070728291	0.171586827	0.00105042	0.188960771	-0.188960771	0.188960771	-0.188960771	0.188960771	-0.188960771
ELA	6	413852	O-B	2	2856	0.625910236	0.089285714	0.158963585	0.148459384	0.625910236	0.00070028	0.200975695	-0.1159482	0.200975695	-0.1159482	0.200975695	-0.1159482
ELA	6	268991	O-B	2	2856	0.831232493	0.077731092	0.831232493	0.066876751	0.023800524	0.00035014	0.41277551	-0.253527897	0.41277551	-0.253527897	0.41277551	-0.253527897
ELA	6	745092	O-A	2	2856	0.674670588	0.073879552	0.674670588	0.18802521	0.06127451	0.00035014	0.466000467	-0.358284437	0.466000467	-0.358284437	0.466000467	-0.358284437
ELA	6	469695	O-A	2	2856	0.383053221	0.198179272	0.286414566	0.383053221	0.1320042801	0.00035014	0.252718595	-0.070919187	0.252718595	-0.070919187	0.252718595	-0.070919187
ELA	6	788001	O-A	2	2856	0.655112045	0.655112045	0.073879552	0.175070028	0.095238095	0.00070028	0.400236822	-0.242260575	0.400236822	-0.242260575	0.400236822	-0.242260575
ELA	6	427959	O-A	2	2856	0.415616246	0.099439776	0.222689076	0.216904762	0.415616246	0.00035014	0.289036339	-0.274586685	0.289036339	-0.274586685	0.289036339	-0.274586685
ELA	6	380316	O-A	2	2856	0.51521008	0.113795518	0.51521008	0.2464986	0.083683473	0.00035014	0.268169914	-0.155024696	0.268169914	-0.155024696	0.268169914	-0.155024696
ELA	6	997492	O-B	2	2856	0.485994398	0.219887955	0.485994398	0.130232101	0.162815126	0.00105042	0.217513303	-0.1582875	0.217513303	-0.1582875		

Cont	Gr	ID	Form	Stv	DOK	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.Omits	Prop.Biserial	Corr.A	Corr.B	Corr.C	Corr.D	
ELA	6	63901	2	B	3	770	0.511948052	0.04025974	0.316883117	0.084415584	0.551948052	0.006493506	0.366005803	-0.252668073	-0.155979371	-0.230709208	0.366005803	
ELA	6	951580	2	B	3	770	0.401298701	0.401298701	0.118181818	0.38961039	0.088311688	0.002597403	0.339745407	0.339745407	-0.21119789	-0.149724605	-0.068176598	-0.309293811
ELA	6	983488	2	D	2	770	0.57792078	0.141558442	0.155844156	0.179422078	0.114675325	0	0.395890141	-0.21119789	-0.21119789	-0.223256955	0.395890141	-0.123971005
ELA	6	324524	3	D	7	777	0.571608752	0.092664093	0.037323037	0.118404110	0.751608752	0	0.334291187	-0.256269794	-0.163704671	-0.124231131	-0.334291187	-0.271091144
ELA	6	790038	3	B	3	777	0.388674389	0.099090909	0.462033467	0.388674389	0.05019305	0	0.150032279	-0.27642011	-0.27642011	-0.167699562	0.150032279	-0.271091144
ELA	6	136952	3	B	3	777	0.788043758	0.758043758	0.101673102	0.073359073	0.066924067	0	0.460914478	0.460914478	0.01364982643	-0.24437304	-0.235554025	-0.24437304
ELA	6	133457	3	B	3	777	0.601023601	0.115830116	0.01023601	0.142857143	0.138986139	0.001287001	0.499970341	-0.209241513	0.499970341	-0.195008479	-0.302526421	-0.195008479
ELA	6	117670	3	B	3	777	0.472586873	0.046332046	0.05019305	0.030888031	0.872586873	0	0.450703	-0.227485926	-0.227485926	-0.29262682	-0.227485926	-0.450703
ELA	6	390142	3	B	3	777	0.86782497	0.271557272	0.1003861	0.128700129	0.496782497	0.002574003	0.433786133	-0.094223809	-0.276005285	-0.223666867	0.433786133	-0.223666867
ELA	6	880358	3	B	3	777	0.673101673	0.141570142	0.117117117	0.1167311673	0.068211068	0	0.384522296	-0.206584691	-0.134431274	0.384522296	-0.25828852	-0.25828852
ELA	6	720975	3	B	3	777	0.716859717	0.1716859717	0.097812098	0.1193101673	0.065637066	0	0.445713231	0.445713231	-0.228210827	-0.258284914	-0.198560433	-0.258284914
ELA	6	536755	3	B	3	777	0.693693694	0.048906049	0.693693694	0.158301158	0.090909099	0	0.340077463	-0.193501813	0.340077463	-0.107342921	-0.253774944	-0.107342921
ELA	6	895719	3	D	7	777	0.795366795	0.083650884	0.795366795	0.038610039	0.082368082	0	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	253559	0	D	3	3228	0.63228005	0.057311029	0.066294919	0.63228005	0.242874845	0.001239157	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	618823	0	D	3	3228	0.855328377	0.064008922	0.041201983	0.040290789	0.855328377	0.000309789	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	449657	0	D	3	3228	0.562267658	0.189281289	0.562267658	0.057260928	0.191759603	0.000929368	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	927017	0	A	K	3228	0.5710021239	0.2227075589	0.5710021239	0.124225237	0.091697646	0	0.364823002	-0.196113583	0.364823002	-0.169338708	-0.149715261	-0.169338708
ELA	7	591286	0	A	V	3228	0.753097893	0.059962825	0.08952192	0.117410161	0.059962825	0	0.41600278	-0.41600278	0.41600278	-0.164503467	-0.173083473	-0.164503467
ELA	7	567197	0	A	V	3228	0.762391574	0.068153656	0.115241636	0.762391574	0.053593556	0.000619579	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	823978	0	B	V	3228	0.723048327	0.068773234	0.073048327	0.156753408	0.000309789	0.000309789	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	403443	0	A	C	3228	0.873605948	0.149628253	0.365551425	0.110285006	0.373605948	0.000929368	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	948710	0	A	C	3228	0.647149938	0.08983891	0.134448575	0.647149938	0.0647149938	0.000929368	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	368524	0	B	C	3228	0.475216853	0.199814126	0.23798637	0.086431227	0.475216853	0.001239157	0.379410417	-0.23743472	0.379410417	-0.23743472	0.379410417	-0.23743472
ELA	7	148520	0	B	C	3228	0.534696406	0.534696406	0.061028501	0.327137546	0.076517968	0.000619579	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	460874	0	A	V	3228	0.45755886	0.17987608	0.73853779	0.45755886	0.088238853	0.000309789	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	198654	0	V	3	3228	0.512391574	0.27850062	0.048946716	0.16016109	0.152391574	0	0.386315227	-0.252753313	-0.17318793	-0.15619625	0.386315227	-0.252753313
ELA	7	561173	0	A	C	3228	0.671967878	0.042750929	0.064745973	0.126703841	0.000619579	0.000619579	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	817980	0	D	3	3228	0.790272615	0.790272615	0.050185874	0.057930607	0.100991326	0.000619579	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	575988	0	D	3	3228	0.500929368	0.500929368	0.245335316	0.098513011	0.1153965304	0.001239157	0.379410417	-0.23743472	0.379410417	-0.23743472	0.379410417	-0.23743472
ELA	7	311092	0	D	3	3228	0.46889715	0.253407683	0.426889715	0.090768278	0.228983425	0	0.303030386	-0.055278161	0.303030386	-0.245701726	-0.131543674	-0.055278161
ELA	7	629922	0	D	3	3228	0.669454771	0.040272615	0.669454771	0.063365551	0.224904833	0	0.322658091	-0.128779891	0.322658091	-0.253392552	-0.152888474	-0.253392552
ELA	7	361134	0	A	C	3228	0.889095415	0.057311029	0.031288274	0.889095415	0.022304833	0	0.391143349	-0.264067391	-0.233342054	0.391143349	-0.140997808	-0.233342054
ELA	7	805987	0	D	3	3228	0.543990087	0.123296159	0.139405204	0.19298761	0.543990087	0.000309789	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	627699	0	D	3	3228	0.562095576	0.085192069	0.104089219	0.562095576	0.053593556	0.000619579	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	792926	0	A	V	3228	0.387564668	0.387564668	0.290892193	0.242874845	0.076886493	0	0.433533267	-0.433533267	0.433533267	-0.205108782	-0.234452723	-0.096866113
ELA	7	978224	0	A	C	3228	0.664807931	0.127633209	0.162639405	0.04919455	0.664807931	0.000929368	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	701186	0	A	C	3228	0.727075589	0.19361834	0.030879834	0.04770559	0.727075589	0.000619579	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	164148	0	D	3	3228	0.846344486	0.036864932	0.846344486	0.07682757	0.039653036	0.000309789	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	678122	0	A	V	3228	0.5054523	0.065675341	0.102320483	0.5054523	0.072490762	0.000309789	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	759246	0	A	V	3228	0.572490706	0.18866171	0.572490706	0.159231722	0.076886493	0.000929368	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	704719	0	A	C	3228	0.50805452	0.108736059	0.121964064	0.50805452	0.119268897	0.001239157	0.379410417	-0.23743472	0.379410417	-0.23743472	0.379410417	-0.23743472
ELA	7	343311	0	A	K	3228	0.534386617	0.153204461	0.163568773	0.534386617	0.144981413	0.001858736	0.482012836	-0.278061908	-0.22614722	0.482012836	-0.154894503	-0.22614722
ELA	7	676168	0	A	V	3228	0.7354399	0.04739777	0.081474937	0.7354399	0.096344486	0.001239157	0.379410417	-0.23743472	0.379410417	-0.23743472	0.379410417	-0.23743472
ELA	7	676830	0	A	V	3228	0.379491945	0.16511772	0.379491945	0.191759603	0.262081784	0	0.481127129	-0.241292066	-0.257768805	-0.220702078	0.481127129	-0.241292066
ELA	7	257776	0	B	K	3228	0.648079131	0.127633209	0.162639405	0.04919455	0.648079131	0.000309789	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	135894	0	B	C	3228	0.554213135	0.196406444	0.120580855	0.554213135	0.128562971	0	0.358485027	-0.358485027	0.358485027	-0.280920355	-0.162383827	-0.358485027
ELA	7	938878	0	B	C	3228	0.517038414	0.517038414	0.141883519	0.183705081	0.157379286	0	0.358485027	-0.358485027	0.358485027	-0.280920355	-0.162383827	-0.358485027
ELA	7	87928	0	B	V	3228	0.553593556	0.115241636	0.553593556	0.133209418	0.193733582	0.000619579	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	466639	0	B	V	3228	0.619268897	0.159231722	0.619268897	0.124535316	0.096564275	0.000309789	0.443926049	-0.233422541	0.443926049	-0.281337608	-0.219199518	-0.281337608
ELA	7	724993	0	A	K	3228	0.70291202	0.07606914	0.122988639	0.098866171	0.70291202	0.001239157	0.379410417	-0.23743472	0.379410417	-0.23743472	0.379410417	-0.23743472
ELA	7	114704	0	A	K	3228	0.559789343	0.179677819	0.125154895	0.133209418	0.559789343	0.001239157	0.379410417	-0.23743472	0.379410417	-0.23743472</		

Cont	Gr	ID	Form	Std	DOE	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.E	Prop.Omits	PointBiserial	Corr.A	Corr.B	Corr.C	Corr.D	Corr.E	
ELA	7	1071080	2-B	K	3	891	0.278338945	0.415267349	0.2307838945	0.0740074074	0.0022244669	0.051439307	0.168625523	-0.095785283	0.051439307	-0.245846966	-0.28271991	-0.126391904	-0.266461172	
ELA	7	617656	2-B	K	3	891	0.594837262	0.594837262	0.1335578	0.069584736	0.200897868	0.001122334	0.415773322	0.415773322	0.415773322	0.4242928834	-0.235900915	-0.286461172	-0.074524782	
ELA	7	9237361	2-B	K	3	891	0.685746352	0.161616162	0.685746352	0.088646262	0.062875073	0.001122334	0.349284163	-0.085657069	0.349284163	0.349284163	-0.235900915	-0.286461172	-0.074524782	
ELA	7	423758	2-B	K	3	891	0.356902357	0.356902357	0.143663661	0.126823793	0.194166382	0.001122334	0.195965839	-0.195965839	0.195965839	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	7	482989	2-B	K	3	891	0.435465769	0.203142536	0.14356881	0.21661055	0.435465769	0.001122334	0.216952611	-0.008465047	0.216952611	-0.171213101	-0.109748896	-0.216952611	-0.216952611	
ELA	7	200178	2-B	D	1	891	0.598204265	0.152637486	0.11335878	0.134680135	0.598204265	0.001122334	0.485742432	-0.208370719	0.485742432	-0.208370719	-0.208370719	-0.208370719	-0.208370719	
ELA	7	411937	2-B	D	2	891	0.400673401	0.090909091	0.400673401	0.274971942	0.232323232	0.001122334	0.204651456	-0.180149072	0.204651456	-0.134546514	-0.208370719	-0.208370719	-0.208370719	-0.208370719
ELA	7	27910	3-B	C	3	898	0.634743875	0.03674833	0.069042316	0.634743875	0.259465579	0.001122334	0.385388320	-0.246259497	0.385388320	-0.246259497	-0.246259497	-0.246259497	-0.246259497	-0.246259497
ELA	7	745614	3-B	C	3	898	0.511335857	0.20716949	0.155902004	0.212494432	0.511335857	0.003340757	0.447126114	-0.110681098	0.447126114	-0.110681098	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	7	546258	3-B	C	3	898	0.615812918	0.083518931	0.615812918	0.171492205	0.12583340757	0.003340757	0.40908105	-0.264140677	0.40908105	-0.264140677	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	7	546573	3-B	C	3	898	0.385300668	0.385300668	0.281737194	0.26389755	0.075723831	0.003340757	0.202741695	-0.202741695	0.202741695	-0.202741695	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	7	581348	3-B	C	3	898	0.385300668	0.18596882	0.18596882	0.239866637	0.385300668	0.002227171	0.19352002	-0.146440004	0.19352002	-0.146440004	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	7	52750	3-B	C	3	898	0.428730512	0.084632517	0.428730512	0.405979555	0.074610249	0.002227171	0.292833993	-0.17486772	0.292833993	-0.17486772	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	7	53870	3-B	C	3	898	0.251670379	0.251670379	0.31791938	0.219376392	0.004454343	0.004454343	0.012572275	-0.052895746	0.012572275	-0.052895746	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	7	961724	3-B	C	3	898	0.30623608	0.191536781	0.145886652	0.672228202	0.001345533	0.001345533	0.335251568	-0.142976021	0.335251568	-0.142976021	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	7	846170	3-B	C	3	898	0.533407572	0.533407572	0.156374833	0.062360802	0.248329621	0.002227171	0.175005741	-0.175005741	0.175005741	-0.175005741	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	7	47869	3-D	2	898	0.562360802	0.080178174	0.562360802	0.247216036	0.110244989	0.002227171	0.305819357	-0.130185962	0.305819357	-0.130185962	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	448894	0-A	K	3	3716	0.384284177	0.384284177	0.165769645	0.086383208	0.001345533	0.253823518	-0.01385992	0.253823518	-0.01385992	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	76630	0-A	K	3	3716	0.251614639	0.125709365	0.751614639	0.049246502	0.069429494	0.043318509	0.200871919	-0.433318509	0.200871919	-0.433318509	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	682639	0-A	K	3	3716	0.694833154	0.694833154	0.092303552	0.111410118	0.101184069	0.000269107	0.450308946	-0.450308946	0.450308946	-0.450308946	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	983834	0-A	K	3	3716	0.688374596	0.113832078	0.098300323	0.688374596	0.096690257	0.001883746	0.458657355	-0.269531157	0.458657355	-0.269531157	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	645610	0-A	K	3	3716	0.723089343	0.045209903	0.162721259	0.069160988	0.0723089343	0.000269107	0.420928671	-0.420928671	0.420928671	-0.420928671	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	561942	0-A	K	3	3716	0.764531755	0.0680083961	0.095263724	0.071331324	0.00080732	0.00080732	0.507531403	-0.097514003	0.507531403	-0.097514003	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	942629	0-A	V	3	3716	0.617868676	0.243272336	0.092841765	0.617868676	0.045209903	0.00080732	0.350986901	-0.057164007	0.350986901	-0.057164007	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	146522	0-A	V	3	3716	0.672228202	0.056781485	0.124058127	0.145886652	0.672228202	0.001345533	0.335251568	-0.142976021	0.335251568	-0.142976021	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	983834	0-D	2	3716	0.6598493	0.067007535	0.065888913	0.181916039	0.6598493	0.000538213	0.476160437	-0.267092552	0.476160437	-0.267092552	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	489131	0-D	2	3716	0.83934338	0.037674919	0.086652314	0.83934338	0.035791173	0.000538213	0.447375554	-0.260327749	0.447375554	-0.260327749	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	641049	0-D	2	3716	0.622281701	0.622281701	0.19510226	0.096570936	0.085306781	0.000538213	0.420412762	-0.20412762	0.420412762	-0.20412762	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	380441	0-D	2	3716	0.707481163	0.180839612	0.707481163	0.062970796	0.048708288	0.00538213	0.35845088	-0.194137831	0.35845088	-0.194137831	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	183012	0-D	2	3716	0.883476857	0.0368676	0.883476857	0.36329386	0.0433216157	0	0.350915491	-0.222840657	0.350915491	-0.222840657	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	988915	0-D	2	3716	0.5901507	0.127825619	0.142895587	0.5901507	0.1391289505	0	0.463008303	-0.254513076	0.463008303	-0.254513076	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	906135	0-D	2	3716	0.584494962	0.584494962	0.21393972	0.122981701	0.077502691	0.001076426	0.328292676	-0.328292676	0.328292676	-0.328292676	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	497968	0-D	2	3716	0.83342036	0.83342036	0.038751346	0.095532831	0.030273681	0.000269107	0.442652708	-0.442652708	0.442652708	-0.442652708	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	525225	0-B	K	3	3716	0.407667394	0.407667394	0.201291712	0.407667394	0.001614639	0.351581903	-0.068947682	0.351581903	-0.068947682	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	383680	0-B	K	3	3716	0.578363832	0.227664155	0.169806243	0.22202917	0.378363832	0.001283746	0.25805855	-0.28401419	0.25805855	-0.28401419	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	590477	0-B	K	3	3716	0.645885576	0.087190527	0.564585576	0.194872982	0.001883746	0.37138749	-0.151578156	0.37138749	-0.151578156	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	163343	0-B	K	3	3716	0.491657696	0.173842842	0.177341227	0.158812702	0.491657696	0.001345533	0.510041244	-0.130330228	0.510041244	-0.130330228	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	733759	0-B	K	3	3716	0.49919268	0.096609257	0.49919268	0.089612487	0.31189451	0.002691066	0.404247642	-0.31046184	0.404247642	-0.31046184	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	359438	0-B	K	3	3716	0.408234661	0.189451023	0.408234661	0.199567704	0.001883746	0.271300135	-0.051479295	0.271300135	-0.051479295	-0.235900915	-0.286461172	-0.074524782	-0.074524782	
ELA	8	375198	0-B	K	3	3716	0.569967707	0.142596334	0.569967707	0.168466071	0.135091939	0.001883746	0.395220818	-0.135091939	0.395220818	-0.135091939	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	357198	0-B	K	3	3716	0.723412271	0.273412271	0.308661141	0.16065662	0.264262496	0.00080732	0.335870047	-0.335870047	0.335870047	-0.335870047	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	740653	0-B	V	3	3716	0.549784715	0.549784715	0.19510226	0.096609257	0.158889128	0.001614639	0.332430205	-0.332430205	0.332430205	-0.332430205	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	985902	0-B	V	3	3716	0.511302476	0.183091496	0.059741658	0.511302476	0.291980264	0.001883746	0.239534529	-0.49251372	0.239534529	-0.49251372	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	742408	0-B	V	3	3716	0.68369214	0.73369214	0.080462683	0.10191389	0.032023681	0.002125853	0.411472909	-0.260668986	0.411472909	-0.260668986	-0.235900915	-0.286461172	-0.074524782	-0.074524782
ELA	8	667685	0-B	V	3	3716	0.453444564	0.453444564	0.208288482	0.221474704	0.11598493	0.00080732	0.453118676	-0.453118676	0.453118676	-				

Cont	Gr	ID	Form	DOK	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.Omits	Point Bisection	Corr.A	Corr.B	Corr.C	Corr.D
MATH	3	19017	0-B	2	989	0.546106067	0.301314459	0.087967644	0.060667341	0.000444889	0.0471988276	-0.254293435	-0.223308635	0.471988276	-0.203057164	
MATH	3	73657	0-B	1	989	0.53892821	0.223458038	0.130434783	0.102123357	0.53892821	0.005055612	0.444162793	-0.223602358	-0.117894268	0.268177161	0.444162793
MATH	3	22245	0-B	2	989	0.687563191	0.124386049	0.687563191	0.095055501	0.089998989	0.003033367	0.507723259	-0.197380374	0.277723259	-0.203043018	-0.21866151
MATH	3	73395	0-B	2	989	0.707785642	0.17785642	0.062686855	0.142568251	0.083923185	0.003033367	0.500470484	0.500470484	0.236114131	-0.244354482	-0.293929006
MATH	3	537314	0-A	1	989	0.424671385	0.054606077	0.424671385	0.47421638	0.094165311	0.006066734	0.578743109	-0.237687819	0.578743109	-0.390735634	-0.153389925
MATH	3	796525	0-D	1	989	0.7239636	0.07078564	0.7239636	0.105156724	0.094034378	0.006066734	0.526161541	-0.2492004	0.526161541	-0.315466167	-0.237500638
MATH	3	183493	0-B	1	989	0.709807887	0.079878655	0.047522725	0.160768453	0.709807887	0.002022245	0.383935497	-0.159275082	-0.155802757	0.262673216	0.383935497
MATH	3	186399	0-A	1	989	0.673407482	0.250758342	0.03303367	0.673407482	0.045050056	0	0.52832402	-0.40299591	-0.14372507	0.52832402	-0.233256279
MATH	3	514360	0-B	1	989	0.471700409	0.218623482	0.21659919	0.174004049	0.143724696	0.004048583	0.451174746	-0.22544377	-0.170012471	0.451174746	-0.160576172
MATH	3	634093	1-C	2	494	0.368421053	0.491920834	0.062753036	0.074898785	0.368421053	0.002024291	0.56307965	-0.419577254	-0.083085509	-0.164788108	0.56307965
MATH	3	108707	1-D	4	494	0.585020243	0.12145749	0.585020243	0.129554656	0.157894377	0.006072874	0.483534109	-0.249592783	0.483534109	-0.125474244	-0.298445547
MATH	3	970240	1-C	4	494	0.287449393	0.125560673	0.287449393	0.42032632	0.163967611	0.002024291	0.342819722	-0.291138909	0.342819722	-0.10418589	-0.015712605
MATH	3	161883	1-B	2	494	0.374493927	0.259109312	0.25708502	0.374493927	0.107287449	0.002024291	0.465115032	-0.209134771	-0.2212603138	0.465115032	-0.114085182
MATH	3	567340	1-A	2	494	0.670040486	0.117408907	0.109311741	0.670040486	0.101214575	0.002024291	0.582362437	-0.321387377	0.582362437	-0.31895509	
MATH	3	520001	1-C	1	494	0.548582936	0.12145749	0.548582936	0.13967611	0.002024291	0	0.532510516	-0.228731165	0.532510516	-0.196819894	-0.336097558
MATH	3	239589	1-D	1	494	0.299595142	0.281325548	0.157894737	0.299595142	0.25708502	0.004048583	0.271628476	-0.166829144	-0.104832662	0.271628476	-0.01889203
MATH	3	814641	1-D	2	494	0.390688259	0.155870445	0.265182186	0.182186235	0.390688259	0.006072874	0.413926342	-0.089702494	-0.177077284	-0.25030406	0.413926342
MATH	3	992565	1-B	1	494	0.506072874	0.2368420105	0.478989785	0.178137652	0.004048583	0.5489868735	0.5489868735	0.5489868735	0.5489868735	0.5489868735	0.5489868735
MATH	3	664212	1-A	1	494	0.0951417	0.560728745	0.145748988	0.198380567	0.0951417	0	0.19387212	0.052697714	-0.087134336	-0.130971036	0.19387212
MATH	3	784945	1-C	2	494	0.408906883	0.224696356	0.165991903	0.408906883	0.196356275	0.004048583	0.309426131	-0.231122212	-0.121034906	0.309426131	-0.019032873
MATH	3	465857	2-A	1	250	0.608	0.04	0.136	0.212	0.608	0.004	0.514121852	-0.137574408	-0.339545934	-0.246768853	0.514121852
MATH	3	501367	2-B	1	250	0.66	0.096	0.144	0.252	0.66	0.092	0.545161252	-0.1892099	-0.329503217	0.545161252	-0.247251047
MATH	3	207442	2-A	1	250	0.58	0.044	0.252	0.108	0.58	0.016	0.629645182	-0.168599337	-0.364000833	-0.30500474	0.629645182
MATH	3	431973	2-A	1	250	0.38	0.524	0.38	0.016	0.076	0.004	0.45564918	-0.317021946	0.45564918	-0.097982501	-0.158874435
MATH	3	601659	2-D	2	250	0.572	0.132	0.572	0.128	0.16	0.008	0.477939344	-0.173396485	0.477939344	-0.378976025	-0.098018294
MATH	3	632669	2-D	2	250	0.676	0.028	0.216	0.676	0.064	0.016	0.550051311	-0.126606063	-0.430859257	0.550051311	-0.12319714
MATH	3	619365	2-D	1	250	0.536	0.044	0.536	0.308	0.108	0.004	0.23027132	-0.171327469	0.23027132	0.33226185	-0.288779741
MATH	3	579875	2-D	2	250	0.604	0.052	0.264	0.604	0.008	0.162100773	-0.162659648	0.162659648	0.304542683	-0.166949753	0.162100773
MATH	3	239182	2-B	1	250	0.64	0.076	0.64	0.112	0.008	0.550360975	-0.29133258	0.550360975	-0.192161099	-0.42061418	
MATH	3	599500	2-C	1	250	0.072	0.072	0.144	0.316	0.172	0	0.205377376	0.025377376	0.162345003	-0.085237964	-0.249205495
MATH	3	163164	2-A	1	250	0.192	0.552	0.192	0.144	0.008	0.266134648	0.402437867	-0.150431798	0.266134648	-0.185269458	
MATH	3	935223	2-B	1	250	0.588	0.156	0.116	0.588	0.128	0.012	0.473668773	-0.28235356	-0.298661546	0.473668773	-0.051544866
MATH	3	283616	3-C	1	245	0.820408163	0.069387755	0.081632653	0.820408163	0.012244898	0.001224489	0.381051906	-0.296833603	-0.113702225	0.381051906	-0.186767036
MATH	3	353836	3-C	1	245	0.838673469	0.159183673	0.232653469	0.159183673	0.008163265	0.008163265	0.485232	-0.074151507	0.485232	-0.258749357	-0.172264433
MATH	3	715648	3-C	1	245	0.795918367	0.053061224	0.07755102	0.795918367	0.065306122	0.004081633	0.390701265	-0.194766972	0.390701265	-0.26399051	
MATH	3	55046	3-C	2	245	0.2104081633	0.502040816	0.224489796	0.065306122	0.204081633	0.131466929	0.183256224	-0.189256224	-0.126536916	-0.110144229	
MATH	3	238785	3-A	1	245	0.718367347	0.065306122	0.718367347	0.17510204	0.05734694	0.004081633	0.409952323	-0.385293137	0.409952323	-0.232121318	-0.181258936
MATH	3	792194	3-D	1	245	0.661224489	0.187755102	0.661224489	0.162224489	0.04081633	0.160455662	-0.021174111	0.160455662	-0.16087218	0.160455662	-0.074948456
MATH	3	992116	3-D	1	245	0.844897559	0.065306122	0.032653061	0.844897559	0.008163265	0.008163265	0.474216837	-0.387825371	-0.17142546	-0.40867218	0.474216837
MATH	3	30603	3-A	1	245	0.424897559	0.151020408	0.244897559	0.187755102	0.08163265	0.162486978	0.18519065	0.162486978	-0.03505966	-0.141014429	
MATH	3	800201	3-C	1	245	0.808163265	0.808163265	0.036734694	0.087514286	0.061224489	0.008163265	0.189256224	-0.17815884	0.189256224	-0.11673341	-0.190124413
MATH	3	285327	3-B	2	245	0.612244898	0.12244898	0.155102041	0.612244898	0.105212449	0.004081633	0.294552378	-0.266758144	-0.081647572	0.294552378	-0.058261512
MATH	3	265567	3-D	2	245	0.469387755	0.469387755	0.142857143	0.125360122	0.253601224	0.008163265	0.328416943	-0.328416943	0.328416943	-0.066666557	-0.067096914
MATH	3	223273	3-D	1	245	0.73877551	0.085714286	0.612244898	0.73877551	0.110204081	0.388314642	-0.122132329	-0.30462588	0.388314642	-0.245386398	
MATH	4	190024	0-A	1	1135	0.468722467	0.167400881	0.199118943	0.162995595	0.468722467	0.001762115	0.40699426	-0.211620633	-0.124927794	-0.194107127	0.40699426
MATH	4	487513	0-B	1	1135	0.831718062	0.073127753	0.831718062	0.052863436	0.0414029692	0.00081057	0.414897583	-0.288294069	0.414897583	-0.17878325	-0.195681182
MATH	4	686272	0-D	1	1135	0.388546236	0.311013216	0.388546236	0.177092511	0.120704846	0.002643172	0.438806258	-0.228666347	0.438806258	-0.109351196	-0.194119396
MATH	4	314598	0-D	1	1135	0.623995595	0.362995595	0.196475771	0.17092511	0.260079295	0.003524229	0.491006019	-0.491006019	0.491006019	-0.228038741	-0.222101856
MATH	4	680464	0-A	1	1135	0.611453744	0.111013216	0.114537445	0.11894273	0.259911894	0.002643172	0.501538942	-0.260220809	0.501538942	-0.21042726	-0.24711503
MATH	4	993333	0-A	1	1135	0.448678414	0.298678414	0.175530396	0.448678414	0.010572687	0.010572687	0.459479683	-0.188629132	-0.208793716	0.459479683	-0.20799623
MATH	4	419406	0-A	1	1135	0.434361233	0.059030837	0.466860352	0.434361233	0.035242291	0.004405286	0.540438864	-0.240819094	-0.330371922	-0.144236374	-0.190083466
MATH	4	407889	0-A	1	1135	0.48810573	0.169162996	0.288810573	0.20989163	0.408810573	0.003524229	0.296729469	-0.187191931	-0.179698762	0.296729469	-0.296729469
MATH	4	977554	0-C	2	1135	0.455506608	0.178854626	0.455506608	0.215859031	0.149797936	0	0.455484426	-0.043182098	0.455484426	-0.304740053	-0.237902711
MATH	4	318567	0-D	1	1135	0.393832899	0.32246696	0.127755306	0.393832899	0.005286344	0.005286344	0.288732602	-0.099087408	0.288732602	-0.10357905	0.288732602
MATH	4	832206	0-B	1	1135	0.640528634	0.640528634	0.214096912	0.3127753	0.069630524	0.001762115	0.584661636	-0.412203513	-0.262004952	-0.162259254	
MATH	4	680044	0-B	1	1135	0.6	0.6	0.1030837	0.2616213348	0.1030837	0.001762115	0.481044652	0.481044652	-0.219007512	-0.280041326	-0.231167354
MATH	4	775624	0-C	1	1135	0.39030837	0.16123348	0.241409692	0.20881057	0.39030837	0.006167401	0.442039348	-0.202588566	-0.103770176	-0.229894381	0.442039348
MATH	4	963536	0-A	2												

Cont	Gr	ID	Form	StD	DOK	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biserial	Corr A	Corr B	Corr C	Corr D	
MATH	4	824465	0	B-O	2	1135	0.157180617	0.236123348	0.155947137	0.517180617	0.088886784	0.001162115	0.505366319	-0.349021764	-0.146373374	0.505366319	-0.179312448	
MATH	4	620137	0	C-G	2	1135	0.60961963	0.139270748	0.192070485	0.6096163	0.056387665	0.002643172	0.33618157	-0.232452682	-0.119302692	0.33618157	-0.150665988	
MATH	4	695435	0	A-T	1	1135	0.635242291	0.635242291	0.090748899	0.807162111	0.191189627	0.002643172	0.571935028	-0.374950208	-0.264215138	-0.356871852	-0.2369500693	
MATH	4	692403	0	A-T	1	1135	0.681057269	0.144888678	0.096035242	0.070484581	0.681057269	0.003524229	0.681057269	-0.223171959	-0.34656143	-0.223171959	0.528730554	
MATH	4	763410	0	A-T	1	1135	0.74185022	0.097797357	0.084581498	0.074898968	0.74185022	0.000881057	0.45421325	-0.269450986	-0.279578457	-0.171428747	-0.171428747	0.465421325
MATH	4	618771	0	A-F	1	1135	0.639647577	0.081057269	0.140088106	0.136563867	0.639647577	0.002643172	0.639647577	-0.274416873	-0.159780615	-0.252148939	0.454360155	
MATH	4	611359	0	A-F	1	1135	0.319823789	0.243171806	0.251101322	0.319823789	0.185022026	0.000881057	0.277188219	-0.00725559	-0.00725559	0.277188219	-0.237924765	
MATH	4	452111	0	B-O	2	1135	0.646317181	0.236123348	0.186784141	0.464303152	0.109251121	0.0003524229	0.461776048	-0.236298565	-0.139863273	0.461776048	-0.231048458	
MATH	4	611557	0	B-O	2	1135	0.545374449	0.139270748	0.21938326	0.096035242	0.545374449	0.000881057	0.582914428	-0.35471773	-0.239102985	-0.35471773	0.582914428	
MATH	4	711371	0	C-G	2	1135	0.676651982	0.114537445	0.066960352	0.676651982	0.140969117	0.000881057	0.406355379	-0.287149633	-0.202493656	0.406355379	-0.135894197	
MATH	4	785676	0	B-O	2	1135	0.618502203	0.618502203	0.178854626	0.146373342	0.000161322	0.000161322	0.488257983	0.488257983	-0.175464184	-0.322161392	-0.244337123	
MATH	4	900360	0	A-T	2	1135	0.427312775	0.177973568	0.172687225	0.221145374	0.427312775	0.000881057	0.353234424	-0.153171721	-0.16380223	-0.127533169	0.353234424	
MATH	4	325978	0	A-F	1	1135	0.614977974	0.20969163	0.103964758	0.614977974	0.069603524	0.001762115	0.495688242	-0.271020005	-0.312897916	0.495688242	-0.125906303	
MATH	4	474966	0	A-F	1	1135	0.30660793	0.359471366	0.229955947	0.101321586	0.30660793	0.0003524229	0.485686813	-0.095179332	-0.251582644	-0.232795954	0.485686813	
MATH	4	365742	0	C-G	2	1135	0.437885449	0.251101322	0.220264317	0.437885449	0.087246229	0.002643172	0.426751858	-0.205102091	-0.147531071	0.426751858	-0.214810821	
MATH	4	938508	0	A-F	2	1135	0.495154185	0.168281938	0.08678414	0.495154185	0.235242291	0.002643172	0.355653417	-0.179164202	-0.141820721	0.355653417	-0.153315248	
MATH	4	811462	0	B-O	2	1135	0.7030837	0.149779736	0.078414097	0.7030837	0.067841409	0.000881057	0.445346265	-0.27238334	-0.208861345	0.445346265	-0.194246085	
MATH	4	818648	0	A-T	1	1135	0.67667923	0.096035242	0.069603524	0.126872247	0.070660793	0.000881057	0.457850199	-0.189064748	-0.253662081	-0.257962157	0.457850199	
MATH	4	800012	0	B-O	2	1135	0.572680725	0.109251121	0.0572680725	0.155947137	0.162114537	0.0003524229	0.533681039	-0.258504128	-0.330681039	-0.276753787	-0.225085198	
MATH	4	473977	0	A-F	1	1135	0.6288105727	0.174493939	0.288105727	0.2959170925	0.6288105727	0.001762115	0.40843928	-0.259826927	-0.209232419	0.40843928	-0.108762894	
MATH	4	938508	0	A-F	2	1135	0.7020205643	0.179735683	0.0720205643	0.066960352	0.049339207	0.001762115	0.468808186	-0.312458709	-0.68808186	-0.200516811	-0.194349449	
MATH	4	376732	0	D-M	2	1135	0.444933921	0.328634361	0.444933921	0.153303965	0.071365639	0.001762115	0.392936379	-0.168753331	0.392936379	-0.187769264	-0.179663151	
MATH	4	497151	0	D-M	2	1135	0.75154185	0.137444934	0.06784141	0.039647577	0.003524229	0.003524229	0.481515872	-0.481515872	-0.26535206	-0.272855607	-0.229323253	
MATH	4	325978	0	A-T	1	1135	0.355066709	0.111894273	0.223788546	0.355066709	0.304845815	0.004405286	0.258353622	-0.138140356	-0.08851043	0.258353622	-0.08977829	
MATH	4	805894	0	C-G	2	1135	0.508370044	0.283700441	0.11894273	0.09339207	0.508370044	0.002643172	0.406446006	-0.195754216	-0.181667108	0.406446006	-0.250385678	
MATH	4	813078	0	A-F	1	1135	0.368281938	0.328634361	0.163876652	0.163876652	0.368281938	0.002643172	0.521798684	-0.193520608	-0.206681928	0.521798684	-0.23640133	
MATH	4	743737	0	B-O	2	1135	0.546255507	0.130396476	0.188546256	0.546255507	0.131277533	0.003524229	0.424608465	-0.140145376	-0.174085346	0.424608465	-0.275061541	
MATH	4	350966	0	B-O	2	1135	0.4272467	0.220264317	0.48722467	0.140969117	0.48722467	0.0003524229	0.298324242	-0.221031373	-0.479883124	-0.1707094703	-0.171430983	
MATH	4	167321	0	C-G	2	1135	0.555947137	0.555947137	0.043171806	0.163876652	0.237004405	0.0003524229	0.346963658	-0.24667768	-0.16647768	-0.103255825	-0.235947028	
MATH	4	420104	0	A-F	1	1135	0.670484951	0.670484951	0.140969117	0.101321586	0.084581498	0.0003524229	0.481645853	-0.314058293	-0.237639118	0.481645853	-0.156341104	
MATH	4	744003	0	A-F	1	1135	0.61938236	0.61938236	0.120704846	0.095154185	0.163876652	0.000881057	0.494502151	-0.494502151	-0.176809162	-0.256763106	-0.288834376	
MATH	4	494598	1	A-T	2	599	0.393898983	0.14524207	0.393898983	0.223375626	0.001669449	0.001669449	0.425996753	-0.167544691	-0.277313204	0.425996753	-0.073589198	
MATH	4	272923	1	B-O	2	599	0.380634391	0.380634391	0.1886447	0.153292036	0.333220363	0.001669449	0.549549507	-0.49450507	-0.0710465	0.549549507	-0.367246381	
MATH	4	523735	1	A-F	1	599	0.676916027	0.676916027	0.105175292	0.105175292	0.000403847	0.000403847	0.421608148	-0.24524764	-0.421608148	0.421608148	-0.69840585	
MATH	4	283371	1	D-M	2	599	0.292153589	0.12687313	0.1886447	0.258764608	0.292153589	0.003338898	0.462305056	-0.06716402	-0.174361216	0.462305056	-0.141463429	
MATH	4	420582	1	C-G	2	599	0.77963272	0.0584430718	0.033388982	0.77963272	0.125208681	0.000380847	0.354395461	-0.235992169	-0.180613748	0.354395461	-0.169853596	
MATH	4	523803	1	B-O	2	599	0.313856427	0.25542571	0.313856427	0.223706177	0.205342237	0.001669449	0.203783957	-0.040349367	0.203783957	-0.059546146	-0.126600678	
MATH	4	372329	1	C-G	2	599	0.4822704508	0.4822704508	0.202003339	0.19694992	0.115919198	0.003338898	0.399722151	-0.390922151	-0.171298555	-0.1917204668	-0.1917204668	
MATH	4	817393	1	A-F	1	599	0.642740508	0.26544204	0.05509182	0.627704508	0.627704508	0.001669449	0.397673386	-0.21363151	-0.234200723	0.397673386	-0.197114215	
MATH	4	346659	2	A-T	2	771	0.284132841	0.276752768	0.276752768	0.284132841	0.212952033	0.007380074	0.152926175	-0.063480758	-0.100182899	0.152926175	-0.069660764	
MATH	4	180559	2	B-O	2	771	0.402664202	0.055305054	0.018450185	0.402664202	0.402664202	0.0003690037	0.46716821	-0.303547949	-0.151891868	0.46716821	-0.175430091	
MATH	4	194353	2	C-G	2	771	0.833948339	0.833948339	0.140221402	0.007380074	0.018450185	0.0003690037	0.290824243	-0.290824243	-0.208516773	-0.128175488	-0.18467767	
MATH	4	879313	2	A-T	2	771	0.450184502	0.191881919	0.450184502	0.166051661	0.177121771	0.014760148	0.463050887	-0.330106252	-0.463050887	-0.253279011	-0.113741966	
MATH	4	497687	2	D-M	2	771	0.597785978	0.143911439	0.132843328	0.597785978	0.125461255	0.0003690037	0.448759765	-0.175454737	-0.256102516	0.448759765	-0.215973779	
MATH	4	591898	2	A-T	1	771	0.5738745387	0.125461255	0.147601476	0.5738745387	0.538745387	0.018450185	0.431612451	-0.161214402	-0.187361623	0.431612451	-0.20058453	
MATH	4	332662	2	B-O	2	771	0.125461255	0.211712177	0.221402214	0.125461255	0.435424354	0.0003690037	0.7062887	-0.157879875	-0.204671235	0.7062887	-0.251323301	
MATH	4	332662	2	D-M	2	771	0.162361624	0.206642066	0.46494649	0.166051661	0.162361624	0.0003690037	0.384412801	-0.2364054592	-0.106965427	0.384412801	-0.049717597	
MATH	4	591986	2	A-F	1	771	0.594095941	0.070110701	0.114391144	0.221402214	0.594095941	0.0003690037	0.48148273	-0.170575793	-0.266632131	0.48148273	-0.260171923	
MATH	4	838469	2	B-O	2	771	0.58302583	0.103321033	0.58302583	0.169741697	0.136531365	0.007380074	0.489795304	-0.161535662	-0.489795304	0.489795304	-0.297998767	
MATH	4	146107	2	A-F	2	771	0.472324723	0.1881919	0.199261993	0.132841328	0.472324723	0.003690037	0.531528389	-0.249402744	-0.138943042	0.531528389	-0.326877749	
MATH	4	578436	2	B-O	2	771	0.675207653	0.143911439	0.125461255	0.675207653	0.051660517	0.003690037	0.55500359	-0.376570589	-0.249273401	0.55500359	-0.209628072	
MATH	4	111327	3	A-T	1	265	0.584905566	0.064150943	0.584905566	0.267924528	0.075471698	0.0003690037	0.451711212	-0.20606378	0.451711212	-0.251094742	-0.180153935	
MATH	4	629468	3	A-F	2	265	0.38679245	0.30186792	0.38679245	0.203773585	0.101886792	0.003773585	0.37784016	-0.110633973	0.37784016	-0.285955428	-0.039797972	
MATH																		

Cont	Gr	ID	Form	St	DOK	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.OMs	Point Biserial	Corr.A	Corr.B	Corr.C	Corr.D	
MATH	5	490305	0-A	1	1613	0.562926224	0.112213267	0.562926224	0.173589585	0.14817111	0.0030299814	0.462666737	-0.17626505	0.462666737	-0.199583973	-0.268259429	-0.268259429	
MATH	5	575313	0-A-F	2	1613	0.417234966	0.417234966	0.378177309	0.135771854	0.067575945	0.001239926	0.322187397	0.322187397	0.322187397	0.027351121	-0.262427588	-0.219046137	-0.262427588
MATH	5	816047	0-C	1	1613	0.562306462	0.076850827	0.562306462	0.142591445	0.001859888	0.001859888	0.389259049	-0.043055494	0.043055494	-0.270553475	-0.208857666	-0.208857666	-0.270553475
MATH	5	860647	0-A	1	1613	0.454327234	0.195908246	0.454327234	0.185388841	0.001239926	0.001239926	0.539603288	-0.193899214	0.193899214	-0.396032888	-0.268769249	-0.268769249	-0.396032888
MATH	5	513801	0-B	1	1613	0.649721017	0.065711017	0.649721017	0.123992556	0.000299944	0.000299944	0.518020615	-0.170221191	0.170221191	-0.235467676	-0.336253193	-0.336253193	-0.235467676
MATH	5	826882	0-A	1	1613	0.706757595	0.706757595	0.106633602	0.107253565	0.001859888	0.001859888	0.461067422	-0.242450203	0.242450203	-0.274729688	-0.195830473	-0.195830473	-0.274729688
MATH	5	488661	0-C	1	1613	0.606943583	0.088034718	0.104773714	0.060943583	0.19900806	0.001239926	0.397314277	-0.147700068	0.147700068	-0.262332122	0.397314277	-0.176510752	-0.262332122
MATH	5	693021	0-A-F	1	1613	0.402353859	0.204587725	0.164910105	0.215747055	0.042353859	0.001239926	0.519840103	-0.23344126	0.23344126	-0.175790665	-0.215861132	-0.215861132	-0.175790665
MATH	5	141970	0-A-F	2	1613	0.584624923	0.187848729	0.175448923	0.584624923	0.002339926	0.002339926	0.421499969	-0.120781773	0.120781773	-0.329168374	0.421499969	-0.15447469	-0.329168374
MATH	5	625349	0-C	1	1613	0.631122169	0.136391816	0.137011779	0.092434346	0.031239926	0.031239926	0.499350301	-0.187851707	0.187851707	-0.293724071	0.499350301	-0.293724071	-0.293724071
MATH	5	950885	0-A	1	1613	0.475511463	0.148791073	0.475511463	0.251704898	0.122752635	0.001239926	0.498809988	-0.256812037	0.256812037	-0.498809988	-0.156837388	-0.156837388	-0.498809988
MATH	5	993592	0-A-F	2	1613	0.43583385	0.233725976	0.43583385	0.147551147	0.175449473	0.007439554	0.380911241	-0.147303648	0.147303648	-0.380911241	-0.10349526	-0.10349526	-0.147303648
MATH	5	499388	0-D-M	1	1613	0.421514706	0.250646637	0.156809589	0.181840291	0.003719777	0.003719777	0.554396558	-0.269199919	0.269199919	-0.233090356	-0.186037243	-0.186037243	-0.233090356
MATH	5	605054	0-A	1	1613	0.504649721	0.504649721	0.2300062	0.084934904	0.006199663	0.006199663	0.600466114	-0.221305628	0.221305628	-0.347296549	-0.245733627	-0.245733627	-0.347296549
MATH	5	920830	0-C	1	1613	0.631122169	0.136391816	0.137011779	0.092434346	0.031239926	0.031239926	0.499350301	-0.187851707	0.187851707	-0.293724071	0.499350301	-0.293724071	-0.293724071
MATH	5	950885	0-A	1	1613	0.475511463	0.148791073	0.475511463	0.251704898	0.122752635	0.001239926	0.498809988	-0.256812037	0.256812037	-0.498809988	-0.156837388	-0.156837388	-0.498809988
MATH	5	993592	0-A-F	2	1613	0.43583385	0.233725976	0.43583385	0.147551147	0.175449473	0.007439554	0.380911241	-0.147303648	0.147303648	-0.380911241	-0.10349526	-0.10349526	-0.147303648
MATH	5	499388	0-D-M	1	1613	0.421514706	0.250646637	0.156809589	0.181840291	0.003719777	0.003719777	0.554396558	-0.269199919	0.269199919	-0.233090356	-0.186037243	-0.186037243	-0.233090356
MATH	5	605054	0-A	1	1613	0.504649721	0.504649721	0.2300062	0.084934904	0.006199663	0.006199663	0.600466114	-0.221305628	0.221305628	-0.347296549	-0.245733627	-0.245733627	-0.347296549
MATH	5	920830	0-C	1	1613	0.631122169	0.136391816	0.137011779	0.092434346	0.031239926	0.031239926	0.499350301	-0.187851707	0.187851707	-0.293724071	0.499350301	-0.293724071	-0.293724071
MATH	5	950885	0-A	1	1613	0.475511463	0.148791073	0.475511463	0.251704898	0.122752635	0.001239926	0.498809988	-0.256812037	0.256812037	-0.498809988	-0.156837388	-0.156837388	-0.498809988
MATH	5	993592	0-A-F	2	1613	0.43583385	0.233725976	0.43583385	0.147551147	0.175449473	0.007439554	0.380911241	-0.147303648	0.147303648	-0.380911241	-0.10349526	-0.10349526	-0.147303648
MATH	5	499388	0-D-M	1	1613	0.421514706	0.250646637	0.156809589	0.181840291	0.003719777	0.003719777	0.554396558	-0.269199919	0.269199919	-0.233090356	-0.186037243	-0.186037243	-0.233090356
MATH	5	605054	0-A	1	1613	0.504649721	0.504649721	0.2300062	0.084934904	0.006199663	0.006199663	0.600466114	-0.221305628	0.221305628	-0.347296549	-0.245733627	-0.245733627	-0.347296549
MATH	5	920830	0-C	1	1613	0.631122169	0.136391816	0.137011779	0.092434346	0.031239926	0.031239926	0.499350301	-0.187851707	0.187851707	-0.293724071	0.499350301	-0.293724071	-0.293724071
MATH	5	950885	0-A	1	1613	0.475511463	0.148791073	0.475511463	0.251704898	0.122752635	0.001239926	0.498809988	-0.256812037	0.256812037	-0.498809988	-0.156837388	-0.156837388	-0.498809988
MATH	5	993592	0-A-F	2	1613	0.43583385	0.233725976	0.43583385	0.147551147	0.175449473	0.007439554	0.380911241	-0.147303648	0.147303648	-0.380911241	-0.10349526	-0.10349526	-0.147303648
MATH	5	499388	0-D-M	1	1613	0.421514706	0.250646637	0.156809589	0.181840291	0.003719777	0.003719777	0.554396558	-0.269199919	0.269199919	-0.233090356	-0.186037243	-0.186037243	-0.233090356
MATH	5	605054	0-A	1	1613	0.504649721	0.504649721	0.2300062	0.084934904	0.006199663	0.006199663	0.600466114	-0.221305628	0.221305628	-0.347296549	-0.245733627	-0.245733627	-0.347296549
MATH	5	920830	0-C	1	1613	0.631122169	0.136391816	0.137011779	0.092434346	0.031239926	0.031239926	0.499350301	-0.187851707	0.187851707	-0.293724071	0.499350301	-0.293724071	-0.293724071
MATH	5	950885	0-A	1	1613	0.475511463	0.148791073	0.475511463	0.251704898	0.122752635	0.001239926	0.498809988	-0.256812037	0.256812037	-0.498809988	-0.156837388	-0.156837388	-0.498809988
MATH	5	993592	0-A-F	2	1613	0.43583385	0.233725976	0.43583385	0.147551147	0.175449473	0.007439554	0.380911241	-0.147303648	0.147303648	-0.380911241	-0.10349526	-0.10349526	-0.147303648
MATH	5	499388	0-D-M	1	1613	0.421514706	0.250646637	0.156809589	0.181840291	0.003719777	0.003719777	0.554396558	-0.269199919	0.269199919	-0.233090356	-0.186037243	-0.186037243	-0.233090356
MATH	5	605054	0-A	1	1613	0.504649721	0.504649721	0.2300062	0.084934904	0.006199663	0.006199663	0.600466114	-0.221305628	0.221305628	-0.347296549	-0.245733627	-0.245733627	-0.347296549
MATH	5	920830	0-C	1	1613	0.631122169	0.136391816	0.137011779	0.092434346	0.031239926	0.031239926	0.499350301	-0.187851707	0.187851707	-0.293724071	0.499350301	-0.293724071	-0.293724071
MATH	5	950885	0-A	1	1613	0.475511463	0.148791073	0.475511463	0.251704898	0.122752635	0.001239926	0.498809988	-0.256812037	0.256812037	-0.498809988	-0.156837388	-0.156837388	-0.498809988
MATH	5	993592	0-A-F	2	1613	0.43583385	0.233725976	0.43583385	0.147551147	0.175449473	0.007439554	0.380911241	-0.147303648	0.147303648	-0.380911241	-0.10349526	-0.10349526	-0.147303648
MATH	5	499388	0-D-M	1	1613	0.421514706	0.250646637	0.156809589	0.181840291	0.003719777	0.003719777	0.554396558	-0.269199919	0.269199919	-0.233090356	-0.186037243	-0.186037243	-0.233090356
MATH	5	605054	0-A	1	1613	0.504649721	0.504649721	0.2300062	0.084934904	0.006199663	0.006199663	0.600466114	-0.221305628	0.221305628	-0.347296549	-0.245733627	-0.245733627	-0.347296549
MATH	5	920830	0-C	1	1613	0.631122169	0.136391816	0.137011779	0.092434346	0.031239926	0.031239926	0.499350301	-0.187851707	0.187851707	-0.293724071	0.499350301	-0.293724071	-0.293724071
MATH	5	950885	0-A	1	1613	0.475511463	0.148791073	0.475511463	0.251704898	0.122752635	0.001239926	0.498809988	-0.256812037	0.256812037	-0.498809988	-0.156837388	-0.156837388	-0.498809988
MATH	5	993592	0-A-F	2	1613	0.43583385	0.233725976	0.43583385	0.147551147	0.175449473	0.007439554	0.380911241	-0.147303648	0.147303648	-0.380911241	-0.10349526	-0.10349526	-0.147303648
MATH	5	499388	0-D-M	1	1613	0.421514706	0.250646637	0.156809589	0.181840291	0.003719777	0.003719777	0.554396558	-0.269199919	0.269199919	-0.233090356	-0.186037243	-0.186037243	-0.233090356
MATH	5	605054	0-A	1	1613	0.504649721	0.504649721	0.2300062	0.084934904	0.006199663	0.006199663	0.600466114	-0.221305628	0.221305628	-0.347296549	-0.245733627	-0.245733627	-0.347296549
MATH	5	920830	0-C	1	1613	0.631122169	0.136391816	0.137011779	0.092434346	0.031239926	0.031239926	0.499350301	-0.187851707	0.187851707	-0.293724071	0.499350301	-0.293724071	-0.293724071
MATH	5	950885	0-A	1	1613	0.475511463	0.148791073	0.475511463	0.251704898	0.122752635	0.001239926	0.498809988	-0.256812037	0.256812037	-0.498809988	-0.156837388	-0.156837388	-0.498809988
MATH	5	993592	0-A-F	2	1613	0.43583385	0.233725976	0.43583385	0.147551147	0.175449473	0.007439554	0.380911241	-0.147303648	0.147303648	-0.380911241	-0.10349526	-0.10349526	-0.147303648
MATH	5	499388	0-D-M	1	1613	0.421514706	0.250646637	0.156809589	0.181840291									

Cont	Gr	ID	Form	Sto	DOE	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.Omits	Point Bisection	Corr.A	Corr.B	Corr.C	Corr.D	
MATH	5	615604	2	A	2	409	0.586797066	0.078239609	0.168704156	0.161831481	0.586797066	0.002444988	0.380912533	-0.207716498	-0.141359514	-0.200289706	0.380912533
MATH	5	864138	2	B	0	409	0.557457213	0.149144354	0.202933985	0.557457213	0.08801956	0.002444988	0.397298964	-0.235022329	-0.160887792	0.397298964	-0.154859796
MATH	5	904592	2	D-M	2	409	0.618943763	0.290953545	0.051344743	0.1858519071	0.618943763	0.002444988	0.547166143	-0.458347142	-0.083017581	-0.108232365	0.547166143
MATH	5	924787	2	D-M	2	409	0.618519107	0.149144254	0.095354523	0.132029334	0.618519107	0.004889976	0.491093722	-0.241327238	-0.229244477	-0.232396736	0.491093722
MATH	5	207111	2	A-F	1	409	0.630806846	0.163814181	0.1229584352	0.630806846	0.073349633	0.002444988	0.531219199	-0.2380459	-0.335734338	0.532191999	-0.19659784
MATH	5	957080	3	A-T	2	400	0.600455	0.1925	0.1455	0.0025	0.501326024	-0.204162125	-0.247104706	-0.193827457	0.501326024	0.501326024	0.501326024
MATH	5	230775	3	D-M	2	400	0.34	0.245	0.34	0.2	0.2125	0.0025	0.291449244	-0.049189362	0.291449244	-0.100271724	-0.18057373
MATH	5	140291	3	D-M	2	400	0.2625	0.2625	0.35	0.1625	0.0025	0.281228228	-0.281228228	-0.108700592	-0.20898898	0.028570685	0.028570685
MATH	5	824204	3	D-M	1	400	0.6275	0.11	0.175	0.0675	0.085	0.0025	0.418425648	-0.248080675	-0.230903756	0.418425648	-0.080745215
MATH	5	855351	3	F	1	400	0.3375	0.0475	0.3375	0.17	0.015	0.377709842	-0.090620592	0.377709842	-0.0817319	-0.229604463	0.377709842
MATH	5	90475	3	B-C	2	400	0.1155	0.4725	0.1155	0.13	0.005	0.21502801	0.135707889	-0.1889892378	0.21502801	-0.175150311	0.21502801
MATH	5	565138	3	C-G	2	400	0.2625	0.125	0.2275	0.2625	0.38	0.005	0.076631753	-0.124504968	0.201214442	0.076631753	0.201220588
MATH	5	891253	3	A-T	2	400	0.305	0.205	0.3175	0.305	0.305	0.0025	0.392621367	-0.167320061	-0.158618086	-0.099646696	0.392621367
MATH	5	898429	3	B-C	1	400	0.64	0.0425	0.64	0.1475	0.0025	0.562104837	-0.20634761	0.562104837	-0.35259382	-0.263926007	0.562104837
MATH	5	831088	3	A-F	2	400	0.41	0.2975	0.195	0.0925	0.41	0.0025	0.332086405	0.04002436	-0.242459885	-0.282025681	0.332086405
MATH	5	185131	3	A-T	1	400	0.705	0.0625	0.14	0.09	0.0025	0.518940036	-0.227278697	-0.332353925	-0.221424739	0.518940036	0.518940036
MATH	5	878213	3	A-F	2	400	0.515	0.1225	0.515	0.1325	0.0025	0.319374699	-0.017932423	0.319374699	-0.318323526	-0.095689867	0.319374699
MATH	6	129145	0	A-N	2	2825	0.58159292	0.184424779	0.140530973	0.58159292	0.092743363	0.000707965	0.334499764	-0.057852145	-0.261702163	0.334499764	-0.176944769
MATH	6	160854	0	A-N	2	2825	0.52884958	0.52884958	0.190088496	0.152663717	0.15079646	0.00460177	0.47272818	-0.281228228	-0.281228228	-0.30324254	-0.05101667
MATH	6	926315	0	A-N	1	2825	0.56991572	0.210265487	0.131681816	0.084955752	0.56991572	0.00185841	0.502721004	-0.167219427	-0.167219427	-0.31420394	0.502721004
MATH	6	277898	0	A-N	1	2825	0.098053097	0.098053097	0.72	0.098053097	0.085666377	0.00185841	0.465038652	-0.06747811	0.465038652	-0.299086628	-0.358822436
MATH	6	973670	0	A-N	1	2825	0.519646018	0.271150442	0.119646018	0.519646018	0.085666377	0.00185841	0.454989768	-0.310677589	-0.122071137	0.454989768	-0.166598465
MATH	6	195368	0	A-R	2	2825	0.669026549	0.669026549	0.12128938	0.12128938	0.100530973	0.001415929	0.498257697	-0.498257697	-0.179689527	-0.360712851	-0.193524626
MATH	6	247636	0	B-E	2	2825	0.501238938	0.36920354	0.081238938	0.501238938	0.045309735	0.002831858	0.527614514	-0.290802884	-0.297308589	0.527614514	-0.187966472
MATH	6	265744	0	C-G	2	2825	0.48955722	0.118584071	0.179469027	0.48955722	0.20920354	0.00185841	0.262459997	-0.132078056	-0.156511737	0.262459997	-0.061740432
MATH	6	314451	0	A-N	1	2825	0.79292035	0.054159292	0.12840378	0.79292035	0.046017699	0.000707965	0.518815235	-0.177481572	-0.177481572	-0.360252768	-0.259252548
MATH	6	872381	0	B-E	2	2825	0.46725664	0.183362832	0.15539823	0.254159292	0.46725664	0.000353982	0.483122402	-0.308276928	-0.141685307	-0.151965932	0.483122402
MATH	6	794919	0	C-G	2	2825	0.69670616	0.176283186	0.043362832	0.69670616	0.089915192	0.000707965	0.307689234	-0.231798468	-0.194312572	0.307689234	-0.057429043
MATH	6	179709	0	D-S	2	2825	0.44213894	0.14264867	0.217699115	0.196106195	0.06030973	0.000707965	0.469213309	-0.469213309	-0.110517319	-0.331390486	-0.249978473
MATH	6	193932	0	A-N	2	2825	0.65840708	0.070088496	0.65840708	0.070088496	0.128376912	0.00169912	0.481837547	-0.176408708	-0.176408708	-0.18353479	0.379355665
MATH	6	423407	0	B-E	2	2825	0.793628319	0.115044248	0.679646018	0.793628319	0.09203598	0.00123894	0.380294808	-0.380294808	-0.164465457	-0.187618071	-0.239885789
MATH	6	292303	0	A-R	2	2825	0.563893805	0.563893805	0.10619469	0.149734513	0.178053097	0.00123894	0.53046707	-0.53046707	-0.232606184	-0.28572931	-0.21148616
MATH	6	510885	0	D-S	1	2825	0.573411504	0.172743363	0.11768142	0.573411504	0.067309735	0.00185841	0.503293704	-0.258422362	-0.154006955	0.503293704	-0.291817327
MATH	6	459545	0	D-S	1	2825	0.657395133	0.657395133	0.085309735	0.196106195	0.06030973	0.000707965	0.469213309	-0.469213309	-0.110517319	-0.331390486	-0.249978473
MATH	6	110186	0	A-N	1	2825	0.65840708	0.070088496	0.65840708	0.070088496	0.128376912	0.00169912	0.481837547	-0.176408708	-0.176408708	-0.18353479	0.379355665
MATH	6	160143	0	B-E	2	2825	0.793628319	0.115044248	0.679646018	0.793628319	0.09203598	0.00123894	0.380294808	-0.380294808	-0.164465457	-0.187618071	-0.239885789
MATH	6	38545	0	B-E	1	2825	0.657699115	0.095212329	0.657699115	0.134513274	0.108672566	0.000393805	0.453565371	-0.217381199	0.453565371	-0.259807556	-0.18803733
MATH	6	179818	0	C-G	2	2825	0.743716814	0.743716814	0.114336283	0.058761062	0.089915192	0.00169912	0.520108046	-0.200108046	-0.494848366	-0.188624566	-0.316706246
MATH	6	259565	0	B-E	1	2825	0.510442478	0.10716619	0.510442478	0.10716619	0.060309735	0.000353982	0.491775551	-0.29777458	-0.25245963	-0.202584939	0.491775551
MATH	6	751222	0	B-E	2	2825	0.703716814	0.03982301	0.116460177	0.14778761	0.703716814	0.00169912	0.488616223	-0.193389588	-0.362306142	-0.216172727	0.500816223
MATH	6	311573	0	C-G	2	2825	0.510442478	0.10716619	0.510442478	0.10716619	0.060309735	0.000353982	0.491775551	-0.29777458	-0.25245963	-0.202584939	0.491775551
MATH	6	311573	0	C-G	2	2825	0.510442478	0.10716619	0.510442478	0.10716619	0.060309735	0.000353982	0.491775551	-0.29777458	-0.25245963	-0.202584939	0.491775551
MATH	6	59007	0	B-E	2	2825	0.691681416	0.121061947	0.691681416	0.086725664	0.099115044	0.001415929	0.483122402	-0.1150673	0.483122402	-0.311457555	-0.31856601
MATH	6	196297	0	B-E	2	2825	0.398230088	0.398230088	0.104778761	0.335575221	0.158938053	0.002477876	0.479805479	-0.222273321	-0.222273321	-0.165373227	-0.234128513
MATH	6	399947	0	C-G	2	2825	0.660884958	0.089557522	0.106548673	0.141946093	0.060884958	0.00161947	0.53285175	-0.207188762	-0.251275832	0.53285175	-0.253285175
MATH	6	979105	0	C-G	2	2825	0.631150442	0.095575221	0.631150442	0.126376912	0.126376912	0.00169912	0.397559202	-0.225827265	-0.233649379	0.397559202	-0.19121514
MATH	6	311573	0	C-G	2	2825	0.510442478	0.10716619	0.510442478	0.10716619	0.060309735	0.000353982	0.491775551	-0.29777458	-0.25245963	-0.202584939	0.491775551
MATH	6	427580	0	D-S	3	2825	0.428318584	0.197168142	0.428318584	0.248849558	0.124247788	0.001415929	0.532522765	-0.261705137	-0.267697002	-0.264312322	0.532522765
MATH	6	538959	0	A-R	2	2825	0.690973451	0.102654867	0.110442478	0.690973451	0.094513274	0.001415929	0.52389145	-0.264878834	-0.309523444	0.52389145	-0.217793675
MATH	6	351144	0	C-G	1	2825	0.425840708	0.091681416	0.073982301	0.425840708	0.408495575	0	0.567886814	-0.168330123	-0.17277511	0.567886814	-0.380433821
MATH	6	864037	0	D-S	2	2825	0.86159292	0.038938053	0.86159292	0.034042478	0.06716619	0.001415929	0.396403713	-0.160881774	0.396403713	-0.22323465	-0.259836622
MATH	6	607081	0	C-G	2	2825	0.48460177	0.118584071	0.48460177	0.118584071	0.16920354	0.00161947	0.331562419	-0.243185361	-0.11002294	0.331562419	-0.156131876
MATH	6	708389	0	D-S	2	2825	0.516106195	0.15106195	0.224778761	0.12831858	0.132221239	0.00161947	0.543514965	-0.43514965	-0.27054469	-0.15514008	-0.309845457
MATH	6	722602	0	A-N	1	2825	0.622300885	0.143362832	0.622300885	0.099823009	0.132035398	0.002477876	0.478931194	-0.216688834	0.478931194	-0.19586169	-0.2823151
MATH	6	362842	0	B-E	2	2825	0.66362832	0.66362832	0.109734513	0.130973451	0.094159292	0.00169912	0.51942928	-0.51942928	-0.323455915	-0.32451513	-0.206234699
MATH	6																

Cont	Gr	ID	Form	Std	DOE	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.Omits	PointBiserial	Corr.B	Corr.C	Corr.D
MATH	6	156944	0-A	1	2825	0.148318584	0.148318584	0.148318584	0.148318584	0.148318584	0.148318584	0.148318584	0.148318584	0.148318584	0.148318584	0.148318584
MATH	6	141571	0-A	1	2825	0.532374336	0.335575221	0.079646018	0.532374336	0.079646018	0.532374336	0.079646018	0.532374336	0.079646018	0.532374336	0.079646018
MATH	6	187866	0-D	2	2825	0.156024839	0.149026549	0.063300885	0.071150042	0.171904428	0.0001769912	0.241035458	0.271904428	0.16958083	-0.287421929	0.470833475
MATH	6	598407	0-A	2	2825	0.513628819	0.116814159	0.513628819	0.116814159	0.1819416631	0.000451076	0.480812968	0.241035458	0.027675974	0.241035458	0.241035458
MATH	6	578189	1-A	1	1412	0.388810198	0.243626062	0.388810198	0.243626062	0.2351217479	0.003541076	0.480812968	0.480812968	-0.185041607	0.339289436	0.480812968
MATH	6	150592	1-A	1	1412	0.635269122	0.060906516	0.635269122	0.060906516	0.0973733711	0.003541076	0.480812968	0.480812968	-0.17667575	0.488509486	-0.320321631
MATH	6	600916	1-B	2	1412	0.545325779	0.096311728	0.263456091	0.545325779	0.092067989	0.002832861	0.338589774	-0.134303309	0.338589774	0.155938799	0.338589774
MATH	6	897587	1-C	2	1412	0.42339943	0.210339943	0.180594901	0.572602097	0.078611898	0.002832861	0.477619372	0.177619372	0.149143507	0.063266017	-0.158361578
MATH	6	459211	1-C	2	1412	0.447592068	0.222379603	0.164305949	0.164305949	0.447592068	0.002832861	0.477619372	0.177619372	0.163932462	-0.195188599	0.477231274
MATH	6	040611	1-B	2	1412	0.394332428	0.472379603	0.105524079	0.128131864	0.202549575	0.00449292	0.566781417	-0.130711122	0.346811833	-0.248640116	0.346811833
MATH	6	696509	1-D	2	1412	0.2021133144	0.2429291785	0.2021133144	0.2429291785	0.219872238	0.00449292	0.566781417	0.165281959	0.036823368	-0.155782291	0.02795623
MATH	6	907046	1-C	2	1412	0.432719547	0.139518414	0.27726289	0.432719547	0.150849858	0.00449292	-0.078190791	0.064507281	0.195137347	-0.078190791	-0.066584441
MATH	6	228203	1-D	2	1412	0.43696889	0.3101983	0.160505657	0.096467646	0.43696889	0.002124646	0.300220775	-0.023648784	0.235319119	-0.169170314	0.300220775
MATH	6	343187	2-B	2	701	0.566333809	0.191155492	0.102710414	0.1369497218	0.366333809	0.002124646	0.410541803	-0.035923313	0.259752459	-0.314289362	0.410541803
MATH	6	370430	2-C	2	701	0.4778602	0.191155492	0.196828816	0.188302425	0.4778602	0.002853067	0.52424615	-0.225279316	-0.229914443	0.246343006	0.52424615
MATH	6	489983	2-C	2	701	0.406526058	0.188302425	0.213980957	0.189728959	0.406526058	0.00426534	0.52424615	-0.225279316	-0.229914443	0.246343006	0.52424615
MATH	6	677065	2-D	2	701	0.2888159772	0.288159772	0.189728959	0.288159772	0.288159772	0.00426534	0.52424615	-0.225279316	-0.229914443	0.246343006	0.52424615
MATH	6	676985	2-D	2	701	0.393723252	0.09700428	0.393723252	0.238231098	0.269614836	0.00426534	0.52424615	-0.225279316	-0.229914443	0.246343006	0.52424615
MATH	6	193276	2-B	2	701	0.346647646	0.316690442	0.346647646	0.216833096	0.115549215	0.00426534	0.52424615	-0.225279316	-0.229914443	0.246343006	0.52424615
MATH	6	557861	2-A	1	701	0.529423937	0.168330956	0.236804565	0.529423937	0.062767475	0.002853067	0.459547243	-0.296488354	-0.256751639	0.459547243	-0.035144076
MATH	6	165078	2-B	2	701	0.194008559	0.152639087	0.373751783	0.194008559	0.276747504	0.002853067	0.459547243	-0.296488354	-0.256751639	0.459547243	-0.035144076
MATH	6	281588	2-A	2	701	0.380884451	0.380884451	0.380884451	0.380884451	0.07003281	0.00426534	0.474587214	-0.11494108	0.121843949	0.11494108	-0.112266872
MATH	6	232003	2-A	2	701	0.249643367	0.095577746	0.27352097	0.249643367	0.37660485	0.002853067	0.459547243	-0.296488354	-0.256751639	0.459547243	-0.035144076
MATH	6	194788	2-B	2	701	0.573466476	0.573466476	0.2929671897	0.101369494	0.0912922472	0.00426534	0.498679416	-0.498679416	-0.301213817	-0.224847937	-0.173453038
MATH	6	833256	3-B	2	712	0.605950562	0.191101236	0.098314607	0.605950562	0.094110124	0.00426534	0.47541854	-0.269791049	-0.318891196	0.47541854	-0.089450688
MATH	6	923178	3-A	1	712	0.570224719	0.570224719	0.089567157	0.089567157	0.280898876	0.004213483	0.348639172	0.046369172	0.24162223	-0.31252627	-0.076942383
MATH	6	930572	3-B	2	712	0.341292135	0.271067416	0.341292135	0.271067416	0.255617978	0.004213483	0.493387192	0.0493387192	0.056284793	-0.102551304	0.056284793
MATH	6	935796	3-C	2	712	0.30561798	0.348314607	0.242977528	0.30561798	0.105337079	0.002808989	0.345668893	-0.259997472	-0.151973532	0.345668893	0.115150333
MATH	6	560851	3-D	2	712	0.413683146	0.130681798	0.186797753	0.181797753	0.490166539	0.011235955	0.291826722	-0.221865122	-0.049265567	-0.191899001	0.291826722
MATH	6	659440	3-C	2	712	0.21344835	0.109550562	0.21344835	0.109550562	0.123595562	0.011235955	0.291826722	-0.221865122	-0.049265567	-0.191899001	0.291826722
MATH	6	849177	3-B	2	712	0.16994382	0.16994382	0.16994382	0.16994382	0.247911011	0.004213483	0.493387192	0.0493387192	0.056284793	-0.102551304	0.056284793
MATH	6	208037	3-D	2	712	0.382022472	0.382022472	0.228932584	0.129213483	0.255617978	0.004213483	0.493387192	0.0493387192	0.056284793	-0.102551304	0.056284793
MATH	6	498880	3-A	1	712	0.490168539	0.075842697	0.136235955	0.490168539	0.289325843	0.008426966	0.441251107	-0.241196998	-0.211132934	0.441251107	-0.195719751
MATH	6	679696	3-A	2	712	0.421134835	0.244388072	0.235955056	0.421134835	0.095505618	0.002808989	0.385340599	-0.279695199	-0.045305162	0.385340599	-0.178573434
MATH	6	765049	3-A	2	712	0.17252809	0.33988764	0.240168539	0.242977528	0.172752809	0.004213483	0.38644729	0.021681158	-0.096514163	-0.0380193	0.38644729
MATH	6	908145	0-A	2	712	0.502809899	0.219101124	0.502809899	0.219101124	0.097911011	0.004213483	0.374243069	-0.141702113	0.042443069	-0.103066184	0.374243069
MATH	7	240576	0-D	2	3537	0.355951871	0.143624541	0.197907831	0.319050806	0.355951871	0.000565451	0.374243069	-0.141702113	0.042443069	-0.103066184	0.374243069
MATH	7	528942	0-A	1	3537	0.53220243	0.53220243	0.151258128	0.235793045	0.079601329	0.002827255	0.504103545	0.504103545	0.35722301	-0.230328433	-0.088301726
MATH	7	296321	0-C	2	3537	0.53406842	0.190839695	0.53406842	0.161718971	0.113909180	0.002827255	0.45919003	-0.27902979	-0.29193003	-0.246529913	-0.090385755
MATH	7	593020	0-A	2	3537	0.384212209	0.144189992	0.229573085	0.229573085	0.384212209	0.011309002	0.491660609	-0.203336116	-0.491834962	-0.103613001	0.491660609
MATH	7	131992	0-A	2	3537	0.356799548	0.308736217	0.174724343	0.158326265	0.356799548	0.000565451	0.472669867	-0.023974845	-0.229319118	-0.289610204	0.472669867
MATH	7	875377	0-A	2	3537	0.561775516	0.561775516	0.147865423	0.244274809	0.045518801	0.000565451	0.350755131	0.350755131	0.235960895	-0.137171107	0.464802407
MATH	7	348699	0-A	2	3537	0.61906983	0.10121572	0.61906983	0.18295165	0.092168504	0.004143627	0.52450542	-0.32224164	0.52450542	-0.2677799	-0.272603895
MATH	7	270819	0-A	1	3537	0.463387051	0.13740458	0.207237772	0.463387051	0.186033362	0.005937235	0.356650649	-0.009472141	-0.192645874	0.356650649	-0.240493647
MATH	7	873994	0-A	2	3537	0.697766469	0.072943172	0.697766469	0.114221091	0.115066368	0.0005937235	0.555917593	-0.252051222	0.555917593	0.329919659	-0.265764237
MATH	7	156675	0-B	2	3537	0.506926774	0.220526968	0.506926774	0.18073852	0.092168504	0.001696335	0.371062894	-0.047180473	0.371062894	-0.271541047	-0.212761921
MATH	7	373960	0-A	2	3537	0.521911224	0.166242578	0.521911224	0.16737348	0.139100933	0.005371784	0.474597361	-0.149697015	0.474597361	-0.251519904	-0.246130483
MATH	7	865376	0-C	2	3537	0.570822731	0.218264066	0.127919194	0.570822731	0.081990387	0.001130902	0.343202066	-0.113879685	-0.20621639	0.343202066	-0.19652785
MATH	7	882737	0-A	2	3537	0.427480916	0.136273678	0.18235793	0.253887475	0.427480916	0.004213627	0.580871301	-0.237679546	-0.238674677	-0.261115656	0.580871301
MATH	7	896073	0-B	2	3537	0.603336161	0.154368109	0.603336161	0.112242013	0.128922816	0.011130902	0.39261862	-0.065290081	0.39261862	-0.259768403	-0.256306946
MATH	7	295597	0-A	2	3537	0.474978679	0.185185185	0.172462539	0.166525043	0.474978679	0.000848176	0.52961516	-0.294319065	-0.15482382	-0.142181776	0.52961516
MATH	7	445876	0-B	2	3537	0.577608142	0.308453492	0.072660427	0.040429743	0.577608142	0.000848176	0.53115822	-0.344229385	-0.287893468	-0.148094477	0.53115822
MATH	7	990597	0-D	2	3537	0.48685327	0.134011874	0.179530676	0.236358496	0.48685327	0.004143627	0.381687912	-0.189585132	-0.2889548	-0.32684046	0.381687912
MATH	7	697481	0-A	2	3537	0.549291046	0.142493639	0.549291046	0.206106807	0.1000848176	0.000848176	0.43285722	-0.07302432	0.43285722	-0.288402001	-0.295120684
MATH	7	614644	0-A	1	3537	0.635596065	0.085383093	0.097823014								

Cont	Gr	ID	Form	Std	DOE	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.Omits	Prop.Biserial	Corr.A	Corr.B	Corr.C	Corr.D	
MATH	7	580135	O	C	G	0.421663274	0.18480246	0.2352227594	0.42663274	0.152671756	0.000565451	0.436101714	-0.317404958	-0.193297058	0.436101714	-0.1027877778	0.077887778	
MATH	7	208891	O	C	G	0.3537	0.683912921	0.083404015	0.199604184	0.683912921	0.032513429	0.000565451	0.246434342	-0.15658048	-0.099107341	0.246434342	-0.177599566	-0.177599566
MATH	7	130498	O	D	S	0.3537	0.530110263	0.191687871	0.201017812	0.530110263	0.008901629	0.000848275	0.445030042	-0.290620615	-0.192557099	0.445030042	-0.184736944	-0.184736944
MATH	7	764098	O	A	N	0.3537	0.428894543	0.428894543	0.180661573	0.299689002	0.089601671	0.000848275	0.371996395	-0.192549551	-0.145259951	0.371996395	-0.091326357	-0.232171569
MATH	7	472888	O	B	E	0.3537	0.349797311	0.349797311	0.140797286	0.178682499	0.328809726	0.001979078	0.451834531	-0.151834531	-0.189597372	0.451834531	-0.262739723	-0.1024939115
MATH	7	188416	O	A	R	0.3537	0.635284139	0.142493639	0.635284139	0.126378287	0.095384396	0	0.357104667	-0.152334973	-0.051304667	0.357104667	-0.227769238	-0.1045938117
MATH	7	592629	O	C	G	0.3537	0.636415041	0.636415041	0.089058524	0.113372915	0.160202618	0.001130902	0.531044395	-0.531044395	-0.208521183	0.531044395	-0.258193558	-0.309124615
MATH	7	240359	O	D	S	0.3537	0.391857086	0.217698615	0.240599378	0.391857086	0.147582659	0.002261804	0.309931596	-0.110080815	-0.090087487	0.309931596	-0.186974305	-0.186974305
MATH	7	520592	O	B	E	0.3537	0.443030817	0.13627678	0.145603619	0.443030817	0.273678258	0.001413627	0.249663935	-0.142901038	-0.136183961	0.249663935	-0.059386027	-0.059386027
MATH	7	584866	O	B	E	0.3537	0.554990105	0.554990105	0.214588634	0.143059078	0.085383093	0.000848176	0.549273048	-0.287370348	-0.257852141	0.549273048	-0.287575727	-0.231624137
MATH	7	558312	O	C	G	0.3537	0.566864574	0.179530676	0.566864574	0.181227029	0.071531495	0.000848176	0.538639929	-0.492372938	-0.538639929	0.538639929	-0.286915857	-0.178245089
MATH	7	248519	O	A	R	0.3537	0.428611818	0.141080011	0.199604184	0.428611818	0.001413627	0.445003198	-0.032046891	-0.265695482	0.445003198	-0.243890387	-0.243890387	-0.445003198
MATH	7	668568	O	B	E	0.3537	0.531241165	0.531241165	0.251060221	0.143341815	0.073509623	0.000848176	0.456441798	-0.456441798	-0.256793796	0.456441798	-0.2133165904	-0.151714472
MATH	7	240537	O	D	S	0.3537	0.42974272	0.117896522	0.15493356	0.29459589	0.42974272	0.000828725	0.23452077	-0.100704182	-0.100230305	0.23452077	-0.101637865	-0.23452077
MATH	7	479029	O	C	G	0.3537	0.624823297	0.624823297	0.148983625	0.140231835	0.084817642	0.001130902	0.463638898	-0.3232082842	-0.243410388	0.463638898	-0.088029608	-0.088029608
MATH	7	587584	O	C	G	0.3537	0.451512581	0.18480246	0.451512581	0.18480246	0.000848176	0.289491534	-0.1567668	-0.289491534	-0.08695862	-0.141698593	-0.08695862	-0.141698593
MATH	7	897181	O	D	S	0.3537	0.58905852	0.142210913	0.142210913	0.14305909	0.204127792	0.508905852	0.00196353	0.522850719	-0.257258948	-0.186586763	0.522850719	-0.257258948
MATH	7	493653	O	A	R	0.3537	0.720801804	0.05060786	0.133446424	0.720801804	0.087079446	0.000848176	0.529302609	-0.230955851	-0.300156358	0.529302609	-0.293498187	-0.293498187
MATH	7	123853	O	A	N	0.3537	0.546508394	0.0746678	0.090754877	0.288740074	0.199321459	0.000565451	0.407902231	-0.216568936	-0.250540561	0.407902231	-0.161651726	-0.407902231
MATH	7	159632	O	A	N	0.3537	0.669776647	0.669776647	0.131750071	0.118744699	0.078888047	0.000848176	0.421546973	-0.202505194	-0.238154167	0.421546973	-0.197200655	-0.197200655
MATH	7	969009	O	B	E	0.3537	0.493921402	0.268023749	0.493921402	0.159457167	0.078314956	0.000282725	0.278541851	-0.045060014	-0.278541851	0.278541851	-0.272001558	-0.221745874
MATH	7	851293	O	D	S	0.3537	0.497879559	0.202148714	0.497879559	0.150409952	0.148713599	0.000848176	0.371561254	-0.254726998	0.371561254	-0.175156096	-0.056940575	-0.056940575
MATH	7	274743	O	B	E	0.3537	0.4175827	0.248232966	0.167938931	0.4175827	0.169696933	0	0.369636803	-0.256837918	-0.156837918	0.369636803	-0.033446306	-0.033446306
MATH	7	295845	O	A	N	0.3537	0.598529828	0.598529828	0.172466259	0.029120724	0.199321459	0.000565451	0.545752071	-0.545752071	-0.185878181	0.545752071	-0.800382609	-0.417602347
MATH	7	570211	O	C	G	0.3537	0.535199321	0.108238356	0.163980775	0.535199321	0.192536046	0	0.396360506	-0.193225804	-0.162518457	0.396360506	-0.196484155	-0.196484155
MATH	7	907577	O	D	S	0.3537	0.76392423	0.76392423	0.085100368	0.09867119	0.05145607	0.000848176	0.464347773	-0.28470079	-0.28470079	0.464347773	-0.282649939	-0.219472117
MATH	7	979635	O	A	R	0.3537	0.628216002	0.112242013	0.087644897	0.11048912	0.628216002	0.000848176	0.407927579	-0.256695951	-0.186517211	0.407927579	-0.168318966	-0.407927579
MATH	7	69537	O	A	R	0.1666	0.566026411	0.12304922	0.566026411	0.18847539	0.121248499	0.001200024	0.556895153	-0.260437084	0.556895153	-0.292830273	0.556895153	-0.230498874
MATH	7	704127	O	D	S	0.1666	0.287515006	0.243697479	0.25270108	0.15486194	0.287515006	0.00160024	0.214389955	-0.192004038	-0.111788534	0.214389955	-0.111788534	-0.214389955
MATH	7	281759	O	A	N	0.1666	0.3436734694	0.305522209	0.336734694	0.207683073	0.178271309	0.00240096	0.180152754	-0.039224091	-0.180152754	0.180152754	-0.086024986	-0.086024986
MATH	7	626927	O	C	G	0.1666	0.4093921402	0.268023749	0.4093921402	0.194477679	0.119447769	0.00180072	0.548344793	-0.170060802	-0.286969983	0.548344793	-0.221347786	-0.221347786
MATH	7	686816	O	C	G	0.1666	0.12244898	0.12244898	0.321128451	0.333133253	0.20288115	0.0030012	0.038580322	-0.036580322	-0.12591786	0.038580322	-0.03125388	-0.130449504
MATH	7	348891	O	B	E	0.1666	0.31512605	0.199879952	0.31512605	0.199297971	0.1626265306	0.00180072	0.113376327	-0.071433808	-0.113376327	0.113376327	-0.04336363	-0.164177166
MATH	7	268279	O	D	S	0.1666	0.530012005	0.05942377	0.530012005	0.301320258	0.107244297	0.00180072	0.289123324	-0.134741371	-0.289123324	0.289123324	-0.240408002	-0.003228638
MATH	7	637376	O	C	G	0.1666	0.300720288	0.300720288	0.25117094	0.05555556	0.81517094	0.076923077	0.052351067	-0.052351067	-0.052351067	0.052351067	-0.052351067	-0.052351067
MATH	7	796550	O	B	E	0.1666	0.393162393	0.393162393	0.251068377	0.263888888	0.090811946	0.001068376	0.385390384	-0.112272996	-0.466016984	0.385390384	-0.301249253	-0.301249253
MATH	7	114500	O	D	S	0.1666	0.52846154	0.083333333	0.148504274	0.52846154	0.238247863	0.001068376	0.441322699	-0.174734866	-0.244651253	0.441322699	-0.141427909	-0.141427909
MATH	7	673713	O	C	G	0.1666	0.45196581	0.401709402	0.45196581	0.08974359	0.050213675	0.002136752	0.469237217	-0.338488414	-0.469237217	0.469237217	-0.345800151	-0.105708821
MATH	7	541714	O	C	G	0.1666	0.248916624	0.469017094	0.248916624	0.469017094	0.110042735	0.0106721019	0.106721019	-0.176874601	-0.106721019	-0.35913611	0.106721019	-0.265608925
MATH	7	572994	O	A	R	0.1666	0.386752137	0.386752137	0.293803419	0.182051218	0.191239163	0	0.540585312	-0.330550814	-0.194798263	0.540585312	-0.152722182	-0.152722182
MATH	7	425134	O	B	E	0.1666	0.534188034	0.081196581	0.534188034	0.173076923	0.003205128	0.003205128	0.204239929	-0.079814417	-0.079814417	0.204239929	-0.122146826	-0.122146826
MATH	7	144704	O	A	R	0.1666	0.449786325	0.128205128	0.449786325	0.181623932	0.240384615	0	0.224319143	-0.00503305	-0.224319143	0.224319143	-0.0864976	-0.187044698
MATH	7	296510	O	A	R	0.1666	0.418181818	0.257754011	0.418181818	0.257754011	0.25534188	0.00534188	0.524193677	-0.077785317	-0.077785317	0.524193677	-0.263895244	-0.330786615
MATH	7	956437	O	A	R	0.1666	0.416666667	0.351495726	0.151709402	0.166666667	0.076923077	0.0033205128	0.389113701	-0.18234071	-0.18234071	0.389113701	-0.107445416	-0.233015694
MATH	7	447693	O	A	R	0.1666	0.213675214	0.213675214	0.294871795	0.362179487	0.129273504	0	0.210840928	-0.210840928	-0.428283065	0.210840928	-0.047965299	-0.047965299
MATH	7	631903	O	C	G	0.1666	0.493251368	0.131410256	0.493251368	0.276709402	0.096153846	0.003205128	0.371988453	-0.223377019	-0.371988453	0.371988453	-0.126080476	-0.176788476
MATH	7	182725	O	B	E	0.1666	0.20320856	0.04919786	0.20320856	0.020320856	0.020320856	0.001069519	0.442952826	-0.111013818	-0.442952826	0.442952826	-0.233958231	-0.292210111
MATH	7	927295	O	C	G	0.1666	0.418181818	0.257754011	0.418181818	0.257754011	0.25534188	0.00534188	0.524193677	-0.077785317	-0.077785317	0.524193677	-0.263895244	-0.330786615
MATH	7	590885	O	A	N	0.1666	0.376898397	0.062302086	0.106951872	0.768893957	0.060625657	0.001069519	0.49422504	-0.242983594	-0.29089034	0.49422504	-0.245841107	-0.245841107
MATH	7	270112	O	C	G	0.1666	0.416666667	0.139037433	0.178609626	0.47486631	0.207486631	0	0.392450666	-0.143164714	-0.192449894	0.392450666	-0.17935867	-0.17935867
MATH	7	103152	O	A	R													

Cont	Gr	ID	Form	Std	DOE	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Point Biseiral	Corr B	Corr C	Corr D	
MATH	8	10670	1 B F	0	1.3639	0.686452322	0.102506887	0.686452322	0.102506887	0.101401484	0.000824402	0.40700254	-0.084118349	0.40700254	-0.234739558	
MATH	8	64065	0 D S	2	3639	0.545204727	0.179719703	0.11739929	0.545204727	0.15718604	0.000549602	0.365483322	-0.076562672	0.365483322	-0.181660654	
MATH	8	37317	0 B F	1	3639	0.629943074	0.134927178	0.111569912	0.629943074	0.123311105	0.000549602	0.394760986	-0.116938664	0.394760986	-0.222667073	
MATH	8	93467	0 B F	1	3639	0.50700742	0.50700742	0.165343063	0.198133355	0.128331959	0.001099203	0.490792435	0.490792435	0.490792435	-0.28573883	-0.117800413
MATH	8	998102	0 C G	2	3639	0.468810113	0.191810937	0.121466979	0.121466979	0.000549602	0.000549602	0.411821708	-0.169548528	0.205798427	-0.156954124	-0.209798427
MATH	8	811313	0 B F	2	3639	0.494641385	0.179719703	0.114569121	0.494641385	0.210225259	0.000824402	0.520659625	-0.321693679	0.182001732	-0.205696259	-0.191675369
MATH	8	904565	0 B F	1	3639	0.688925529	0.688925529	0.148117615	0.111569912	0.050288541	0.001099203	0.474041252	0.474041252	0.250699643	0.272312354	-0.200111646
MATH	8	718510	0 B F	2	3639	0.672987084	0.672987084	0.090599055	0.182197291	0.052486947	0.001374004	0.579903937	0.579903937	0.306233992	-0.352703497	-0.214039926
MATH	8	45087	0 C G	1	3639	0.73000824	0.149270082	0.273000824	0.10577082	0.026655674	0.000549602	0.494234176	-0.368503274	0.494234176	-0.2144842	-0.154563788
MATH	8	912546	0 B F	2	3639	0.574058807	0.574058807	0.16433086	0.134377576	0.125858752	0.001374004	0.479129262	0.479129262	0.162535445	-0.285795168	-0.237067863
MATH	8	458785	0 B F	2	3639	0.544105523	0.218198111	0.544105523	0.154987634	0.081615829	0.001099203	0.394925194	-0.181500868	0.394925194	-0.190644063	-0.191677783
MATH	8	127048	0 D S	2	3639	0.386919483	0.146194009	0.218466612	0.247870294	0.386919483	0.000549602	0.429565394	-0.162336131	0.269164014	-0.093006016	0.429565394
MATH	8	692106	0 A N	1	3639	0.7142072	0.140148392	0.070898939	0.7142072	0.071997802	0.002748008	0.479198995	0.307576886	-0.203246778	0.479198995	-0.210936643
MATH	8	659205	0 B F	1	3639	0.5001374	0.5001374	0.150690822	0.262150934	0.08216543	0.001648805	0.375104587	-0.375104587	0.03112952	-0.382477024	-0.099554072
MATH	8	152002	0 B F	2	3639	0.846115669	0.027480077	0.846115669	0.027480077	0.104695969	0.000549602	0.457559695	0.457559695	0.164433005	-0.373523774	-0.164433005
MATH	8	749150	0 B F	2	3639	0.406705139	0.046705139	0.197581753	0.204726573	0.190711734	0.000274801	0.483621107	-0.483621107	0.249440703	-0.128937669	-0.249440703
MATH	8	100532	0 B F	1	3639	0.50343501	0.170252382	0.097279472	0.226710635	0.000549602	0.000549602	0.455812003	0.455812003	0.145804163	-0.243093063	-0.239589347
MATH	8	100384	0 C G	1	3639	0.344325364	0.255289915	0.204453772	0.194009933	0.344325364	0.001923605	0.552733655	-0.285023005	-0.21902604	0.552733655	-0.21902604
MATH	8	800483	0 C G	2	3639	0.57873042	0.08931025	0.57873042	0.08931025	0.121422095	0.001648805	0.450786888	-0.278786601	0.450786888	-0.278786601	-0.162427791
MATH	8	882170	0 C G	2	3639	0.541082715	0.1721200879	0.318768993	0.094531465	0.186314922	0.001648805	0.368203115	-0.117762893	0.368203115	-0.300366038	-0.117762893
MATH	8	16747	0 B F	2	3639	0.394641385	0.027480077	0.394641385	0.027480077	0.194661390	0.001923605	0.498892176	-0.24128609	-0.194088506	-0.16901948	0.498892176
MATH	8	841464	0 B F	1	3639	0.356691399	0.356691399	0.135201979	0.289914812	0.215169002	0.003022808	0.454041768	0.454041768	0.168413875	-0.168218972	-0.197253335
MATH	8	789626	0 D S	2	3639	0.566913987	0.171200879	0.055509976	0.566913987	0.057845456	0.000549602	0.400218622	-0.217905117	-0.192633175	0.400218622	-0.164271931
MATH	8	243427	0 B F	2	3639	0.6784831	0.04286892	0.6784831	0.04286892	0.050838142	0.003022808	0.38727141	-0.072383134	0.38727141	-0.295367975	-0.180725354
MATH	8	294145	0 B F	2	3639	0.398735916	0.318768993	0.094531465	0.398735916	0.186314922	0.001648805	0.368203115	-0.117762893	0.368203115	-0.300366038	-0.117762893
MATH	8	407618	0 D S	1	3639	0.804341852	0.063733779	0.9288266	0.804341852	0.037922506	0.001099203	0.406209755	-0.18192109	-0.297998407	0.406209755	-0.179036729
MATH	8	697168	0 B F	2	3639	0.71640561	0.034624897	0.58807385	0.71640561	0.133827975	0.001099203	0.485083782	-0.20467204	0.250313904	0.485083782	-0.314217923
MATH	8	697593	0 C G	1	3639	0.472932124	0.10225886	0.202802968	0.472932124	0.221214619	0.000824402	0.549492186	-0.127850313	-0.336098877	0.549492186	-0.234062665
MATH	8	739898	0 C G	2	3639	0.979318994	0.497389994	0.228909041	0.979318994	0.126272400	0.001923605	0.400102959	-0.207018457	0.400102959	-0.204488362	-0.170293933
MATH	8	25847	0 B F	2	3639	0.440230833	0.121461924	0.440230833	0.121461924	0.26078593	0.001099203	0.410893865	-0.087176324	0.233168963	-0.082905504	0.410893865
MATH	8	575783	0 B F	2	3639	0.445452047	0.159384446	0.445452047	0.159384446	0.067158554	0.000549602	0.4668233	-0.15401011	0.4668233	-0.186257814	-0.295951711
MATH	8	502337	0 D S	2	3639	0.44627645	0.188788129	0.44627645	0.188788129	0.119888733	0.001099203	0.266345943	0.266345943	0.180240853	-0.230366787	-0.385654946
MATH	8	483460	0 C G	1	3639	0.472382523	0.472382523	0.221764221	0.144270504	0.001923605	0.001923605	0.423088532	-0.423088532	0.186928251	-0.196529976	-0.262228867
MATH	8	419041	0 C G	2	3639	0.4984886	0.103874691	0.4984886	0.103874691	0.126037289	0.000549602	0.465895459	-0.242791001	-0.136019328	0.465895459	-0.242791001
MATH	8	25847	0 B F	2	3639	0.440230833	0.121461924	0.440230833	0.121461924	0.26078593	0.001099203	0.410893865	-0.087176324	0.233168963	-0.082905504	0.410893865
MATH	8	575783	0 B F	2	3639	0.445452047	0.159384446	0.445452047	0.159384446	0.067158554	0.000549602	0.4668233	-0.15401011	0.4668233	-0.186257814	-0.295951711
MATH	8	422475	0 B F	2	3639	0.470458917	0.144820005	0.23008244	0.15361363	0.070458917	0.001099203	0.385655496	-0.092554576	0.180240853	-0.230366787	-0.385654946
MATH	8	745317	0 C G	1	3639	0.589997252	0.101951085	0.589997252	0.101951085	0.093432262	0.000549602	0.464030152	-0.185997929	0.464030152	-0.233851679	-0.262228867
MATH	8	630361	0 D S	2	3639	0.281670391	0.264907942	0.16790327	0.212695976	0.35394394	0.000549602	0.465895459	-0.242791001	-0.136019328	0.465895459	-0.242791001
MATH	8	44142	0 B F	2	3639	0.687001924	0.687001924	0.109370309	0.093330959	0.101951085	0.001099203	0.519253329	-0.192523329	0.227477643	-0.309405247	-0.254148552
MATH	8	280712	0 D S	2	3639	0.676009893	0.04800135	0.162682056	0.111843913	0.676009893	0.001374004	0.535058868	-0.225883218	-0.28352906	-0.302824501	0.535058868
MATH	8	752906	0 B F	1	3639	0.30860126	0.330860126	0.360263809	0.236603462	0.070623798	0.001648805	0.342067787	0.342067787	0.197230081	-0.120198889	-0.056453582
MATH	8	409252	0 A N	1	3639	0.48859768	0.08761445	0.113217917	0.394292566	0.086595768	0.001099203	0.410027413	-0.184692852	0.197796233	-0.192089943	0.410027413
MATH	8	17499	0 B F	1	3639	0.36438582	0.261060731	0.270129156	0.36438582	0.103052809	0.001374004	0.314963466	-0.251737111	0.101048861	0.314963466	-0.145562626
MATH	8	709972	0 B F	2	3639	0.48612554	0.131904369	0.163506458	0.21791701	0.48612554	0.000549602	0.361846576	-0.152552206	-0.198433335	-0.226216378	0.361846576
MATH	8	655885	0 B F	2	3639	0.408914564	0.067600989	0.061005771	0.408914564	0.064028579	0.000274801	0.392033687	-0.231948367	-0.188437778	0.392033687	-0.203900002
MATH	8	357246	0 B F	2	3639	0.451497664	0.451497664	0.215718604	0.178895301	0.15361363	0.000274801	0.276638937	0.276638937	0.133555829	-0.176267677	-0.041725057
MATH	8	782811	0 B F	2	3639	0.317394889	0.181093707	0.284418796	0.317394889	0.215169002	0.001923605	0.254012699	-0.094488536	-0.123650325	0.254012699	-0.05924532
MATH	8	349703	0 C G	2	3639	0.281670391	0.14866722	0.24649629	0.355042594	0.281670391	0.000549602	0.229162772	-0.121370445	-0.204151886	0.229162772	-0.121370445
MATH	8	195877	0 A N	2	3639	0.603187689	0.124759549	0.13217917	0.139598791	0.603187689	0.000274801	0.476189116	-0.109725152	-0.282988563	-0.289708373	0.476189116
MATH	8	195821	1 A N	2	1615	0.23219814	0.139318885	0.523219814	0.211145511	0.124658204	0.001857585	0.370379563	-0.198929805	0.370379563	-0.195642072	-0.102970548
MATH	8	190165	1 C G	2	1615	0.408668731	0.19380805	0.246439628	0.408668731	0.193226006	0.001857585	0.356442594	-0.180115356	-0.173937324	0.356442594	-0.079899187
MATH	8	805547	1 B F	2	1615	0.392569659	0.19504644	0.321981842	0.392569659	0.179566563	0.000619195	0.27999302	-0.077279501	-0.211021536	0.27999302	-0.044450015
MATH	8	508652	1 B F	2	1615	0.676169959	0.157894737	0.079259686	0.676169959	0.064210826	0.000274801	0.507692099	-0.329621952	-0.212439634	0.507692099	-0.212439634
MATH	8	244644	1 C G	2	1615	0.349845201	0.156037152	0.34984								

Cont	Gr	ID	Form	Std	DOE	N	P-Value	Prop A	Prop B	Prop C	Prop D	Prop Omits	Prop Biasial	Corr A	Corr B	Corr C	Corr D
MATH	8	497456	2	1004	0.257468127	0.282868526	0.184262948	0.274900398	0	-0.011709667	0.08847852	0.077095803	0.072611522				
MATH	8	835377	3	BF	2	1020	0.743137255	0.743137255	0.117647059	0.082352941	0.054901961	0.001960784	0.520051191	0.520051191	0.295720374	0.295720374	-0.239154012
MATH	8	688945	3	BF	1	1020	0.408823529	0.093137255	0.408823529	0.245098039	0.25	0.001960784	0.29693775	-0.068389098	-0.29693775	-0.153837116	-0.134010681
MATH	8	110862	3	BF	1	1020	0.481372549	0.321568627	0.16372549	0.481372549	0.031372549	0.001960784	0.483539214	-0.473698437	0.201408169	0.483539214	-0.058718241
MATH	8	358044	3	CG	2	1020	0.468275492	0.15	0.132352941	0.228431373	0.137254902	0.001960784	0.249066513	-0.234075984	-0.304195792	-0.136003933	-0.492066513
MATH	8	770729	3	D	2	1020	0.468275492	0.15	0.132352941	0.228431373	0.137254902	0.001960784	0.249066513	-0.234075984	-0.304195792	-0.136003933	-0.492066513
MATH	8	563508	3	CG	2	1020	0.337254902	0.374509804	0.337254902	0.178431373	0.105882353	0.003921569	0.322403881	-0.130681188	0.322403881	-0.157066784	-0.081352331
MATH	8	439194	3	BE	2	1020	0.214705882	0.209803922	0.220682825	0.35	0.214705882	0.001960784	0.18780952	-0.003980025	-0.05834416	-0.100225022	0.18780952
MATH	8	376064	3	BE	2	1020	0.214705882	0.209803922	0.220682825	0.35	0.214705882	0.001960784	0.18780952	-0.003980025	-0.05834416	-0.100225022	0.18780952
MATH	8	765000	3	CG	1	1020	0.206862745	0.262745098	0.443137255	0.206862745	0.087254902	0.001960784	0.104562407	0.207871325	0.104562407	0.158065528	-0.260117019
MATH	8	768500	3	CG	1	1020	0.206862745	0.262745098	0.443137255	0.206862745	0.087254902	0.001960784	0.104562407	0.207871325	0.104562407	0.158065528	-0.260117019
MATH	8	520423	3	BE	2	1020	0.524509804	0.524509804	0.158662745	0.242156863	0.169607843	0.002941176	0.090969674	0.077279989	0.092069674	-0.03817205	-0.194909688
MATH	8	520423	3	BE	2	1020	0.524509804	0.524509804	0.158662745	0.242156863	0.169607843	0.002941176	0.090969674	0.077279989	0.092069674	-0.03817205	-0.194909688
MATH	8	612044	3	BE	2	1020	0.519697843	0.257853404	0.160558464	0.17116928	0.305998604	0.0008726	0.326410646	-0.048451581	-0.211597779	-0.254017329	0.326410646
SCIENCE	4	609408	0	A	2	2292	0.65052356	0.185863874	0.65052356	0.122164049	0.040575916	0.0008726	0.305963135	-0.313473776	-0.274854153	-0.244515485	0.509637135
SCIENCE	4	540504	0	B	2	2292	0.488656195	0.149214666	0.256108202	0.488656195	0.104027542	0.001745201	0.281617566	-0.153472336	-0.083493892	0.281617566	-0.155339943
SCIENCE	4	598384	0	C	1	2292	0.811954625	0.811954625	0.088132635	0.064136126	0.035776614	0	0.468662276	0.468662276	-0.25184033	-0.245668486	-0.277537412
SCIENCE	4	392802	0	B	2	2292	0.883071553	0.057155323	0.031413613	0.028359151	0.883071553	0	0.420207798	-0.213932247	-0.263440177	-0.237429842	0.420207798
SCIENCE	4	680607	0	B	2	2292	0.727748691	0.727748691	0.068499127	0.071204119	0.156307543	0.0004363	0.486495893	0.486495893	-0.21815123	-0.249535141	-0.296650085
SCIENCE	4	780003	0	A	2	2292	0.60034904	0.60034904	0.116928447	0.206369983	0.001308901	0.001308901	0.334990929	-0.20379065	-0.334990929	-0.253738562	-0.071026812
SCIENCE	4	441323	0	A	2	2292	0.852094024	0.057155323	0.045811518	0.040663318	0.852094024	0.0008726	0.447780709	-0.228538126	-0.258030704	-0.247734161	0.447780709
SCIENCE	4	948643	0	A	2	2292	0.660121264	0.053664921	0.102966841	0.182373473	0.660121264	0.0008726	0.456811211	-0.275141351	-0.242482754	-0.202963825	0.456811211
SCIENCE	4	319527	0	A	2	2292	0.663617565	0.085951134	0.063617565	0.069371728	0.179319372	0.001745201	0.410999272	-0.14559368	0.410999272	-0.30027905	-0.197066612
SCIENCE	4	319527	0	A	2	2292	0.663617565	0.085951134	0.063617565	0.069371728	0.179319372	0.001745201	0.410999272	-0.14559368	0.410999272	-0.30027905	-0.197066612
SCIENCE	4	390472	0	A	2	2292	0.577225131	0.577225131	0.068062827	0.097311239	0.253490401	0.003490401	0.363424212	0.366342412	-0.28992728	-0.663424212	-0.059273625
SCIENCE	4	194997	0	A	2	2292	0.65052356	0.185863874	0.65052356	0.122164049	0.040575916	0.0008726	0.345153743	-0.319290012	-0.345153743	-0.042009511	-0.125149882
SCIENCE	4	105474	0	C	2	2292	0.632635253	0.108202443	0.136125654	0.632635253	0.122164049	0.0008726	0.425802328	-0.25401343	-0.250697316	0.425802328	-0.119300493
SCIENCE	4	164255	0	A	3	2292	0.41702967	0.19982548	0.22425829	0.157504363	0.001308901	0.001308901	0.325292955	-0.325292955	-0.04362946	-0.20166475	-0.198887054
SCIENCE	4	836692	0	D	2	2292	0.577225131	0.577225131	0.068062827	0.097311239	0.253490401	0.0008726	0.363424212	0.366342412	-0.28992728	-0.663424212	-0.059273625
SCIENCE	4	107376	0	D	2	2292	0.62521881	0.162303665	0.10475742	0.62521881	0.040575916	0.0008726	0.447239958	-0.138988098	-0.287995546	0.447239958	-0.25084056
SCIENCE	4	569403	0	A	3	2292	0.56217801	0.121914485	0.165921637	0.56217801	0.091623037	0.001745201	0.399187967	0.399187967	-0.121773623	-0.246464452	-0.188789915
SCIENCE	4	383096	0	A	3	2292	0.734293194	0.094420838	0.095549738	0.734293194	0.001745201	0.0008726	0.457727984	-0.210387298	-0.216553356	0.457727984	-0.292646002
SCIENCE	4	195407	0	A	2	2292	0.524886153	0.194589678	0.07417103	0.524886153	0.203752182	0.0008726	0.43203867	-0.172108485	-0.253599771	0.43203867	-0.196966358
SCIENCE	4	954145	0	A	2	2292	0.830715532	0.044066318	0.830715532	0.054537622	0.070244328	0.0004363	0.329061011	-0.235609859	0.329061011	-0.171818011	-0.141722171
SCIENCE	4	11907	0	A	2	2292	0.697207671	0.082460733	0.697207671	0.17364747	0.102533051	0.0004363	0.48947518	-0.254090742	-0.498047518	-0.22888376	-0.12575029
SCIENCE	4	889094	0	A	2	2292	0.758726003	0.076352531	0.095386038	0.758726003	0.066317027	0.001617801	0.489431126	-0.197478548	-0.320105946	0.489431126	-0.241079333
SCIENCE	4	219556	0	B	1	2292	0.610383944	0.053228621	0.610383944	0.203752182	0.131762653	0.0008726	0.412054522	-0.228501919	0.412054522	-0.158532497	-0.250285656
SCIENCE	4	49688	0	B	2	2292	0.71819009	0.05061082	0.071553229	0.101448342	0.71819009	0.0008726	0.454809099	-0.32961667	-0.321871579	-0.187857413	0.454809099
SCIENCE	4	468413	0	B	2	2292	0.527923211	0.142670157	0.527923211	0.09904041	0.229933012	0.0004363	0.376167383	0.376167383	-0.16677894	-0.376167383	-0.196735661
SCIENCE	4	882929	0	C	2	2292	0.793636017	0.793636017	0.062356021	0.59773124	0.093804538	0.0004363	0.32105429	-0.32105429	-0.232593586	-0.182991096	-0.120797983
SCIENCE	4	799675	0	C	2	2292	0.910341361	0.032396651	0.02574171	0.910341361	0.046684149	0.0004363	0.506535334	-0.244326627	-0.254634011	0.506535334	-0.336692419
SCIENCE	4	379901	0	C	2	2292	0.933246073	0.042757417	0.009598604	0.012632705	0.933246073	0.001745201	0.393346339	-0.300066893	-0.172808871	-0.165346419	0.393346339
SCIENCE	4	643630	0	C	2	2292	0.78286213	0.088132635	0.056364921	0.78286213	0.07547993	0.0004363	0.477770244	-0.290411195	-0.290253143	0.477770244	-0.183358754
SCIENCE	4	169340	0	C	2	2292	0.78286213	0.088132635	0.056364921	0.78286213	0.07547993	0.0004363	0.477770244	-0.290411195	-0.290253143	0.477770244	-0.183358754
SCIENCE	4	470228	0	A	2	2292	0.852094024	0.852094024	0.040938918	0.057116928	0.03413613	0.0004363	0.514900243	0.514900243	-0.213064176	-0.275166331	-0.264965222
SCIENCE	4	425069	0	A	2	2292	0.855148342	0.064684119	0.087521815	0.057116928	0.855148342	0.003926702	0.56842203	-0.296172126	-0.317701216	-0.349866682	0.56842203
SCIENCE	4	167782	0	D	1	2292	0.82460733	0.04148517	0.081588133	0.82460733	0.052356021	0	0.485217693	-0.265047863	-0.30417876	0.485217693	-0.308181931
SCIENCE	4	936437	0	D	2	2292	0.71902668	0.043193717	0.143106457	0.71902668	0.093368237	0.001308901	0.466401895	-0.292248823	-0.206400599	0.466401895	-0.261906425
SCIENCE	4	899458	0	D	2	2292	0.685427574	0.12478185	0.095549738	0.685427574	0.093368237	0.0008726	0.460322618	-0.209591054	-0.228750948	0.460322618	-0.264115765
SCIENCE	4	137510	0	A	2	2292	0.842495637	0.056282723	0.07417103	0.842495637	0.026614311	0.0004363	0.387497995	-0.215787421	-0.216899863	0.387497995	-0.132646103
SCIENCE	4	893425	0	A	2	2292	0.565008726	0.118673647	0.565008726	0.096422339	0.17277487	0.002617801	0.244142453	-0.185869432	0.244142453	-0.239290839	0.027064694
SCIENCE	4	606263	0	A	2	2292	0.719895288	0.119546248	0.719895288	0.085514834	0.07417103	0.0008726	0.564178906	-0.24035214	0.564178906	-0.311320105	-0.33352059
SCIENCE	4	693873	0	A	2	2292	0.848167539	0.052792321	0.07460733	0.848167539	0.048167539	0.001308901	0.447252791	-0.294557129	-0.231096815	-0.218540485	0.447252791
SCIENCE	4	993393	0	A	2	2292	0.588132635	0.1256445	0.151832461	0.132198953	0.588132635	0.002181501	0.40487018	-0.167679949	-0.196128788	-	

Cont.	Gr.	ID	Form	Std	DOK	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.Omits	PointBiserial	Corr.A	Corr.B	Corr.C	Corr.D
SCIENCE	4	104027	1A	2	1014	0.645956607	0.120315582	0.140039448	0.092710217	0.000986193	0.600718437	-0.35982765	0.600718437	-0.2780357	-0.24729747	-0.2780357	-0.24729747
SCIENCE	4	386436	1A	2	1014	0.437869822	0.296844181	0.150887574	0.437869822	0.111439842	0.00295858	0.229539465	0.065508652	-0.160643142	0.229539465	-0.26545409	-0.254086062
SCIENCE	4	591935	1D	2	1014	0.478303748	0.478303748	0.163708087	0.286863931	0.120315582	0.000986193	0.178424738	0.0013920988	0.0013920988	0.0013920988	-0.2780357	-0.254086062
SCIENCE	4	319157	1D	2	1014	0.534516765	0.534516765	0.111439842	0.184073373	0.171597633	0.000986193	0.433051296	0.433051296	-0.2725132	-0.05930301	-0.278258373	-0.278258373
SCIENCE	4	720845	1D	2	1014	0.41913215	0.41913215	0.169625247	0.181459566	0.228244458	0.00295858	0.329777155	-0.189886827	-0.186944056	-0.093130874	-0.14559636	-0.14559636
SCIENCE	4	3274694	1B	2	1014	0.334319527	0.334319527	0.235700197	0.196252465	0.00295858	0.00295858	0.222768629	0.03125393	0.222768629	-0.144392562	-0.144392562	-0.144392562
SCIENCE	4	812589	1B	2	1014	0.474538974	0.133156095	0.174556213	0.214990138	0.474538974	0.00295858	0.356178926	-0.345877417	-0.099672287	-0.048164297	0.356178926	0.356178926
SCIENCE	4	108210	1D	2	1014	0.396449704	0.173570002	0.396449704	0.264299803	0.165708087	0.001972387	0.196995973	-0.270221624	0.196995973	-0.199407005	0.04297498	0.04297498
SCIENCE	4	895261	2A	2	638	0.641065831	0.130940044	0.10815407	0.120689565	0.641065831	0.001567398	0.491805295	-0.207465647	-0.286212414	-0.237075074	0.491805295	0.491805295
SCIENCE	4	913878	2C	2	638	0.619122257	0.178683386	0.092476489	0.19122257	0.106583071	0.0013134796	0.344969082	-0.181975784	-0.284938743	0.344969082	-0.046204306	-0.046204306
SCIENCE	4	451888	2B	2	638	0.835423197	0.048589342	0.061128527	0.835423197	0.05174138	0.0033134796	0.459934515	-0.272401074	-0.266267288	0.459934515	-0.193313725	-0.193313725
SCIENCE	4	669179	2A	2	638	0.681818182	0.681818182	0.10815047	0.122257053	0.087774235	0.001567398	0.533295372	0.533295372	-0.261189878	-0.290851487	-0.254438601	-0.254438601
SCIENCE	4	920001	2A	2	638	0.492163009	0.492163009	0.169278997	0.173981191	0.1653009404	0.001567398	0.260398057	0.260398057	-0.144861182	-0.131403827	-0.069322701	-0.069322701
SCIENCE	4	895261	2A	2	638	0.473250432	0.180250784	0.473250432	0.145768025	0.195924756	0.004702194	0.354728939	-0.174287638	0.354728939	-0.28835913	-0.067297309	-0.067297309
SCIENCE	4	646502	2C	2	638	0.565830731	0.171159877	0.285266646	0.128526646	0.056830721	0.001567398	0.424239128	-0.331644776	-0.204684555	0.424239128	-0.204684555	-0.204684555
SCIENCE	4	721169	2D	2	638	0.722557053	0.114420063	0.078369906	0.722557053	0.068639498	0.001567398	0.456819389	-0.322131951	-0.290150102	0.456819389	-0.189192819	-0.189192819
SCIENCE	4	631017	2C	2	638	0.694357367	0.081504702	0.181818182	0.694357367	0.042319749	0.001567398	0.476196135	-0.32860242	-0.172332189	0.476196135	-0.312943344	-0.312943344
SCIENCE	4	570925	2B	2	640	0.681818182	0.159874608	0.081504702	0.081504702	0.681818182	0.001567398	0.542680536	-0.297947309	-0.306412714	-0.348195951	0.542680536	0.542680536
SCIENCE	4	525333	3A	2	640	0.47848375	0.05	0.1171875	0.74848375	0.08125	0.003125	0.362846326	-0.28571978	-0.17632875	0.362846326	-0.13277445	-0.13277445
SCIENCE	4	159411	3D	2	640	0.4984375	0.1828125	0.140625	0.175	0.4984375	0.003125	0.426429958	-0.171866659	-0.200843199	-0.197047888	0.426429958	0.426429958
SCIENCE	4	318105	3A	2	640	0.65625	0.1578125	0.65625	0.09375	0.090625	0.0015625	0.382172685	-0.193688423	0.382172685	-0.208892301	-0.169014324	-0.169014324
SCIENCE	4	646176	3A	2	640	0.640625	0.10625	0.184375	0.640625	0.0671875	0.0015625	0.517359274	-0.348129709	-0.22980458	0.517359274	-0.20367407	-0.20367407
SCIENCE	4	110550	3A	2	640	0.7234375	0.0453125	0.1984375	0.0328125	0.7234375	0.0015625	0.495958285	-0.329056234	-0.26107988	-0.276602925	0.495958285	0.495958285
SCIENCE	4	20375	3A	2	640	0.571875	0.13125	0.08125	0.2140625	0.571875	0.0015625	0.383502111	-0.226199451	-0.164936834	0.383502111	-0.16467935	-0.16467935
SCIENCE	4	486072	3B	2	640	0.409375	0.1875	0.2203125	0.409375	0.18125	0.0015625	0.22077872	-0.293899041	-0.064104153	0.22077872	-0.228466234	-0.228466234
SCIENCE	4	335997	3B	2	640	0.346875	0.296875	0.1671875	0.346875	0.1890625	0.0015625	0.161720834	0.019172072	-0.067304888	0.161720834	-0.183954204	-0.183954204
SCIENCE	4	482668	3C	2	640	0.3171875	0.3171875	0.1453125	0.2	0.3359375	0.0015625	0.207178406	0.207178406	-0.14562404	-0.09998307	-0.089965683	-0.089965683
SCIENCE	4	398464	3C	2	640	0.2562625	0.5265625	0.0578125	0.3484375	0.0671875	0.0015625	0.30289378	0.30289378	-0.262262769	-0.071239681	-0.252410087	-0.252410087
SCIENCE	8	10967	3A	2	4631	0.710429713	0.104513064	0.710429713	0.137983137	0.046210322	0.000863744	0.318294506	-0.18021183	0.318294506	-0.13587834	-0.201798473	-0.201798473
SCIENCE	8	292236	3A	2	4631	0.619122257	0.137983137	0.062405621	0.137983137	0.065644569	0.001511553	0.55257811	-0.308373139	-0.292025334	-0.274671622	-0.274671622	-0.274671622
SCIENCE	8	40288	3D	2	4631	0.551106884	0.041459728	0.063917081	0.551106884	0.3429065	0.000647808	0.224288438	-0.254923463	-0.302213528	0.224288438	0.02884007	0.02884007
SCIENCE	8	19708	3B	2	4631	0.747570719	0.11617613	0.054199957	0.084407903	0.747570719	0.000647808	0.397074791	-0.15302469	-0.28013272	-0.219541873	0.397074791	0.397074791
SCIENCE	8	16516	3B	2	4631	0.576549341	0.112502699	0.576549341	0.17179171	0.134099637	0.000107968	0.345230319	-0.180313965	0.345230319	-0.173880125	-0.138682082	-0.138682082
SCIENCE	8	72047	3C	2	4631	0.719283007	0.073418268	0.096523429	0.199911466	0.00863744	0.000107968	0.160954902	-0.206950583	-0.072162457	0.160954902	0.005179101	0.005179101
SCIENCE	8	906361	3D	2	4631	0.684733319	0.133880371	0.684733319	0.114230188	0.065860505	0.001295616	0.490944726	-0.19222791	0.490944726	-0.30292342	-0.228466234	-0.228466234
SCIENCE	8	28306	3D	2	4631	0.703735694	0.703735694	0.155905852	0.046642194	0.092852516	0.000863744	0.537869574	-0.307408099	-0.307408099	-0.226199193	-0.293180777	-0.293180777
SCIENCE	8	483999	3C	2	4631	0.56889158	0.06508314	0.128050097	0.246383071	0.556899158	0.002159361	0.31963366	-0.220056518	-0.290337027	-0.01135035	0.31963366	0.31963366
SCIENCE	8	34077	3C	2	4631	0.699201036	0.08785986	0.699201036	0.1477000281	0.064133017	0.00107968	0.467030743	-0.187800729	0.467030743	-0.25809738	-0.280120576	-0.280120576
SCIENCE	8	756643	3D	2	4631	0.7584233	0.08112287	0.73418268	0.09955634	0.74584233	0.00107968	0.525754059	-0.22880816	-0.336119999	-0.27097937	0.525754059	0.525754059
SCIENCE	8	99838	3D	2	4631	0.718073805	0.086806305	0.718073805	0.117685165	0.659036925	0.000863744	0.438681994	-0.1847526158	-0.281801372	-0.287374693	0.438681994	0.438681994
SCIENCE	8	426524	3D	2	4631	0.731970767	0.041624392	0.114877996	0.053552149	0.787950767	0.002375297	0.426653515	-0.27566168	-0.238457893	-0.215013296	0.426653515	0.426653515
SCIENCE	8	163768	3D	2	4631	0.62858937	0.063485208	0.15655366	0.150723386	0.62858937	0.000647808	0.48774984	-0.257049593	0.209149756	-0.268582453	0.48774984	0.48774984
SCIENCE	8	38828	3B	2	4631	0.72852408	0.084862881	0.102785575	0.728352408	0.082919456	0.00107968	0.205384454	-0.0046161	-0.214776302	-0.053844454	-0.094983438	-0.094983438
SCIENCE	8	12304	3C	2	4631	0.637815458	0.116605485	0.132584755	0.637815458	0.112502699	0.000431872	0.479788571	-0.281475408	-0.373137371	0.479788571	0.004300978	0.004300978
SCIENCE	8	271204	3C	2	4631	0.707838048	0.067156122	0.117901016	0.106456489	0.707838048	0.000647808	0.524028793	-0.236763807	-0.302889733	0.524028793	-0.236763807	-0.236763807
SCIENCE	8	100159	3C	2	4631	0.764845606	0.034338327	0.740660076	0.764845606	0.000431872	0.000431872	0.384078249	-0.232264468	-0.304809063	-0.12044795	0.384078249	0.384078249
SCIENCE	8	14484	3B	2	4631	0.77153962	0.028071691	0.03038221	0.161304254	0.77153962	0.000431872	0.423278956	-0.29701403	0.28403468	-0.25885563	0.423278956	0.423278956
SCIENCE	8	751251	3D	2	4631	0.756208162	0.075793565	0.756208162	0.109991147	0.000863744	0.000863744	0.481646572	-0.151930816	0.481646572	-0.330819899	-0.287546681	-0.287546681
SCIENCE	8	908670	3A	2	4631	0.666810624	0.666810624	0.106024617	0.145324984	0.080760095	0.00107968	0.537456893	-0.337456893	-0.269841319	-0.301826998	-0.230093556	-0.230093556
SCIENCE	8	947703	3D	2	4631	0.659036925	0.06851738	0.153962427	0.117685165	0.659036925	0.000863744	0.520611893	-0.255948023	-0.291265351	-0.237570494	0.520611893	0.520611893
SCIENCE	8	104007	3B	2	4631	0.69185921	0.078600734	0.083284388	0.136039732	0.69185921	0.000215936	0.494251511	-0.201912748	-0.197510041	-0.339181672	0.494251511	0.494251511
SCIENCE	8	43422	3A	2	4631	0.629237746	0.629237746	0.106									

Cont	Gr	ID	Form	Std	DOK	N	P-Value	Prop.A	Prop.B	Prop.C	Prop.D	Prop.Omits	PointBiserial	Corr.A	Corr.B	Corr.C	Corr.D
SCIENCE	8	342695	0	A	2	4631	0.657525372	0.070827035	0.657525372	0.109047722	0.16152019	0.00107968	0.510976038	-0.136725646	-0.280693884	-0.225185463	-0.207294761
SCIENCE	8	418699	0	A	3	4631	0.610667242	0.079032606	0.610667242	0.13560786	0.173612611	0.00107968	0.418039542	-0.136725646	0.418039542	-0.25866313	-0.207294761
SCIENCE	8	719442	0	C	2	4631	0.6888049232	0.083567264	0.09371626	0.6888049232	0.1133880736	0.000431872	0.533934755	-0.309526481	0.309576319	-0.33394735	-0.207096433
SCIENCE	8	791853	0	C	2	4631	0.703303882	0.106672425	0.063033882	0.703303882	0.125880136	0.00107968	0.353929171	-0.270159417	0.356029171	-0.240594521	-0.062911099
SCIENCE	8	231963	0	C	2	4631	0.730295832	0.131289138	0.0730295832	0.730295832	0.063485208	0.00107968	0.448714882	-0.18166916	0.448714882	-0.320901179	-0.221181729
SCIENCE	8	239030	0	A	2	4631	0.631397106	0.081191967	0.150591824	0.631397106	0.0631397106	0.001511553	0.490031915	-0.309784795	-0.249315358	-0.178290748	0.490031915
SCIENCE	8	357203	0	A	3	4631	0.572662492	0.572662492	0.163463615	0.153314619	0.10861585	0.001943425	0.43009714	0.43009714	0.273849229	-0.180566726	-0.145565694
SCIENCE	8	187999	0	B	2	4631	0.615417836	0.099114662	0.129993522	0.155024218	0.0615417836	0.000431872	0.43165693	-0.148248865	-0.245079751	-0.229621423	0.43165693
SCIENCE	8	224608	0	B	2	4631	0.600951019	0.133448489	0.600951019	0.128913842	0.118291384	0.002159361	0.543668724	-0.20269395	0.543668724	-0.299374913	-0.280724227
SCIENCE	8	231591	0	A	2	4631	0.69293889	0.153746491	0.69293889	0.098466854	0.053988402	0.0010863744	0.390399797	-0.146300836	0.390399797	-0.282156599	-0.188832443
SCIENCE	8	561789	0	A	2	4631	0.552580436	0.061109911	0.072707946	0.552580436	0.357806089	0.001295616	0.38089218	-0.270969485	-0.124932492	0.38089218	-0.247187705
SCIENCE	8	133295	0	A	3	4631	0.620384366	0.620384366	0.147268409	0.150939322	0.079886351	0.001511553	0.57191384	0.57191384	0.286507809	-0.319932418	-0.220785342
SCIENCE	8	808250	0	A	2	4631	0.615417836	0.099114662	0.129993522	0.155024218	0.0615417836	0.000431872	0.43165693	-0.148248865	-0.245079751	-0.229621423	0.43165693
SCIENCE	8	131117	1	A	2	4631	0.451354062	0.078736209	0.256168806	0.213640923	0.153534062	0.001504514	0.392925156	-0.185528231	-0.123922562	-0.223716836	-0.329295156
SCIENCE	8	174716	1	B	2	1994	0.714643932	0.061685055	0.148445336	0.635907723	0.100030900	0.001504514	0.222344152	-0.252721183	0.452951628	-0.230872623	-0.219643933
SCIENCE	8	192615	1	A	2	1994	0.735205617	0.0667001	0.735205617	0.11334002	0.084754263	0.0	0.561375575	-0.225582755	0.561375575	-0.351447154	-0.287272715
SCIENCE	8	528486	1	A	2	1994	0.251755266	0.264292879	0.274824473	0.251755266	0.208124373	0.001030900	-0.03932412	-0.026874104	0.097945137	-0.03932412	-0.035601961
SCIENCE	8	381517	1	B	2	1994	0.485463699	0.485463699	0.114343029	0.193079238	0.206118355	0.001030900	0.360449267	0.360449267	-0.219677892	-0.306720764	0.027209491
SCIENCE	8	445263	1	B	3	1994	0.478435306	0.478435306	0.168505519	0.168505519	0.541212337	0.000501505	0.454302929	-0.252438533	-0.211066651	-0.164216771	0.454302929
SCIENCE	8	100934	1	A	2	1994	0.635907723	0.108826479	0.105817452	0.148445336	0.635907723	0.001030900	0.378470789	-0.17104447	-0.201411585	-0.186586635	0.378470789
SCIENCE	8	202961	1	A	2	1994	0.524573721	0.091273821	0.524573721	0.118355065	0.265295888	0.000501505	0.445870363	-0.171572409	0.445870363	-0.318485802	-0.158616699
SCIENCE	8	423013	1	B	3	1994	0.432296891	0.432296891	0.165997994	0.157979322	0.242226688	0.001504514	0.376823025	0.376823025	0.151934712	-0.213701097	-0.112372724
SCIENCE	8	688912	1	C	3	1994	0.497492477	0.497492477	0.155466399	0.271815446	0.074724173	0.000501505	0.318442651	0.318442651	-0.287303602	-0.011879151	-0.187676533
SCIENCE	8	187769	2	A	2	1994	0.770106222	0.770106222	0.07814871	0.073455083	0.076631259	0.000758725	0.572985488	-0.267325385	-0.347634321	-0.291152339	-0.247672158
SCIENCE	8	295554	2	A	2	1994	0.737481032	0.037936267	0.059939302	0.737481032	0.164643399	0	0.444778916	-0.272434824	-0.258588222	0.444778916	-0.221851171
SCIENCE	8	969133	2	A	2	1994	0.350531108	0.098939302	0.350531108	0.264036419	0.286039454	0	0.226573288	-0.18061669	-0.18061669	0.226573288	-0.127632196
SCIENCE	8	908646	2	A	2	1994	0.698027314	0.180576631	0.698027314	0.05538695	0.001517451	0.001517451	0.378932747	-0.081058745	0.378932747	-0.336780048	-0.08994933
SCIENCE	8	643119	2	C	2	1994	0.869499241	0.869499241	0.093566091	0.039453718	0.054628225	0.000758725	0.476536401	-0.277552804	-0.304608228	-0.219443692	-0.219443692
SCIENCE	8	593757	2	A	2	1994	0.15477997	0.234446131	0.15477997	0.459028832	0.151745068	0	0.089189059	0.001854986	-0.089189059	0.20711601	-0.199948923
SCIENCE	8	543031	2	B	2	1994	0.780783376	0.110015175	0.057663126	0.051593323	0.780783376	0	0.526209231	-0.252527315	-0.362811672	-0.243647699	0.526209231
SCIENCE	8	168099	2	C	2	1994	0.745827011	0.115326252	0.745827011	0.051593323	0.087253414	0	0.322055928	-0.213710739	0.322055928	-0.238184256	-0.068289574
SCIENCE	8	623195	2	B	2	1994	0.276176024	0.46737481	0.034901366	0.276176024	0.220030349	0.001517451	0.11252824	0.059324814	0.11252824	0.11252824	-0.049205084
SCIENCE	8	466363	3	A	2	1994	0.858225929	0.056103108	0.858225929	0.040181956	0.045489007	0	0.515929453	-0.335392392	0.515929453	-0.240247016	-0.266845752
SCIENCE	8	430524	3	C	2	1994	0.743745262	0.743745262	0.090219864	0.081880212	0.082638362	0.0015163	0.526667803	0.526667803	-0.297305945	-0.31010952	-0.205402261
SCIENCE	8	140928	3	A	2	1994	0.582259287	0.112888519	0.582259287	0.119765277	0.109931766	0.00075815	0.414824512	-0.198497264	0.414824512	-0.18035202	-0.216935565
SCIENCE	8	671017	3	A	2	1994	0.582259287	0.112888519	0.582259287	0.119765277	0.109931766	0.00030326	0.470494848	-0.238215266	0.470494848	-0.286835596	-0.162546944
SCIENCE	8	915814	3	B	2	1994	0.322971948	0.53525398	0.322971948	0.084154663	0.056103108	0.0015163	0.136481114	0.083184541	0.136481114	-0.259724579	-0.130533429
SCIENCE	8	741571	3	A	2	1994	0.472327521	0.072782411	0.472327521	0.355272403	0.098559515	0.00075815	0.248161656	-0.222701617	0.248161656	0.003759788	-0.221199841
SCIENCE	8	152330	3	A	2	1994	0.569370735	0.221379833	0.125852919	0.569370735	0.081122062	0.00227445	0.411770737	-0.130776745	-0.223881419	0.411770737	-0.271075223
SCIENCE	8	786702	3	A	2	1994	0.746019712	0.112206217	0.084154663	0.746019712	0.054586808	0.00030326	0.561926559	-0.349334355	-0.263091302	0.561926559	-0.261523082
SCIENCE	8	363988	3	B	2	1994	0.402577761	0.153904473	0.109173616	0.33358605	0.402577761	0.00075815	0.204495535	-0.282207539	-0.164284306	0.112515317	0.204495535
SCIENCE	8	688633	3	B	2	1994	0.413949962	0.413949962	0.230477635	0.122820318	0.231993935	0.00075815	0.415206889	0.415206889	0.081370459	-0.313908602	-0.159126864
SCIENCE	8	561985	3	C	2	1994	0.582259287	0.221379833	0.582259287	0.108415466	0.087187263	0.00075815	0.274582644	-0.075761569	0.274582644	-0.178579452	-0.167459423
SCIENCE	8	115763	3	C	2	1994	0.462471569	0.099317665	0.20166793	0.236542835	0.462471569	0	0.309028655	-0.147319739	-0.201627749	-0.068511693	0.309028655

Open-ended Paper/Pencil Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
Mean Raw Score	Mean Raw Score
Prop 0	Proportion 0
Prop 1	Proportion 1
Prop 2	Proportion 2
Prop 3	Proportion 3
Prop 4	Proportion 4
Point Biserial	Point Biserial
Corr 0	Correlation 0
Corr 1	Correlation 1
Corr 2	Correlation 2
Corr 3	Correlation 3
Corr 4	Correlation 4
IRT Difficulty Estimate	IRT Difficulty Estimate
IRT Difficulty Error	IRT Difficulty Error
Infit	Infit
Infit Mean Square	Infit Mean Square
Outfit	Outfit
Outfit Mean Square	Outfit Mean Square
Male/Female DIF Code	Male/Female DIF Code
White/Black DIF Code	White/Black DIF Code
White/Hispanic DIF Code	White/Hispanic DIF Code

Cont	Gr	ID	Form	Std	DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Prop 4	Point Bisequal	Corr 0	Corr 1	Corr 2	Corr 3	Corr 4	Difficulty Estimate	IRT Error	IRT	Infitt	Infitt	Mean Square	Outfit Square	Outfit	Male/Female	White/Black	Hispanic	DIF Code	
MATH	8	581783	1	C-G	2	1100	1.084545455	0.356363636	0.382727273	0.095454545	0.150909091	0.014545455	0.706694473	-0.590507011	0.030970838	0.257092519	0.468130102	0.205792033	1.373	0.039	-2.9691	0.8719	-4.0292	0.8161	A+	B-	A+				
MATH	8	168946	2	B-E	3	1100	0.81	0.592727273	0.188181818	0.074545455	0.039090909	0.657280616	-0.632218768	0.203581519	0.209144188	0.374045018	0.315966481	1.4374	0.0378	-0.009	0.9987	-1.8491	0.8597	A+	A-	A+					
MATH	8	112134	3	D-5	3	1100	1.341818182	0.287272727	0.318181818	0.213636364	0.127272727	0.053636364	0.721119407	-0.574207476	-0.096880002	0.239360159	0.397908224	0.329494102	0.9545	0.0377	-1.8691	0.9225	-2.6391	0.8888	A+	C	B-				
MATH	8	46137	4	B-E	2	1100	0.783636364	0.629090909	0.173636364	0.054545455	0.07	0.072727273	0.67797796	-0.627861898	0.164080058	0.302292511	0.439586298	1.262	0.0371	-3.0092	0.8344	-3.2993	0.7233	A-	A-	A-					
MATH	8	427748	5	C-G	3	1100	0.517272727	0.54	0.409090909	0.046363636	0.002727273	0.001818182	0.654238277	-0.63915581	0.495613822	0.321513264	0.083435692	0.068559576	2.905	0.0587	-5.3482	0.7607	-6.3393	0.726	A+	A-	A-				
MATH	8	50231	6	B-F	2	1100	1.299090909	0.224545455	0.271818182	0.182454545	0.181818182	0.139090909	0.762384449	-0.531658999	0.246894619	0.058945761	0.356070215	0.495839943	0.2186	0.0334	-4.3392	0.8281	-4.5382	0.8047	A+	A-	A-				
MATH	8	68609	8	A-N	2	123673	1.308727273	0.367272727	0.416363636	0.187272727	0.132727273	0.085454545	0.752338226	-0.628498989	-0.051547681	0.222991075	0.401939004	0.397333753	0.8389	0.0436	-3.0191	0.8696	-4.4492	0.7861	A+	A-	A-				
MATH	8	57917	9	B-E	3	1100	1.036363636	0.306363636	0.416363636	0.187272727	0.054545455	0.015454545	0.719688344	-0.613810546	0.069097568	0.386346041	0.336413346	0.207764617	1.5832	0.0436	-6.0492	0.7559	-6.7793	0.7376	A+	A-	A-				
SCIENCE	4	339077	0	A	2	123673	1.159282948	0.212272727	0.381660486	0.071560486	0.027272727	0.046363636	0.622411644	-0.576504516	0.012895508	0.047075155		0.6752	0.0047	-9.8991	0.8847	-9.8991	0.8726	A+	A-	A-					
SCIENCE	4	25224	0	B	2	123673	1.502858344	0.164223396	0.168694865	0.67608174			0.57346839	-0.443697086	-0.196631805	0.505063916		-0.0898	0.0048	9.9011	1.1008	9.9012	1.1999	A+	A-	A-					
SCIENCE	4	19771	0	C	3	123673	0.977294963	0.364647094	0.29341085	0.341942025			0.614659488	-0.462196144	-0.002916144	0.370257754		1.1663	0.0043	9.9013	1.2926	9.9014	1.3791	A+	A-	A-					
SCIENCE	4	95760	0	A	2	123673	1.308727273	0.367272727	0.416363636	0.187272727	0.132727273	0.085454545	0.752338226	-0.628498989	-0.051547681	0.222991075	0.401939004	0.397333753	0.8389	0.0436	-3.0191	0.8696	-4.4492	0.7861	A+	A-	A-				
SCIENCE	4	97676	5	C	3	1100	0.72	0.460909091	0.358181818	0.180909091			0.632866144	-0.560521062	-0.115322862	0.5418034		0.255	0.0046	-9.8991	0.8933	-9.8991	0.8644	A+	A-	A-					
SCIENCE	4	94181	6	A	2	1100	1.20309091	0.297272727	0.183636364	0.023636364			0.489105332	-0.409201238	-0.199709558	0.438249691		-0.5195	0.0053	9.9011	1.0628	9.9012	1.1866	A+	A-	A-					
SCIENCE	4	38952	7	B	2	1100	1.041818182	0.235454545	0.487272727	0.272727273			0.46347938	-0.473976284	0.079782781	0.305393764		0.6635	0.0507	2.9911	1.0983	2.9912	1.1062	A+	B-	A-					
SCIENCE	4	47626	8	A	2	1100	1.416363636	0.155454545	0.571818182			0.10061307	-0.115573072	0.120217672	-0.003093311		3.4055	0.0659	7.0614	1.3815	9.9021	2.0561	A+	A-	A-						
SCIENCE	4	63765	9	C	3	1100	0.906363636	0.329090909	0.435454545	0.235454545			0.463820304	-0.390581235	0.033466322	0.37399985		1.2414	0.0497	3.4811	1.1335	3.1911	1.1305	B+	A+	A+					
SCIENCE	4	96311	4	A	3	1100	0.803636364	0.352727273	0.490909091	0.156363636			0.397884916	-0.327492753	0.080080813	0.320618033		1.6738	0.0524	2.9411	1.1152	2.7511	1.1116	A+	A+	A+					
SCIENCE	4	97676	5	C	3	1100	0.72	0.460909091	0.358181818	0.180909091			0.331010141	-0.285286498	0.033400381	0.301922481		1.8028	0.0487	6.3113	1.2562	6.6413	1.3463	A+	C-	A+					
SCIENCE	4	34181	6	A	2	1100	1.20309091	0.297272727	0.183636364	0.023636364			0.234484265	-0.238571843	0.212351209	0.095370666		3.4954	0.0708	3.1812	1.2018	3.2714	1.3524	A+	A-	A+					
SCIENCE	4	38952	7	B	2	1100	1.041818182	0.235454545	0.487272727	0.272727273			0.326398664	-0.264800969	-0.017241395	0.27022836		1.0106	0.0505	6.6713	1.2645	6.7513	1.2736	A+	A-	A-					
SCIENCE	4	47626	8	A	2	1100	1.416363636	0.155454545	0.571818182			0.57346839	-0.550823781	-0.062057379	0.45920586		0.0756	0.0507	-0.1119	0.9941	-0.489	0.9698	A+	A-	A-						
SCIENCE	4	63765	9	C	3	1100	0.906363636	0.329090909	0.435454545	0.235454545			0.36651693	-0.259809811	-0.05865023	0.356271931		1.3692	0.0494	6.0312	1.2379	6.1913	1.2665	A-	A-	A-					
SCIENCE	4	275618	10	A	3	1100	0.707272727	0.526363636	0.24	0.233636364			0.46964899	-0.439548269	0.124748241	0.392752227		1.7428	0.0457	2.4111	1.0949	1.2011	1.0735	A+	A-	A-					
SCIENCE	4	65399	11	B	2	1099	0.17561495	0.86533212	0.093721565	0.040966315			0.152709718	-0.148453394	0.098305613	0.111154495		3.4215	0.0072	2.7812	1.2331	6.9026	2.5979	A+	A-	A-					
SCIENCE	4	296840	12	A	2	1100	0.909090909	0.297272727	0.505454545	0.201818182			0.50802075	-0.542071245	0.276697607	0.269858367		1.2941	0.0517	0.901	1.0335	0.961	1.0363	A+	A-	A-					
SCIENCE	8	673287	0	D	3	120548	0.914598334	0.186423665	0.712554335	0.101022			0.540846782	-0.536877001	0.291465911	0.25611156		0.9276	0.0062	-9.8991	0.9062	-9.8991	0.8943	A+	A-	A-					
SCIENCE	8	893140	0	B	3	120548	0.881632213	0.28827521	0.541817367	0.169907423			0.404027263	-0.377335235	0.09695437	0.326448066		0.9268	0.0052	9.9011	1.0907	9.9011	1.0873	A+	A-	A-					
SCIENCE	8	283103	0	A	2	120548	1.038772937	0.263115108	0.434996848	0.301888045			0.384119039	-0.366573415	0.069189374	0.276690111		0.4543	0.0047	9.9013	1.2886	9.9013	1.3074	A+	A-	A-					
SCIENCE	8	383857	0	A	3	120548	0.72413313	0.467324219	0.352982829	0.179737532			0.435340756	-0.4399919891	0.234327281	0.280111243		1.302	0.0047	9.9012	1.1647	9.9012	1.1893	A+	A-	A-					
SCIENCE	8	109535	0	B	3	120548	1.375642897	0.131922554	0.360511995	0.507565451			0.518177673	-0.422184332	-0.166767282	0.445937242		-0.4796	0.005	9.901	1.0457	9.9011	1.07	A+	A-	A-					
SCIENCE	8	40740	1	A	3	1100	0.781818182	0.428181818	0.371818182	0.2			0.493413057	-0.477197073	0.202323094	0.345967809		1.175	0.0489	2.3011	1.0885	1.051	1.0473	A+	A-	B-					
SCIENCE	8	290159	2	B	3	1100	1.277272727	0.120909091	0.480909091	0.398181818			0.353439114	-0.397780608	0.048709352	0.215205596		-0.3527	0.0543	6.1112	1.2497	5.9813	1.252	B+	A-	A-					
SCIENCE	8	158034	3	A	3	1100	0.70909091	0.484545455	0.33	0.185454545			0.537542942	-0.509055485	0.21105254	0.398228627		1.321	0.0487	-0.989	0.9619	-1.4391	0.9291	A+	A-	A-					
SCIENCE	8	234351	4	C	2	1100	0.641818182	0.508181818	0.341818182	0.15			0.4625007	-0.442032451	0.222009614	0.323977916		1.5295	0.0502	0.881	1.0342	1.9211	1.1004	A+	C-	A-					
SCIENCE	8	105568	5	A	2	1099	0.314831665	0.722474977	0.24021838	0.037906642			0.324651833	-0.323905491	0.269528113	0.157725673		2.6736	0.063	0.841	1.0424	2.2712	1.1877	A+	A-	A-					
SCIENCE	8	14440	6	C	2	1100	0.7827272																								

Open-ended Online Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
Mean Raw Score	Mean Raw Score
Prop 0	Proportion 0
Prop 1	Proportion 1
Prop 2	Proportion 2
Prop 3	Proportion 3
Prop 4	Proportion 4
Point Biserial	Point Biserial
Corr 0	Correlation 0
Corr 1	Correlation 1
Corr 2	Correlation 2
Corr 3	Correlation 3
Corr 4	Correlation 4

Cont	Gr	ID	Form	Std	DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Prop 4	Point Biserial	Corr 0	Corr 1	Corr 2	Corr 3	Corr 4
ELA	3	613963	0	A-K	3	950	0.868421053	0.386315789	0.390526316	0.191578947	0.031578947	0.031578947	0.655015472	-0.606252455	0.176236985	0.4338222425	0.22003308	
ELA	3	467571	0	B-K	3	950	1.122105263	0.227368421	0.473684211	0.248421053	0.050526316	0.050526316	0.577250476	-0.511158631	0.007136246	0.383208552	0.205894088	
MATH	3	194218	0	A-T	2	989	1.338725986	0.158746208	0.527805865	0.166835187	0.109201213	0.037411527	0.71290199	-0.487746734	-0.224471806	0.28663096	0.411559111	0.290869889
MATH	3	967694	0	D-M	3	989	0.804853387	0.479271992	0.342770475	0.093023256	0.063700708	0.021233569	0.661365266	-0.605165004	0.216151338	0.28716877	0.327278455	0.25241848
MATH	3	470151	0	C-G	2	989	1.458038423	0.247724975	0.309403438	0.234580384	0.153690597	0.054600607	0.68905113	-0.496830885	-0.222402427	0.261716821	0.375610188	0.31214534
MATH	4	963441	0	B-O	2	1135	1.676651982	0.254625551	0.194713656	0.239664577	0.241409692	0.069603524	0.751162948	-0.574260786	-0.216229258	0.119172845	0.460950244	0.344510368
MATH	4	238586	0	D-M	3	1135	0.429955947	0.749797936	0.137444934	0.058149778	0.042290749	0.012334802	0.565675808	-0.570631021	0.273320919	0.2344361482	0.31483689	0.216534598
MATH	4	140906	0	A-F	3	1135	1.06784141	0.446696035	0.282819383	0.097797357	0.101321586	0.071365639	0.693394572	-0.576652792	0.23138376	0.241491503	0.353518824	0.39471996
MATH	5	660007	0	D-M	3	1613	0.934283943	0.520768754	0.238065716	0.083075015	0.102293862	0.055796652	0.768395248	-0.691671047	0.136548022	0.245430065	0.421449665	0.400516344
MATH	5	722417	0	A-F	2	1613	1.313081215	0.345519281	0.21450713	0.310601364	0.040917545	0.088654681	0.721525769	-0.545593211	-0.132192696	0.282518689	0.250279806	0.469187388
MATH	5	197479	0	B-O	3	1613	0.836949783	0.487290763	0.27650341	0.167389957	0.049597024	0.019218847	0.678197114	-0.592770239	0.10402183	0.412792756	0.273399744	0.264399206
MATH	6	489550	0	D-S	3	2825	0.926017699	0.432212389	0.274690265	0.24920354	0.022654867	0.021238938	0.612923673	-0.554046493	0.097529745	0.389146146	0.206897569	0.220696019
MATH	6	904232	0	B-E	3	2825	1.242477876	0.483539823	0.12920354	0.144778761	0.14619469	0.096283186	0.730227272	-0.659351662	0.002361191	0.208996139	0.369271393	0.422741688
MATH	6	480223	0	A-R	3	2825	0.975221239	0.525309735	0.183362832	0.153982301	0.065486726	0.071858407	0.653713667	-0.583461221	0.059313451	0.275639965	0.29905496	0.367608856
MATH	7	340884	0	D-S	3	3537	2.040995194	0.112807464	0.237772123	0.270285553	0.253887475	0.125247385	0.704382177	-0.386609207	-0.372274974	-0.055774067	0.386724762	0.414638531
MATH	7	776330	0	B-E	3	3537	0.881538027	0.445292621	0.34916596	0.115351993	0.059089624	0.031099802	0.737677378	-0.667294884	0.170316733	0.377704676	0.344281807	0.280076816
MATH	7	310648	0	A-R	2	3537	1.069550466	0.337008764	0.39722929	0.155781736	0.079163133	0.030817077	0.761803304	-0.612581732	-0.009276489	0.376801962	0.39318502	0.296810387
MATH	8	896225	0	D-S	2	3639	1.206100577	0.256663919	0.423193185	0.18933773	0.118988733	0.011816433	0.642738601	-0.511509745	-0.082320009	0.33076519	0.365589506	0.149363396
MATH	8	411558	0	B-E	2	3639	1.514701841	0.158834845	0.408079143	0.233031052	0.159659247	0.040395713	0.702906088	-0.388819172	-0.368089603	0.233125668	0.456417929	0.290991662
MATH	8	108674	0	A-N	3	3639	0.903270129	0.3569662	0.457543281	0.124484749	0.047265732	0.013740038	0.711954106	-0.613877261	0.146635438	0.390456747	0.32403156	0.200961997
SCIENCE	4	339077	0	A	2	2292	1.089005236	0.259162304	0.392670157	0.348167539			0.640307802	-0.616846915	0.091816555	0.473244536		
SCIENCE	4	225224	0	B	2	2292	1.313263525	0.248254799	0.190226876	0.561518325			0.605430626	-0.540614884	-0.111194751	0.558619472		
SCIENCE	4	919771	0	C	3	2292	0.969458988	0.363001745	0.304537522	0.332460733			0.454527582	-0.4122232648	0.038356057	0.383303023		
SCIENCE	4	475760	0	A	2	2292	1.234729494	0.244328098	0.276614311	0.479057592			0.687216993	-0.627769122	-0.049857035	0.584607394		
SCIENCE	4	758619	0	B	2	2292	1.533158813	0.118673647	0.229493892	0.651832461			0.593037617	-0.486062504	-0.23577383	0.538087571		
SCIENCE	8	673287	0	D	3	4631	0.97300799	0.184841287	0.657309436	0.157849277			0.579731619	-0.579120299	0.232992111	0.313264852		
SCIENCE	8	893140	0	B	3	4631	0.989419132	0.241200605	0.528179659	0.230619737			0.485800239	-0.409747523	0.033927892	0.375941904		
SCIENCE	8	283103	0	A	2	4631	1.103000152	0.253293025	0.390412438	0.356294537			0.439353915	-0.419925412	0.051690173	0.328683531		
SCIENCE	8	383857	0	A	3	4631	0.658605053	0.520837832	0.299719283	0.179442885			0.45728734	-0.4648836753	0.251138083	0.305328055		
SCIENCE	8	109535	0	B	3	4631	1.397970201	0.122003887	0.358022025	0.519974088			0.562970205	-0.454054293	-0.1966657018	0.486165297		

Evidence Based Selected Response Paper/Pencil Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
Mean Raw Score	Mean Raw Score
Prop 0	Proportion 0
Prop 1	Proportion 1
Prop 2	Proportion 2
Prop 3	Proportion 3
Point Biserial	Point Biserial
Corr 0	Correlation 0
Corr 1	Correlation 1
Corr 2	Correlation 2
Corr 3	Correlation 3
IRT Difficulty Estimate	IRT Difficulty Estimate
IRT Difficulty Error	IRT Difficulty Error
Infit	Infit
Infit Mean Square	Infit Mean Square
Outfit	Outfit
Outfit Mean Square	Outfit Mean Square
Male/Female DIF Code	Male/Female DIF Code
White/Black DIF Code	White/Black DIF Code
White/Hispanic DIF Code	White/Hispanic DIF Code

Cont Gr	ID	Form	Std	DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Point Biserial	Corr 0	Corr 1	Corr 2	Corr 3	IRT Estimate	IRT Difficulty	Infilt Mean Square	Infilt Mean Square	Outfit Mean Square	Male/DIF Code	White/Black/DIF Code	White/Hispanic/DIF Code	
ELA	3	8616275	0 A-K	3	125594	1.6081865995	0.13785245	0.133677405	0.11523461	0.197413889	0.440840092	-0.27680055	-0.246313475	0.200040308	0.28772739	0.0038	9.9013	1.3013	9.9013	9.9013	1.3386	A-	A-	A-
ELA	3	462220	0 A-K	3	125594	1.909040241	0.132761119	0.188090195	0.316496011	0.362652674	0.58364603	-0.299642327	-0.401124609	0.0296688426	0.508809843	0.0564	0.0036	9.9013	1.0697	9.9011	1.0676	A-	A-	A-
ELA	3	489081	0 B-K	3	125594	1.93146169	0.235281894	0.33628995	0.42842811	0.277237571	-0.117730073	-0.253038586	0.342494135	0.0296688426	0.508809843	0.2241	0.0044	9.9015	1.4655	9.9016	1.6515	A-	A-	A-
ELA	3	702578	0 A-K	3	140534	0.870009714	0.350820899	0.428348488	0.270330613	0.315769511	-0.258685747	-0.2023549123	0.265448293	0.0296688426	0.508809843	0.1086	0.0046	9.9013	1.3068	9.9014	1.3702	A-	A-	A-
ELA	3	962090	1 B-K	3	140534	1.473811729	0.174445949	0.365638139	0.271574147	0.188341766	0.518434734	-0.286857349	-0.252211383	0.1265474797	0.443970987	0.6416	0.0112	9.9011	1.1422	9.9014	1.1556	A-	A-	A-
ELA	3	598257	1 A-K	3	14033	1.111807881	0.245706549	0.396779021	0.35751443	0.503623369	-0.400404115	-0.08651196	0.447975414	0.0296688426	0.508809843	0.3631	0.0135	9.9011	1.0606	6.4311	1.0752	A-	A-	A-
ELA	3	851466	2 A-K	3	13973	0.84130943	0.444356974	0.249982128	0.305660917	0.293572805	-0.132826671	-0.274735904	0.069142086	0.0296688426	0.508809843	0.9798	0.0125	9.9015	1.4689	9.9017	1.7273	B-	A-	A-
ELA	3	589539	2 A-K	3	13973	1.78701782	0.101052029	0.27137386	0.36751532	0.260359264	-0.382828158	-0.300812758	0.067917024	0.462456693	0.1551	0.0115	9.9015	1.6811	1.0186	1.941	1.0222	A-	A-	A-
ELA	3	347181	3 A-K	3	13956	1.97284953	0.094224706	0.225351103	0.294138722	0.386285469	0.619382776	-0.334598587	-0.386339015	0.001095068	0.531250555	-0.1404	0.0113	-1.899	0.9782	-1.209	0.9837	A-	A-	A-
ELA	3	470214	3 A-K	3	13956	0.810547435	0.457867584	0.273717398	0.268415019	0.294461341	-0.181681129	-0.142715799	0.347861701	0.0296688426	0.508809843	1.1064	0.0128	9.9011	1.465	9.9018	1.7506	A-	A-	A-
ELA	3	582134	4 A-K	3	13953	1.8463083208	0.161327313	0.280513151	0.289190855	0.266250985	0.56237325	-0.343257644	-0.175892478	0.529203984	0.469044811	0.4069	0.0107	9.9011	1.0606	3.831	1.0459	A+	A+	A+
ELA	3	754173	4 A-K	3	13953	1.222532789	0.224682864	0.328101484	0.447215653	0.405608977	-0.298062666	-0.16373685	0.404987857	0.0296688426	0.508809843	0.1629	0.0131	-5.8291	0.9401	-5.2591	0.9326	A+	A+	A+
ELA	3	489446	5 A-K	3	13981	1.028181103	0.324292761	0.323234376	0.352478363	0.405608977	-0.298062666	-0.16373685	0.404987857	0.0296688426	0.508809843	0.6226	0.0129	9.9013	1.2636	9.9013	1.339	A+	A+	A+
ELA	3	902350	5 A-K	3	13981	1.40770818	0.112926617	0.213929617	0.236628033	0.316967821	0.446404147	0.569169579	-0.307725041	-0.191081027	0.593641793	0.1814	0.0132	9.9012	1.1882	9.9013	1.3293	A-	A-	A-
ELA	3	936121	6 B-C	3	13933	1.82021101	0.105792005	0.2267943273	0.296234972	0.336980779	0.555317545	-0.265808754	-0.337632333	-0.03006333	0.513224908	0.0035	0.0112	7.8811	1.0908	9.9011	1.133	A-	A-	A-
ELA	3	909878	6 B-K	3	13933	1.41770688	0.180793799	0.223641714	0.2058564487	0.469169579	-0.307725041	-0.191081027	0.593641793	0.0296688426	0.508809843	0.1064	0.011	-1.649	0.9818	-2.699	0.9667	A-	B-	A-
ELA	3	461136	7 B-K	3	13891	1.20977614	0.236628033	0.316967821	0.446404147	0.438437041	-0.307725041	-0.191081027	0.593641793	0.0296688426	0.508809843	0.03035	0.0112	7.8811	1.0908	9.9011	1.133	A-	A-	A-
ELA	3	420039	7 B-K	3	13891	1.71355554	0.098840976	0.267943273	0.296234972	0.336980779	0.555317545	-0.265808754	-0.337632333	-0.03006333	0.513224908	0.1176	0.0112	9.9013	1.2698	9.9013	1.2818	A+	A+	A+
ELA	3	691320	8 B-K	3	13931	1.829875817	0.113631469	0.268178882	0.292872012	0.325317637	0.608918397	-0.262755207	-0.420311264	0.017297187	0.558641432	0.1064	0.011	-1.649	0.9818	-2.699	0.9667	A-	A-	A-
ELA	3	147026	8 B-K	3	13931	0.940420645	0.378005886	0.303567583	0.318426531	0.367331913	-0.243436024	-0.151559087	0.402961539	0.0296688426	0.508809843	0.8194	0.0127	9.9013	1.3194	9.9015	1.4599	A-	A-	A-
ELA	3	830695	9 B-K	3	13943	1.8463083208	0.12576171	0.246431901	0.283654881	0.344187047	0.486024926	-0.208218219	-0.315617235	-0.052369639	0.481263318	0.1216	0.0108	9.9013	1.2519	9.9013	1.3041	A-	A-	A-
ELA	3	288632	9 B-K	3	13943	0.871333286	0.44402209	0.240622535	0.31535375	0.344187047	0.486024926	-0.208218219	-0.315617235	-0.052369639	0.481263318	0.962	0.0123	9.9015	1.4769	9.9018	1.8067	A-	A-	A-
ELA	4	492826	0 A-V	2	123747	1.87664347	0.208182825	0.095970003	0.695847172	0.575195922	-0.474283314	-0.286402651	0.601943864	0.0296688426	0.508809843	-0.3569	0.0045	-0.469	0.9979	9.9012	1.1968	A-	A-	A-
ELA	4	143629	0 B-K	3	123747	1.360003297	0.06282806	0.162081212	0.355451041	0.421691031	0.618019259	-0.292185743	-0.45921778	-0.017482563	0.50140548	-0.4608	0.0041	-9.109	0.9637	1.981	1.0093	A-	A-	A-
ELA	4	902367	0 A-K	2	123747	1.679184142	0.090806242	0.139203375	0.769990384	0.607607056	-0.433543765	-0.389716307	0.616567032	0.0296688426	0.508809843	-0.1032	0.0054	-9.8992	0.7864	-9.8993	0.6888	A-	A-	A-
ELA	4	533092	0 A-C	3	123747	1.112972436	0.090749675	0.184852966	0.245072608	0.479324751	0.666713809	-0.363080024	-0.427205676	-0.062655822	0.59466447	-0.3413	0.0038	-9.8991	0.9194	-9.8991	0.9363	A-	A-	A-
ELA	4	362550	0 B-K	3	123747	1.883827487	0.073213896	0.282738167	0.33105449	0.312993446	0.515014732	-0.279770688	-0.302753428	0.020199514	0.430649911	-0.1099	0.004	9.9012	1.1827	9.9013	1.2513	A-	A-	A-
ELA	4	559681	0 B-K	3	123747	1.19550373	0.301631555	0.277186518	0.421181928	0.47618316	-0.342276761	-0.193549876	0.493627421	0.0296688426	0.508809843	0.3999	0.0043	9.9012	1.189	9.9013	1.2991	A-	A-	A-
ELA	4	902872	1 B-C	3	13812	1.140747176	0.312409499	0.23443826	0.453156675	0.503901223	-0.363029308	-0.232847018	0.536157437	0.0296688426	0.508809843	0.3291	0.0126	9.9012	1.153	9.9013	1.2741	A+	A-	A-
ELA	4	266047	1 B-K	3	13812	1.4732117	0.104763913	0.425499566	0.319497249	0.108239212	0.425788308	-0.266207926	-0.217233253	0.22789899	0.255694043	0.6484	0.0129	9.9012	1.2404	9.9013	1.2608	A-	A-	A-
ELA	4	912765	2 B-K	3	13742	1.942948625	0.093508951	0.33903362	0.33903362	0.348711978	0.665753428	-0.374667052	-0.472550369	0.079876202	0.520430485	-0.1209	0.0117	-7.5491	0.9154	-6.4291	0.9181	A+	A-	A-
ELA	4	387610	2 B-V	3	13742	1.257167807	0.164168243	0.414495707	0.42133605	0.437351723	-0.41575424	-0.014565207	0.326427932	0.0296688426	0.508809843	-0.0461	0.0144	9.9012	1.1768	9.9013	1.2577	A-	A-	A-
ELA	4	135253	3 B-K	3	13762	1.978564162	0.066850748	0.209562564	0.401758465	0.321828223	0.549492038	-0.2729267147	-0.380586954	0.055991728	0.418737143	-0.2249	0.0122	7.0111	1.0915	8.7711	1.1116	A+	A-	A-
ELA	4	550323	3 B-C	3	13762	1.950734595	0.367315797	0.23019099	0.402485104	0.400403648	-0.344035806	-0.19168399	0.5052973791	0.0296688426	0.508809843	0.5905	0.0125	9.9012	1.204	9.9014	1.3927	A-	A-	A-
ELA	4	178244	4 B-K	3	13768	0.952861708	0.427653338	0.191821615	0.380520046	0.425181356	-0.296859828	-0.223426721	0.48369024	0.0296688426	0.508809843	0.7591	0.0123	9.9013	1.314	9.9016	1.6456	A+	A-	A-
ELA	4	518412	4 B-K	3	13768	1.829629204	0.084979663	0.221746078	0.258599651	0.234674608	0.581487346	-0.377687228	-0.3474683	0.188321582	0.367693361	0.046	0.0124	1.231	1.0142	2.701	1.0322	A+	A-	A-
ELA	4	273239	4 B-K	3	13785	1.47036634	0.145883206	0.214000725	0.26398259	0.376133478	0.452534039	-0.241354679	-0.37574632	-0.00351503	0.496726765	0.0961	0.0108	9.9013	1.279	9.9014	1.3858	A-	A-	A-
ELA	4	435421	5 B-K	3	13785	1.208342401	0.238882844	0.313891911	0.447225245	0.505934713	-0.402900839	-0.133613586	0.470234288	0.0296688426	0.508809843	0.1862	0.0133	9.9011	1.1109	9.9012	1.1802	A+	A+	A+
ELA	4	414457	6 A-K	3	13745	1.439941797	0.118661331	0.32273554	0.586603128	0.444277578	-0.48221935	-0.068510589	0.343390625	0.0296688426	0.508809843	-0.4779	0.0148	8.6911	1.1053	9.9013	1.2922	A+	A-	A-
ELA	4	682161	6 A-K	3	13745	1.2791924	0.280174609	0.28490360	0.28490360	0.111531466	0.66281496	-0.247476332	0.190237758	0.214349169	0.1906	0.0114	9.9017	1.7074	9.9018	1.8437	A+	A-	A-	
ELA	4	374631	7 A-C	3	13777	1.943456485	0.059809828	0.242360456	0.392393119	0.305436597	0.519332449	-0.192909171	0.023711756	0.427790847	-0.2132	0.0123	9.9011	1.1191	9.9013	1.2574	A+	A-	A-	
ELA	4	731549	7 A-K	3	13777	1.360963925	0.224794948	0.189446178	0.585758873	0.519332449	-0.192909171	0.023711756	0.427790847	0.0296										

Cont Gr	ID	Form	Std DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Point Biserial	Corr 0	Corr 1	Corr 2	Corr 3	IRT Difficulty Estimate	IRT Error	Infitt Mean Square	Infitt	Outfit Mean Square	Outfit	Male/DIF	White/Black/DIF	White/Hispanic Code	
ELA	5 212871	8-B-K	3	13533	1.560629572	0.2044188037	0.359861108	0.36784157	0.1090666726	0.422172753	-0.287505292	-0.224318913	0.2544559337	0.210024102	0.05947	0.0132	9.9012	1.2438	9.9013	1.2504	A+	A-	A-	
ELA	5 507198	8-B-K	3	13533	1.277691569	0.224414394	0.3579479642	0.302105963	0.5772716292	0.413015134	-0.445012915	-0.2022386917	0.5517466081		0.0599	0.0134	1.011	1.0114	0.491	1.0077	A+	A+	A-	
ELA	5 984279	9-B-C	3	13472	0.921912114	0.409812945	0.258461995	0.331725069	0.222535629	0.58294686	-0.260951546	-0.2222758609	0.4796966881		0.8769	0.0027	9.9013	1.2895	9.9014	1.4279	A-	A-	A-	
ELA	5 966225	9-B-K	3	13472	1.038781713	0.15513658	0.314875297	0.307452494	0.222535629	0.59824686	-0.344281992	-0.327693992	0.470058796		0.5145	0.0114	1.061	1.0118	2.771	1.0257	A-	A-	A-	
ELA	6 554120	0-B-K	3	123756	1.360491613	0.17740554	0.284697308	0.537891754	0.582960595	0.577701	-0.3143467015	-0.358031757	0.520791724		0.0429	0.0045	-9.8991	0.9299	-9.8991	0.9299	A-	A-	A-	
ELA	6 284219	0-B-K	2	123756	2.062421216	0.083050519	0.187368693	0.313689841	0.415890947	0.577701	-0.3143467015	-0.358031757	0.520791724		-0.0455	0.0038	9.9011	1.0542	7.061	1.0332	A-	A-	A-	
ELA	6 152730	0-A-K	3	123756	1.109974466	0.291387892	0.30724975	0.401362358	0.463951544	-0.29186029	-0.210748372	0.468991792		0.6435	0.0043	9.9012	1.1984	9.9013	1.2385	9.9013	1.3383	A-	A-	A-
ELA	6 668303	0-A-K	3	123756	1.628333172	0.161406316	0.161406316	0.259955073	0.264892207	0.439867996	-0.233464425	-0.37831305	0.059090937	0.427754025	-0.2286	0.0046	-9.8991	0.9464	0.751	1.006	A-	A-	A-	
ELA	6 933041	0-A-K	3	123756	1.05211869	0.162836549	0.169115033	0.668048418	0.328533566	0.450463358	-0.178523061	-0.380433094	0.006855174	0.362902534	-0.0091	0.0041	9.9012	1.2125	9.9013	1.3306	A-	A-	A-	
ELA	6 692657	0-B-C	3	13763	2.050750995	0.075519571	0.12674133	0.619205533	0.328533566	0.450463358	-0.178523061	-0.380433094	0.006855174	0.362902534	-0.0091	0.0041	9.9012	1.2125	9.9013	1.3306	A-	A-	A-	
ELA	6 735249	1-B-K	3	13851	1.654603075	0.098837629	0.366688326	0.311500686	0.218973359	0.418722383	-0.218763644	-0.20225207	0.051941842	0.363812144	-0.8223	0.0162	-0.549	0.9922	3.0511	1.0715	A-	A-	C	
ELA	6 635642	1-B-V	3	13851	1.638798643	0.069814454	0.22157245	0.708613097	0.472604107	0.472604107	-0.312026177	-0.309616854	0.457965795		-0.8223	0.0162	-0.549	0.9922	3.0511	1.0715	A-	A-	C	
ELA	6 228714	2-B-K	3	13763	0.654072513	0.1550316065	0.259259357	0.3488878	0.328533566	0.450463358	-0.178523061	-0.380433094	0.006855174	0.362902534	1.6325	0.013	9.9016	1.6181	9.9012	2.1738	A+	A-	A-	
ELA	6 546168	2-B-K	3	13763	1.475295976	0.102811887	0.468429848	0.275448867	0.153309598	0.381547485	-0.212677663	-0.048618177	0.340935133		0.758	0.0121	9.9013	1.2772	9.9013	1.3123	A+	A-	A-	
ELA	6 622774	3-B-C	3	13762	1.999709345	0.065252144	0.17199535	0.460543526	0.302208981	0.607638759	-0.308583507	-0.393417076	0.009125141	0.479358836	0.006	0.0125	-4.5091	0.9473	-4.7991	0.9425	A-	A-	B	
ELA	6 504896	3-B-K	3	13762	1.090751757	0.287094899	0.33053053045	0.37852056	0.406990441	-0.265570713	-0.189665432	0.432441959		0.6933	0.013	9.9013	1.2646	9.9014	1.4353	A+	A-	A-		
ELA	6 145273	4-B-C	3	13768	1.065296339	0.302803603	0.329096456	0.368099942	0.437315249	-0.343491817	-0.088128366	0.413102633		0.7565	0.0128	9.9012	1.1746	9.9013	1.2653	A+	A-	A-		
ELA	6 431449	4-B-K	3	13768	1.803457292	0.086940732	0.311510523	0.311519465	0.289439279	0.420034616	-0.18497554	-0.249979882	-0.027702753	0.398618637	0.2914	0.0114	9.9013	1.318	9.9014	1.4085	A-	A-	A-	
ELA	6 326086	5-B-K	3	13689	1.489663233	0.187880035	0.134505096	0.677551319	0.490537198	-0.342592085	-0.352707629	0.543816009		-0.1184	0.0134	8.0611	1.1081	9.9014	1.4107	A+	A+	A-		
ELA	6 450367	5-B-K	3	13689	1.113302652	0.081306158	0.227262766	0.483673022	0.593656033	-0.267302348	-0.403123038	-0.115798994	0.075064745		-0.0995	0.0112	3.151	1.0383	3.4811	1.0586	A-	A-	A-	
ELA	6 620728	7-A-K	3	13757	2.494642727	0.093770444	0.191754002	0.241691517	0.473359017	0.456167562	-0.20162242	-0.369834794	-0.127303801	0.587878339	-0.0715	0.0111	0.231	1.0028	-2.109	0.9659	A-	A-	B	
ELA	6 616572	8-A-K	3	13741	1.047078087	0.248016884	0.356888145	0.395094971	0.404033895	-0.347195709	-0.15607669	0.4022427		0.529	0.0132	9.9012	1.2216	9.9013	1.3039	A+	A+	A-		
ELA	6 858004	8-A-K	3	13741	1.932319336	0.08259952	0.240011644	0.39858817	0.33753002	0.529009486	-0.272917027	-0.323414611	-0.00245163	0.453437861	0.1055	0.0115	9.8611	1.1151	9.9012	1.1788	A+	A-	A-	
ELA	6 447289	9-A-C	3	13707	1.308598342	0.274020573	0.148099511	0.577879915	0.465278015	-0.347133776	-0.269845828	0.507549159		0.2959	0.0123	9.9012	1.1879	9.9014	1.3775	A+	A-	A-		
ELA	6 428909	9-A-C	3	13707	1.547749325	0.113299774	0.334427665	0.43046024	0.108776538	0.465278015	-0.347133776	-0.269845828	0.507549159	0.145390656	0.8568	0.0125	9.9014	1.3972	9.9014	1.4291	A+	A-	A-	
ELA	7 639059	0-B-K	3	122356	1.232968002	0.134127345	0.40777309	0.458095346	0.438244412	-0.326474295	-0.169705187	0.390685774		-0.0797	0.0048	9.9011	1.0975	9.9011	1.1368	A-	A-	A-		
ELA	7 139984	0-B-C	3	123256	1.430468943	0.016705069	0.08028558	0.339358733	0.563907639	0.546765666	-0.20767157	-0.363624766	-0.237525385	0.47942317	-1.0366	0.0048	-9.8991	0.9265	-9.8991	0.9058	A-	A-	A-	
ELA	7 790613	0-A-K	3	123256	1.524141235	0.165979749	0.389157526	0.291604466	0.153258259	0.248303577	-0.131973839	-0.065944143	-0.048031349	0.286157994	0.8768	0.0039	9.9016	1.6185	9.9017	1.6899	A+	A-	A-	
ELA	7 902404	0-A-K	3	123256	0.725011358	0.493184916	0.28861881	0.218196274	0.354157335	-0.268671461	-0.030322698	0.358487691		1.4249	0.0044	9.9012	1.2336	9.9016	1.5535	A+	A-	A-		
ELA	7 958759	0-B-K	3	123256	1.268514341	0.153029277	0.267102616	0.759774408	0.491010252	-0.300806972	-0.333943048	0.518789063		-0.2112	0.0047	9.9011	1.0501	9.9011	1.1402	A+	A-	A-		
ELA	7 436009	0-A-C	3	123256	1.764733563	0.087541377	0.183219172	0.33717836	0.25804829	0.546278236	-0.30328202	-0.297598478	0.047972119	0.460900655	0.253	0.0039	9.9011	1.0644	9.9011	1.0795	A+	A-	A-	
ELA	7 529138	1-B-K	3	13839	2.12994942	0.038803382	0.190892007	0.371630898	0.398583713	0.550321546	-0.266759122	-0.384268338	-0.026622286	0.440004887	-0.4414	0.0124	-0.019	0.9998	2.781	1.0357	A+	A-	A-	
ELA	7 660126	1-B-C	3	13839	1.68437026	0.27848833	0.27848833	0.446292536	0.484431699	-0.386239874	-0.130358288	0.462555802		0.422	0.0127	9.9011	1.218	9.9012	1.2166	A+	A-	A-		
ELA	7 181676	2-B-C	3	13665	1.5654592	0.145993414	0.369022064	0.27521039	0.220563483	0.4804191782	-0.177293239	-0.307277773	0.466791684		0.6281	0.0112	9.9012	1.2117	9.9012	1.2418	A+	A-	A-	
ELA	7 292822	2-B-C	3	13665	1.800109988	0.44224662	0.44224662	0.70325649	0.384679491	-0.255542325	-0.151598023	0.430053366		1.1884	0.0128	9.9012	1.2378	9.9014	1.3813	A+	A-	A-		
ELA	7 306335	3-B-V	3	13678	1.67730662	0.089779207	0.142710923	0.30750987	0.551354784	-0.399768813	-0.340963726	0.552865988		0.8227	0.0159	-9.8992	0.8449	-9.8993	0.7192	A+	A-	A-		
ELA	7 208130	3-B-K	3	13678	1.848954526	0.064263781	0.278695716	0.40062699	0.256177804	-0.2791728017	-0.290878564	-0.273913046	0.082943183	0.35126965	0.0929	0.0124	9.9011	1.1327	9.9011	1.1581	A-	A-	A-	
ELA	7 505777	4-B-C	3	13687	0.860451523	0.44421714	0.251141196	0.304688664	0.3216474298	-0.213822309	-0.143525704	0.360657609		1.0938	0.0124	9.9014	1.3817	9.9017	1.7016	A+	A+	A+		
ELA	7 120507	4-B-K	3	13687	1.894133119	0.070431797	0.194929495	0.50112501	0.229926207	0.554059049	-0.333466254	-0.354206634	0.149172275	0.35899333	1.0072	0.0127	-0.809	0.9903	-0.889	0.9893	A+	A+	A+	
ELA	7 581679	5-B-K	3	13726	0.451478945	0.713317791	0.121885473	0.164797636	0.234935979	-0.128158417	-0.191304903	0.324940489		1.927	0.0136	9.9013	1.3416	9.9026	2.6384	A-	A-	A-		
ELA	7 368387	5-B-C	3	13726	1.741439604	0.110811598	0.319102433	0.287920734	0.282165234	0.576751598	-0.302676062	-0.336032212	0.075599738	0.487679334	0.3141	0.0111	0.691	1.0075	1.651	1.0196	A+	A+	A+	
ELA	7 743536	6-A-K	3	13679	1.75487324	0.104832225	0.2580598	0.414796403	0.222311572	0.557483198	-0.328020109	-0.363679336	0.221116005	0.362381201	0.3625	0.0118	3.181	1.0361	4.181	1.0483	A-	A-	A-	
ELA	7 503667	6-A-V	3	13679	0.95226259	0.422764822	0.459244097	0.117991081	0.37897599	-0.307494076	0.100697547	0.315316848		1.6812	0.015	9.9011	1.233	9.9012	1.1964	A-	A-	A-		
ELA	7 410082	7-A-K	3	13634	1.423059997	0.165542027	0.245855948	0.588602024	0.546502285	-0.40646187	-0.260864337	0.535262567		-0.1667	0.0137	-3.169	0.9632	-1.239	0.9778	A+	A+	A+		

Cont Gr	ID	Form	Std	DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Point Biserial	Corr 0	Corr 1	Corr 2	Corr 3	IRT Difficulty Estimate	IRT Error	Infit Mean Square	Infit	Outfit Mean Square	Outfit	Male/ Female DIF Code	White/ Black DIF Code	White/ Hispanic DIF Code
ELA	8 371399	5 B-C			3	13488	0.741622183	0.489991103	0.278395611	0.231613286	0.3021606	-0.201500793	-0.096061235	0.340834976	0.352823297	1.1881	0.013	9.9013	1.3334	9.9017	1.6811	A-	A-	A-
ELA	8 570823	5 B-K			3	13488	1.816725979	0.09334223	0.2492586	0.40473013	0.252669039	-0.269829602	-0.287337484	0.100801239	0.352823297	0.0656	0.0119	9.9012	1.1858	9.9012	1.1949	A+	A-	A-
ELA	8 139405	6 A-K			3	13476	0.664440487	0.482264767	0.371029979	0.146705254	0.181566479	-0.131666386	0.00230168	0.182808659	0.352823297	1.5019	0.0143	9.9015	1.4627	9.9017	1.7396	A-	A-	A-
ELA	8 164390	6 A-K			3	13476	1.74109528	0.131418819	0.282724844	0.299198575	0.286657762	-0.277480602	-0.266619258	0.066777021	0.405210552	0.2156	0.0111	9.9013	1.2549	9.9013	1.328	A+	A-	A-
ELA	8 506268	7 A-K			3	13431	1.767999404	0.087260815	0.354403991	0.261410171	0.296925024	-0.295003604	-0.366866694	0.06288683	0.505810693	0.0401	0.0115	0.461	1.005	0.631	1.008	A+	A-	A-
ELA	8 319514	7 A-C			3	13431	1.363710818	0.196113469	0.244062244	0.559824287	0.524679722	-0.426746101	-0.175691124	0.493356951	0.505810693	-0.183	0.0135	2.651	1.0308	7.9412	1.1522	A-	A-	A-
ELA	8 430359	8 A-K			3	13400	1.414925373	0.117164179	0.350746269	0.532089552	0.55521557	-0.461746579	-0.181237306	0.470955138	0.505810693	-0.4721	0.015	-6.8591	0.9229	-2.969	0.9554	A+	A-	A-
ELA	8 679226	8 A-C			3	13400	1.894701493	0.099328358	0.231343284	0.344626866	0.324701493	-0.273003842	-0.340087332	0.005807412	0.474750138	-0.038	0.0116	9.9011	1.1296	9.9012	1.1584	A+	A-	A-
ELA	8 268252	9 A-K			3	13430	1.147431124	0.322338049	0.207892777	0.469769173	0.444941792	-0.335730397	-0.189027358	0.468092564	0.474750138	0.3202	0.0123	9.9012	1.2005	9.9013	1.3332	A+	A-	A-
ELA	8 474060	9 A-K			3	13430	2.087043931	0.069694713	0.147282204	0.40930752	0.373715562	-0.290311774	-0.35133617	-0.103478597	0.515332942	-0.3516	0.0122	-1.599	0.9804	-2.229	0.971	A+	A-	A-

Evidence Based Selected Response Online Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
Mean Raw Score	Mean Raw Score
Prop 0	Proportion 0
Prop 1	Proportion 1
Prop 2	Proportion 2
Prop 3	Proportion 3
Point Biserial	Point Biserial
Corr 0	Correlation 0
Corr 1	Correlation 1
Corr 2	Correlation 2
Corr 3	Correlation 3

Cont Gr	ID	Form	Std	DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Point Biserial	Corr 0	Corr 1	Corr 2	Corr 3	
ELA	3	861675	0	A-K	3	950	1.323157895	0.201052632	0.373684211	0.326315789	0.098947368	0.500795602	-0.321596274	-0.213810688	0.299474262	0.307833792
ELA	3	462220	0	A-K	3	950	1.555789474	0.181052632	0.288421053	0.324210526	0.206315789	0.5632221249	-0.280259869	-0.365832904	0.183598967	0.463873717
ELA	3	489081	0	B-K	3	950	1.012631579	0.307368421	0.372631579	0.32		0.283882976	-0.142231069	-0.193531825	0.341281199	
ELA	3	702578	0	B-K	3	950	0.749473684	0.406315789	0.437894737	0.155789474		0.282260181	-0.231977652	0.057268652	0.235822165	
ELA	3	962090	1	A-C	3	424	1.228773585	0.238207547	0.403301887	0.25	0.108490566	0.497560899	-0.251776423	-0.22008848	0.170074482	0.455228815
ELA	3	598257	1	A-K	3	424	0.889150943	0.325471698	0.45990566	0.214622642		0.461709423	-0.2984245	-0.111918935	0.476437453	
ELA	3	851466	2	A-K	3	262	0.824427481	0.465648855	0.244274809	0.290076336		0.292056703	-0.185285057	-0.148520573	0.344286808	
ELA	3	589539	2	A-K	3	262	1.538167939	0.13740458	0.351145038	0.347328244	0.164122137	0.651188384	-0.322613874	-0.404546287	0.248835286	0.501349891
ELA	3	347181	3	A-K	3	264	1.606060606	0.196969697	0.227272727	0.348484848	0.227272727	0.675561932	-0.43647686	-0.344337605	0.220284266	0.508099014
ELA	3	470749	3	A-K	3	264	0.803030303	0.431818182	0.333333333	0.234848485		0.302010636	-0.124879894	-0.245212944	0.418661162	
ELA	4	492826	0	A-V	2	1105	1.222624434	0.287782805	0.201809955	0.51040724		0.583252098	-0.44183039	-0.26059449	0.609370951	
ELA	4	143629	0	B-K	3	1105	1.740271493	0.129411765	0.242539397	0.386425339	0.241628959	0.611003012	-0.309707867	-0.407461182	0.144880589	0.486023842
ELA	4	902367	0	A-K	2	1105	1.426244344	0.181900452	0.209954751	0.608144796		0.640937325	-0.477061313	-0.323737203	0.647082415	
ELA	4	533092	0	A-C	3	1105	1.70678733	0.158371041	0.275113122	0.267873303	0.298642534	0.651167771	-0.338326098	-0.373346005	0.032714242	0.602533319
ELA	4	362550	0	B-K	3	1105	1.63438914	0.123076923	0.315837104	0.364705882	0.19638009	0.493410362	-0.275941459	-0.256134287	0.103127898	0.402953558
ELA	4	559681	0	B-K	3	1105	0.874208145	0.407239819	0.311312217	0.281447964		0.482062037	-0.3144473176	-0.186625509	0.535729009	
ELA	4	902872	1	B-C	3	517	0.854932302	0.415860735	0.313346228	0.270793037		0.509471408	-0.357750564	-0.135824555	0.53857706	
ELA	4	266047	1	B-K	3	517	1.295938104	0.141199226	0.500967118	0.278529981	0.079303675	0.403619736	-0.213903315	-0.17710094	0.168003271	0.324653922
ELA	4	912765	2	B-K	3	290	1.634482759	0.168965517	0.251724138	0.355172414	0.224137931	0.699318291	-0.462035924	-0.36110371	0.265833617	0.485922754
ELA	4	387610	2	B-V	3	290	1.206896552	0.213793103	0.365517241	0.420689655		0.392247678	-0.331595177	-0.061927083	0.335792738	
ELA	4	135253	3	B-K	3	298	1.781879195	0.077181208	0.261744966	0.463087248	0.197986577	0.537249528	-0.321234738	-0.30138985	0.132391376	0.381954492
ELA	4	550323	3	B-C	3	298	0.865771812	0.422818792	0.288590604	0.288590604		0.324037394	-0.182710849	-0.197095934	0.396299301	
ELA	5	250991	0	A-K	2	1589	1.531151668	0.13215859	0.394587791	0.283196979	0.190056639	0.53072746	-0.338284964	-0.192420932	0.066874475	0.454910836
ELA	5	332467	0	A-V	2	1589	1.220893644	0.23096287	0.317180617	0.451856514		0.640922407	-0.468433833	-0.248179417	0.628757818	
ELA	5	562370	0	B-K	3	1589	1.106985525	0.317180617	0.258653241	0.424166142		0.621912133	-0.460243533	-0.235104618	0.641700421	
ELA	5	823236	0	B-K	3	1589	1.451856514	0.166771554	0.376966646	0.293895532	0.162366268	0.53077087	-0.280991054	-0.285305105	0.187832572	0.426929457
ELA	5	824485	0	B-K	3	1589	0.944619257	0.353052234	0.349276274	0.297671492		0.366991792	-0.252769832	-0.11271841	0.381732063	
ELA	5	150057	0	A-C	3	1589	1.674638137	0.115796098	0.331025802	0.315921963	0.237256136	0.572784928	-0.310796705	-0.305607857	0.075086601	0.489787881
ELA	5	320841	1	A-K	3	742	1.603773585	0.130727763	0.330188679	0.343665768	0.19541779	0.543296779	-0.180754628	-0.335198916	-0.031393038	0.588819804
ELA	5	117522	1	A-K	3	742	1.14690027	0.274932615	0.303234501	0.421832884		0.373716342	-0.207584089	-0.264800699	0.434136761	
ELA	5	645508	2	A-C	3	416	0.983173077	0.353365385	0.310096154	0.336538462		0.357076689	-0.278858745	-0.064711837	0.345441673	
ELA	5	791221	2	A-K	3	416	1.740384615	0.100961538	0.324519231	0.307692308	0.266826923	0.567373503	-0.327080141	-0.31399958	0.093484402	0.457625633
ELA	5	122371	3	A-K	3	431	1.744779582	0.071925754	0.3225058	0.394431555	0.211136891	0.522883783	-0.280328839	-0.369585744	0.221176791	0.335908103
ELA	5	848572	3	A-C	3	431	0.75638051	0.452436195	0.3387471	0.208816705		0.346954536	-0.19285259	-0.16311048	0.4260818	
ELA	6	541120	0	B-K	3	2856	1.209733894	0.230742297	0.328781513	0.44047619		0.569228489	-0.44374999	-0.163710011	0.531502685	
ELA	6	284219	0	B-K	2	2856	1.886554622	0.099089636	0.235294118	0.345588235	0.320028011	0.571778463	-0.299707872	-0.337541608	0.002085365	0.496766179
ELA	6	152730	0	A-K	3	2856	1.047619048	0.297969188	0.356442577	0.345588235		0.446254713	-0.315335281	-0.143895145	0.448191706	
ELA	6	668303	0	A-K	3	2856	1.366596639	0.214285714	0.361694678	0.267156863	0.156862745	0.372342417	-0.132579235	-0.26959201	0.123646259	0.355339734
ELA	6	933041	0	A-K	3	2856	1.238445378	0.272759104	0.216036415	0.511204482		0.600697491	-0.442569257	-0.286721204	0.630373675	
ELA	6	692657	0	B-C	3	2856	1.818277311	0.106442577	0.198879552	0.464635854	0.230042017	0.477049442	-0.19605304	-0.389542697	0.120184483	0.370694811
ELA	6	735249	1	B-K	3	1309	1.420168067	0.150496562	0.420932009	0.286478228	0.142093201	0.433801902	-0.239633393	-0.198785218	0.12918073	0.359220441
ELA	6	635642	1	B-V	3	1309	1.524064171	0.101604278	0.272727273	0.625668449		0.509176583	-0.318190138	-0.337466589	0.509202812	
ELA	6	228714	2	B-K	3	769	0.607282185	0.56046814	0.271781534	0.167750325		0.146370505	-0.040803454	-0.158222194	0.242587695	
ELA	6	561468	2	B-K	3	769	1.482444733	0.094928479	0.475942783	0.280884265	0.148244473	0.350647392	-0.173046929	-0.19334158	0.098917363	0.289369372

Cont Gr	ID	Form	Std	DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Point Biserial	Corr 0	Corr 1	Corr 2	Corr 3
ELA	6	622774	3	B-C	3	777	1.823680824	0.093951094	0.240669241	0.413127413	0.2522252252	-0.322702207	-0.3195550502	0.066998107	0.455363699
ELA	6	504896	3	B-K	3	777	1.057915058	0.31016731	0.321750322	0.368082368	0.335266878	-0.252904115	-0.088753269	0.328529977	
ELA	7	639059	0	B-K	3	3228	1.27354399	0.144052045	0.438351921	0.417596035	0.543854315	-0.4075222656	-0.187962822	0.479279518	
ELA	7	139984	0	B-C	3	3228	2.261152416	0.024783147	0.120817844	0.422862454	0.431536555	-0.200972022	-0.357755768	-0.154131369	0.452229538
ELA	7	790613	0	A-K	3	3228	1.377942999	0.171933086	0.412019827	0.282218092	0.133828996	-0.124033353	-0.096326736	-0.012866631	0.293722593
ELA	7	902404	0	A-K	3	3228	0.620508055	0.531908302	0.315675341	0.152416357	0.313965467	-0.219074492	-0.026151796	0.337954377	
ELA	7	958759	0	B-K	3	3228	1.339219331	0.171313507	0.318153656	0.510532838	0.486864567	-0.30501594	-0.293465685	0.503329998	
ELA	7	436009	0	A-C	3	3228	1.595105328	0.093866171	0.38692689	0.349442379	0.16976456	-0.251760178	-0.314936891	0.131289522	0.437409649
ELA	7	529138	1	B-K	3	1439	1.826268242	0.06323836	0.289089646	0.405837387	0.241834607	-0.232004981	-0.340680557	0.056695353	0.427542793
ELA	7	660126	1	B-C	3	1439	1.009728978	0.334259903	0.321751216	0.343988881	0.516211059	-0.362173672	-0.178537023	0.53522484	
ELA	7	181676	2	B-C	3	890	1.42247191	0.169662921	0.395505618	0.27752809	0.157303371	-0.105034989	-0.247849196	0.052094259	0.377066455
ELA	7	292822	2	B-C	3	890	0.73258427	0.487640449	0.292134831	0.220224719	0.327927426	-0.24081447	-0.045855962	0.340791047	
ELA	7	306335	3	B-V	3	896	1.684151786	0.083705357	0.1484375	0.767857143	0.553138299	-0.371556963	-0.384609762	0.567604714	
ELA	7	208130	3	B-K	3	896	1.713169643	0.0625	0.318080357	0.463169643	0.15625	-0.228647647	-0.307015465	0.19057825	0.2845093
ELA	8	580365	0	A-C	2	3716	1.26883746	0.105758881	0.519644779	0.37459634	0.433793209	-0.422536908	-0.034482821	0.304059341	
ELA	8	724319	0	A-K	3	3716	1.979278794	0.061356297	0.235468245	0.365715823	0.337459634	-0.268661261	-0.375178396	0.02052979	0.452097394
ELA	8	846132	0	B-K	2	3716	1.394241119	0.166038751	0.273681378	0.560279871	0.496435108	-0.343243844	-0.268345123	0.498369662	
ELA	8	267825	0	B-V	3	3716	1.24058127	0.272604952	0.214208827	0.513186222	0.432241921	-0.317559485	-0.209521856	0.454898322	
ELA	8	819447	0	B-K	3	3716	1.514531755	0.171420883	0.305974166	0.359257266	0.163347686	-0.186266003	-0.341027026	0.196237271	0.36030817
ELA	8	171038	0	A-V	3	3716	2.26722282	0.051130248	0.110871905	0.357642626	0.480355221	-0.229481461	-0.329656966	-0.168552503	0.470039214
ELA	8	350605	1	B-C	3	1570	1.610191083	0.124840764	0.328025478	0.359235669	0.187898089	-0.303020151	-0.240964345	0.127326697	0.38963332
ELA	8	972939	1	B-C	3	1570	0.84522293	0.373248408	0.408280255	0.218471338	0.416840236	-0.328183329	0.006863519	0.375979324	
ELA	8	374090	2	B-K	3	1074	1.985102421	0.055865922	0.177839851	0.491620112	0.274674115	-0.29807297	-0.376400539	0.108217706	0.35461462
ELA	8	387618	2	B-C	3	1074	0.468342644	0.695530726	0.140595903	0.163873371	-0.033021436	0.137577889	-0.292125665	0.103288153	
ELA	8	117574	3	B-C	3	1072	1.705223881	0.079291045	0.327425373	0.402052239	0.191231343	-0.236343605	-0.287205929	0.110809509	0.366936065
ELA	8	864813	3	B-K	3	1072	0.969216418	0.350746269	0.329291045	0.319962687	0.484995525	-0.370244376	-0.092671048	0.472135739	

Text-Dependent Analysis Paper/Pencil Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
Mean Raw Score	Mean Raw Score
Prop 0	Proportion 0
Prop 1	Proportion 1
Prop 2	Proportion 2
Prop 3	Proportion 3
Prop 4	Proportion 4
Point Biserial	Point Biserial
Corr 0	Correlation 0
Corr 1	Correlation 1
Corr 2	Correlation 2
Corr 3	Correlation 3
Corr 4	Correlation 4
IRT Difficulty Estimate	IRT Difficulty Estimate
IRT Difficulty Error	IRT Difficulty Error
Infit	Infit
Infit Mean Square	Infit Mean Square
Outfit	Outfit
Outfit Mean Square	Outfit Mean Square
Male/Female DIF Code	Male/Female DIF Code
White/Black DIF Code	White/Black DIF Code
White/Hispanic DIF Code	White/Hispanic DIF Code

Text-Dependent Analysis Online Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
Mean Raw Score	Mean Raw Score
Prop 0	Proportion 0
Prop 1	Proportion 1
Prop 2	Proportion 2
Prop 3	Proportion 3
Prop 4	Proportion 4
Point Biserial	Point Biserial
Corr 0	Correlation 0
Corr 1	Correlation 1
Corr 2	Correlation 2
Corr 3	Correlation 3
Corr 4	Correlation 4

Cont Gr	ID	Form	Std	DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Prop 4	Point Biserial	Corr 0	Corr 1	Corr 2	Corr 3	Corr 4	
ELA	4	772343	0	E	3	1105	0.987330317	0.258823529	0.52760181	0.183710407	0.027149321	0.002714932	0.60238036	-0.496844421	0.054279494	0.378921759	0.238383951	0.096770038
ELA	5	735517	0	E	3	1589	1.26620516	0.106356199	0.555695406	0.307740717	0.025802391	0.004405286	0.605433285	-0.397549409	-0.260784141	0.458086419	0.214528784	0.101108478
ELA	6	953434	0	E	3	2856	1.617647059	0.066526611	0.389005602	0.412464986	0.12429972	0.007703081	0.639666674	-0.393436276	-0.403029863	0.358218836	0.326440522	0.119959693
ELA	7	220244	0	E	3	3228	1.530978934	0.076208178	0.433395291	0.380731103	0.102540273	0.007125155	0.668294422	-0.38723334	-0.418104094	0.397528868	0.355989935	0.105992648
ELA	8	261260	0	E	3	3716	1.630516685	0.07911733	0.405812702	0.336383208	0.162809473	0.015877287	0.668268495	-0.406840883	-0.406386963	0.307969008	0.391938569	0.153309779

Writing Prompt Paper/Pencil Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
Mean Raw Score	Mean Raw Score
Prop 0	Proportion 0
Prop 1	Proportion 1
Prop 2	Proportion 2
Prop 3	Proportion 3
Prop 4	Proportion 4
Point Biserial	Point Biserial
Corr 0	Correlation 0
Corr 1	Correlation 1
Corr 2	Correlation 2
Corr 3	Correlation 3
Corr 4	Correlation 4

Cont	Gr	ID	Form	Std	DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Prop 4	Point Biserial	Corr 0	Corr 1	Corr 2	Corr 3	Corr 4	IRT Difficulty Estimate	IRT Error	Infit Mean Square	Infit Mean Square	Outfit Mean Square	Outfit Mean Square	Male/ Female DIF Code	White/ Black DIF Code	White/ Hispanic DIF Code	
ELA	3	734871	0	C	3	125594	1.848894055	0.029627211	0.322300428	0.448827173	0.168041467	0.03120372	0.555086022	-0.224773192	-0.441458583	0.184569826	0.320417805	0.188793609	0.7655	0.0042	-9.8991	0.9291	-9.8991	-9.8991	0.926			
ELA	4	227552	0	C	3	123747	2.016574139	0.015838768	0.205225177	0.553807365	0.196780528	0.028348162	0.533066521	-0.162913276	-0.432200944	0.067965681	0.33203167	0.175347272	0.5171	0.0046	-9.8991	0.8911	-9.8991	-9.8991	0.8933			
ELA	5	806684	0	C	3	122402	2.440744432	0.015383736	0.068797895	0.458873221	0.373580497	0.083364651	0.595805983	-0.15955299	-0.359586	-0.304413212	0.3366238527	0.308114981	-0.0686	0.0044	-9.8992	0.8139	-9.8992	-9.8992	0.8121			
ELA	6	239755	0	C	3	123756	2.250654514	0.015118459	0.137520605	0.463355312	0.349599211	0.034406413	0.594214707	-0.194473203	-0.441264008	-0.114180327	0.410862632	0.201456104	0.4895	0.0044	-9.8992	0.7984	-9.8992	-9.8992	0.7981			
ELA	7	741053	0	C	3	123256	2.389709223	0.006587915	0.092214578	0.442899331	0.421496722	0.036801454	0.565314294	-0.118481943	-0.367464041	-0.266061096	0.421162114	0.212354022	0.0689	0.0047	-9.8992	0.8193	-9.8992	-9.8992	0.8183			
ELA	8	536589	0	C	3	121075	2.496444353	0.00767293	0.082040058	0.378880859	0.468982036	0.062424117	0.581688615	-0.1300586	-0.384765735	-0.289483509	0.397038833	0.244837687	-0.2747	0.0046	-9.8992	0.8328	-9.8992	-9.8992	0.8298			

Writing Prompt Online Item Statistics

Column Heading	Definition
Cont	Content
Gr	Grade
ID	Item ID
Form	Form
Std	Standard
DOK	Depth of Knowledge
N	N
Mean Raw Score	Mean Raw Score
Prop 0	Proportion 0
Prop 1	Proportion 1
Prop 2	Proportion 2
Prop 3	Proportion 3
Prop 4	Proportion 4
Point Biserial	Point Biserial
Corr 0	Correlation 0
Corr 1	Correlation 1
Corr 2	Correlation 2
Corr 3	Correlation 3
Corr 4	Correlation 4

Cont Gr	ID	Form	Std	DOK	N	Mean Raw Score	Prop 0	Prop 1	Prop 2	Prop 3	Prop 4	Point Biserial	Corr 0	Corr 1	Corr 2	Corr 3	Corr 4
ELA	3 734871	0 C		3	950	1.423157895	0.061052632	0.537894737	0.323157895	0.072631579	0.005263158	0.611617322	-0.328903952	-0.38712766	0.383359827	0.326451402	0.106979921
ELA	4 227552	0 C		3	1105	1.759276018	0.049773756	0.297737557	0.509502262	0.129411765	0.013574661	0.573422926	-0.274426818	-0.412260763	0.237665664	0.340174715	0.131360434
ELA	5 806684	0 C		3	1589	2.0874764	0.034612964	0.1843927	0.491504091	0.237885463	0.051604783	0.612366162	-0.216703822	-0.427144479	-0.039228425	0.377999235	0.288955087
ELA	6 239755	0 C		3	2856	2.109943978	0.026260504	0.161064426	0.510154062	0.281512605	0.021008403	0.579804289	-0.26441981	-0.3900242	-0.034653861	0.3946939	0.177580483
ELA	7 741053	0 C		3	3228	2.028810409	0.003407683	0.210656753	0.558550186	0.208488228	0.01889715	0.569216979	-0.098705262	-0.453449568	0.014278499	0.389008827	0.187580309
ELA	8 536589	0 C		3	3716	2.385629709	0.012917115	0.118945102	0.395317546	0.415231432	0.057588805	0.580945585	-0.165257538	-0.407827446	-0.206289511	0.40140445	0.230704456

APPENDIX G: 2016 TEST BOOK SECTION LAYOUT PLANS

English Language Arts Test/Answer Booklet Section Layout for Grades 4, 5, 6, 7, and 8

English Language Arts Core

Core/common standalone MC items	18
Core/common passage-based MC items	23
3 core 2 pt EBSR items	6
3 core 3 pt EBSR items	9
1 core 4 pt TDA	16 (weighted x 4)
1 core 4 pt WP	12 (weighted x 3)
Total	84 points

The estimated testing time for English language arts is approximately 230–280 minutes (including placeholder items and embedded field test items). [Timing assumes 30 min per TDA or WP; 3 to 5 min per EBSR; 1½ to 2 min per MC, and 7 min per reading passage set.]

Section	Content	Number of MC/EBSR	MC/EBSR Item Breakdown	Number of WP/TDA	WP/TDA Item Breakdown	Estimated Number of Passages	Section Time (in minutes)
1	Writing and Language	20	18–common (core) items, 2–psychometric use/placeholder	1	1–common (core) writing prompt	N/A	55–65
2	Reading	22–23	22–23–common (core) items	0	N/A	3	60–75
3	Reading and Text-Dependent Analysis	16	6–placeholder items, 10–field test items	1	1–field test TDA	2	70–80
4	Reading and Text-Dependent Analysis	6–7	6–7–common (core) items	1	1–common (core) TDA	1	45–60

Notes: 1) There were nine forms per grade. 2) Sections 2 and 4 must equal a combined total of 29 MC/SR items.

English Language Arts Test/Answer Booklet Section Layout for Grade 3

English Language Arts Core

Core/common standalone MC items	18
Core/common passage-based MC items	20
2 core 2 pt EBSR items	4
2 core 3 pt EBSR items	6
2 core 3 pt SA items	6
1 core 4 pt WP	8 (weighted x 2)
Total	84 points

The estimated testing time for reading is approximately 160–215 minutes (including equating block items and embedded field test items). [Timing assumes 5 to 10 min per SA, 30 min per WP, 3 to 5 min per EBSR, 1½ to 2 min per MC, and 7 min per reading passage set.]

Section	Content	Number of MC/EBSR	MC/EBSR Item Breakdown	Number of WP/SA	WP/SA Item Breakdown	Estimated Number of Passages	Section Time (in minutes)
1	Writing and Language	20	18–common (core) items, 2–psychometric use/placeholder	1	1–common (core) writing prompt	N/A	55–65
2	Reading	12	12–common (core) items	1	1–common (core) SA	3	40–50
3	Reading	16	6–placeholder items, 10–field test items	1	1–field test SA	2	45–55
4	Reading	12	12–common (core) items	1	1–common (core) SA	1	40–50

Notes: 1) There were nine forms per grade.

Mathematics Test/Answer Book Section Layout for Grades 3, 4, 5, 6, 7, and 8

Mathematics Core

Core/common MC items	60
3 core 4 pt OE items	12
<hr/>	
Total	72 points

The estimated testing time for mathematics is approximately 155–185 minutes. [Timing assumes 5 to 10 min per OE and 1½ to 2 min per MC.]

Section	Content	Number of MC	MC Item Breakdown	Number of OE	OE Item Breakdown	Section Time (in minutes)
1	Mathematics	24	24–common (core) items (includes 4 non–calc in Grades 4–8)	2	2–common (core) items	55–65
2	Mathematics	24	12–common (core) items, 2–placeholder items, 10–embedded field test items	1	1–embedded field test item	50–60
3	Mathematics	24	24–common (core) items	1	1–core test	50–60

Notes: 1) There were nine forms per grade. 2) The ruler items in Grade 3 and the protractor items in Grade 4 may fall in Section 1, 2, or 3. 3) Calculators are not allowed on the Grade 3 test. In Grades 4–8, a portion of section 1 is considered “non-calc.”

Science Test/Answer Book Section Layout

General Information (see grade level page for specifics)

- Timing Key: MC = 1 to 1½ min; 2 pt OE = 5 min; 4 pt OE = 10 min; G8 Scenario stimulus = 3 min
- There are 12 forms per grade.
- Within a section at Grade 4, MC *most likely* will precede OE items.
- Within a section at Grade 8, non-scenario MC items *most likely* will precede scenario-based MC items which will precede OE items.
- Grade 4 and 8 will have both Test Booklets and scannable Answer Booklets.
- *Generally*, core items will precede equating block items, which will precede field test items.

Science: Grade 4

Core/common MC items	58 (16 core linking)
5 core 2 pt OE items	10 (2 core linking)
Total	68 points

The estimated Grade 4 testing time for science is approximately 95–100 minutes or 110–115 minutes administration time (including equating block items and embedded field test items). [Timing assumes 5 min per 2 pt OE and 1 min per MC.]

Grade	Section	Number of MC	Estimated MC Item Breakdown	Number of OE	Estimated OE Item Breakdown	Testing Time
4	1	34	29-common (core) items, 1-equating block item, 4-embedded field test item	3	3-common (core) items	45–55
4	2	34	29-common (core) items, 1-equating block item, 4-embedded field test items	3	2-common (core) items, 1-embedded field test item	45–55

Science: Grade 8

Core/common MC items	58 (16 core linking)
5 core 2 pt OE items	10 (2 core linking)
Total	68 points

The estimated grade 8 testing time is 105–110 minutes per grade for science or 120–125 minutes administration time (including equating block items and embedded field test items). [Timing assumes 5 min per 2 pt OE, 1 min per MC, and 3 min per grade 8 scenario.]

Grade	Section	Number of MC	Estimated MC Item Breakdown	Number of OE	Estimated OE Item Breakdown	Testing Time
8	1	35	27-common (core) items, 4-embedded field test scenario-based items, 1-equating block item, 3-embedded field test item	3	3-common (core) items	50–60
8	2	35	27-common (core) items, 4-common (core) scenario-based items, 1-equating block item, 3-embedded field test item	3	2-common (core) items, 1-embedded field test item	50–60

APPENDIX H: MEAN RAW SCORES BY FORM

Grade 3 English Language Arts

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	125284	45	62	3	62	36.12	37	11.49
All	01	14294	45	62	5	61	35.58	37	11.67
All	02	14093	45	62	4	61	36.07	37	11.49
All	03	14075	45	62	3	62	36.02	37	11.72
All	04	13803	45	62	5	62	36.23	38	11.40
All	05	13839	45	62	4	61	36.16	37	11.39
All	06	13797	45	62	6	61	36.48	38	11.39
All	07	13754	45	62	3	61	36.10	37	11.43
All	08	13813	45	62	4	60	36.22	38	11.45
All	09	13816	45	62	4	61	36.29	38	11.39
PPT	00	124351	45	62	3	62	36.16	38	11.47
PPT	01	13876	45	62	5	61	35.79	37	11.60
PPT	02	13837	45	62	4	61	36.12	37	11.48
PPT	03	13816	45	62	3	62	36.08	38	11.71
PPT	04	13803	45	62	5	62	36.23	38	11.40
PPT	05	13839	45	62	4	61	36.16	37	11.39
PPT	06	13797	45	62	6	61	36.48	38	11.39
PPT	07	13754	45	62	3	61	36.10	37	11.43
PPT	08	13813	45	62	4	60	36.22	38	11.45
PPT	09	13816	45	62	4	61	36.29	38	11.39
CBT	00	933	45	62	6	58	30.94	30	11.84
CBT	01	418	45	62	6	55	28.51	27	11.62
CBT	02	256	45	62	8	58	33.06	33	11.62
CBT	03	259	45	62	7	58	32.76	33	11.74

Grade 4 English Language Arts

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	123597	49	84	0	84	48.11	50	14.61
All	01	14150	49	84	5	84	47.39	49	15.06
All	02	13905	49	84	5	84	47.94	50	14.80
All	03	13924	49	84	6	84	48.10	50	14.47
All	04	13636	49	84	5	84	48.03	50	14.56
All	05	13646	49	84	7	84	48.34	50	14.53
All	06	13606	49	84	7	83	48.45	50.5	14.42
All	07	13647	49	84	0	84	48.34	50	14.43
All	08	13542	49	84	5	83	48.36	50	14.54
All	09	13541	49	84	7	83	48.08	50	14.61
PPT	00	122516	49	84	0	84	48.18	50	14.58
PPT	01	13644	49	84	5	84	47.78	50	14.90
PPT	02	13620	49	84	5	84	48.03	50	14.77
PPT	03	13634	49	84	6	84	48.18	50	14.46
PPT	04	13636	49	84	5	84	48.03	50	14.56
PPT	05	13646	49	84	7	84	48.34	50	14.53
PPT	06	13606	49	84	7	83	48.45	50.5	14.42
PPT	07	13647	49	84	0	84	48.34	50	14.43
PPT	08	13542	49	84	5	83	48.36	50	14.54
PPT	09	13541	49	84	7	83	48.08	50	14.61
CBT	00	1081	49	84	9	79	40.58	41	15.49
CBT	01	506	49	84	10	78	36.81	36	15.59
CBT	02	285	49	84	9	79	43.35	44	15.07
CBT	03	290	49	84	11	79	44.44	45	14.21

Grade 5 English Language Arts

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	122868	49	84	3	84	48.09	50	14.94
All	01	14301	49	84	5	82	47.67	49	15.06
All	02	13891	49	84	6	83	48.18	50	14.80
All	03	13915	49	84	3	84	47.84	49	14.88
All	04	13479	49	84	4	83	48.29	50	14.85
All	05	13507	49	84	8	84	48.20	50	15.04
All	06	13508	49	84	7	83	48.14	50	14.96
All	07	13497	49	84	8	84	48.03	50	15.00
All	08	13410	49	84	4	83	48.17	50	15.01
All	09	13360	49	84	6	84	48.31	50	14.85
PPT	00	121311	49	84	3	84	48.17	50	14.91
PPT	01	13574	49	84	5	82	48.18	50	14.87
PPT	02	13482	49	84	6	83	48.25	50	14.78
PPT	03	13494	49	84	3	84	47.96	50	14.87
PPT	04	13479	49	84	4	83	48.29	50	14.85
PPT	05	13507	49	84	8	84	48.20	50	15.04
PPT	06	13508	49	84	7	83	48.14	50	14.96
PPT	07	13497	49	84	8	84	48.03	50	15.00
PPT	08	13410	49	84	4	83	48.17	50	15.01
PPT	09	13360	49	84	6	84	48.31	50	14.85
CBT	00	1557	49	84	8	82	41.70	41	15.58
CBT	01	727	49	84	9	75	38.03	36	15.34
CBT	02	409	49	84	8	82	45.78	49	15.17
CBT	03	421	49	84	9	80	44.05	44	14.95

Grade 6 English Language Arts

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	125263	49	84	2	84	50.42	52	14.58
All	01	14951	49	84	8	84	49.77	52	14.95
All	02	14380	49	84	8	84	50.36	52	14.51
All	03	14367	49	84	2	83	50.53	53	14.45
All	04	13632	49	84	7	83	50.68	53	14.57
All	05	13554	49	84	6	84	50.74	53	14.53
All	06	13598	49	84	8	84	50.51	52	14.48
All	07	13620	49	84	5	84	50.33	52	14.54
All	08	13593	49	84	6	84	50.36	52	14.63
All	09	13568	49	84	5	84	50.51	53	14.48
PPT	00	122454	49	84	2	84	50.51	53	14.56
PPT	01	13665	49	84	8	84	50.38	52	14.80
PPT	02	13618	49	84	8	84	50.46	52	14.55
PPT	03	13606	49	84	2	83	50.63	53	14.48
PPT	04	13632	49	84	7	83	50.68	53	14.57
PPT	05	13554	49	84	6	84	50.74	53	14.53
PPT	06	13598	49	84	8	84	50.51	52	14.48
PPT	07	13620	49	84	5	84	50.33	52	14.54
PPT	08	13593	49	84	6	84	50.36	52	14.63
PPT	09	13568	49	84	5	84	50.51	53	14.48
CBT	00	2809	49	84	7	83	46.24	48	14.63
CBT	01	1286	49	84	9	80	43.30	44	15.05
CBT	02	762	49	84	9	78	48.59	50	13.71
CBT	03	761	49	84	7	83	48.85	51	13.87

Grade 7 English Language Arts

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	124961	49	84	5	84	48.99	50	13.92
All	01	15077	49	84	9	83	48.25	49	14.08
All	02	14387	49	84	9	83	49.16	51	13.94
All	03	14376	49	84	8	84	48.99	50	13.79
All	04	13536	49	84	5	83	49.00	51	14.05
All	05	13584	49	84	8	84	48.86	50	13.81
All	06	13514	49	84	8	83	49.01	50	13.91
All	07	13470	49	84	9	83	49.06	50	13.94
All	08	13486	49	84	9	83	49.29	51	13.78
All	09	13531	49	84	7	83	49.36	51	13.93
PPT	00	121795	49	84	5	84	49.09	50	13.91
PPT	01	13660	49	84	9	83	48.90	50	13.94
PPT	02	13518	49	84	9	83	49.24	51	13.98
PPT	03	13496	49	84	8	84	49.09	50	13.82
PPT	04	13536	49	84	5	83	49.00	51	14.05
PPT	05	13584	49	84	8	84	48.86	50	13.81
PPT	06	13514	49	84	8	83	49.01	50	13.91
PPT	07	13470	49	84	9	83	49.06	50	13.94
PPT	08	13486	49	84	9	83	49.29	51	13.78
PPT	09	13531	49	84	7	83	49.36	51	13.93
CBT	00	3166	49	84	12	82	45.18	46	13.84
CBT	01	1417	49	84	12	77	42.02	41	13.92
CBT	02	869	49	84	12	81	47.96	49	13.23
CBT	03	880	49	84	14	82	47.52	49	13.25

Grade 8 English Language Arts

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	123275	49	84	4	84	52.23	54	14.49
All	01	14884	49	84	9	84	51.47	53	14.69
All	02	14330	49	84	4	84	52.08	54	14.33
All	03	14345	49	84	8	84	52.24	54	14.44
All	04	13288	49	84	8	84	52.18	54	14.57
All	05	13331	49	84	4	84	52.33	54	14.46
All	06	13303	49	84	6	84	52.59	54	14.66
All	07	13260	49	84	10	84	52.46	54	14.44
All	08	13227	49	84	8	84	52.52	54	14.39
All	09	13307	49	84	8	84	52.27	54	14.44
PPT	00	119629	49	84	4	84	52.33	54	14.47
PPT	01	13343	49	84	9	84	52.15	54	14.47
PPT	02	13276	49	84	4	84	52.20	54	14.35
PPT	03	13294	49	84	8	84	52.29	54	14.44
PPT	04	13288	49	84	8	84	52.18	54	14.57
PPT	05	13331	49	84	4	84	52.33	54	14.46
PPT	06	13303	49	84	6	84	52.59	54	14.66
PPT	07	13260	49	84	10	84	52.46	54	14.44
PPT	08	13227	49	84	8	84	52.52	54	14.39
PPT	09	13307	49	84	8	84	52.27	54	14.44
CBT	00	3646	49	84	10	83	48.72	50	14.89
CBT	01	1541	49	84	10	81	45.56	45	15.28
CBT	02	1054	49	84	11	83	50.49	52	13.94
CBT	03	1051	49	84	11	82	51.57	54	14.39

Grade 3 Mathematics

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	125420	63	72	3	72	45.76	48	14.65
All	01	14637	63	72	6	72	45.08	47	14.91
All	02	14003	63	72	4	72	45.71	47	14.66
All	03	14023	63	72	6	72	45.41	47	14.73
All	04	13810	63	72	5	72	45.64	47	14.69
All	05	13811	63	72	6	72	45.80	47	14.54
All	06	13849	63	72	4	72	46.06	48	14.58
All	07	13804	63	72	8	72	46.17	48	14.48
All	08	13729	63	72	3	72	46.05	48	14.60
All	09	13754	63	72	7	72	45.93	48	14.61
PPT	00	124450	63	72	3	72	45.81	48	14.64
PPT	01	14151	63	72	6	72	45.40	47	14.81
PPT	02	13760	63	72	4	72	45.79	48	14.65
PPT	03	13782	63	72	6	72	45.47	47	14.73
PPT	04	13810	63	72	5	72	45.64	47	14.69
PPT	05	13811	63	72	6	72	45.80	47	14.54
PPT	06	13849	63	72	4	72	46.06	48	14.58
PPT	07	13804	63	72	8	72	46.17	48	14.48
PPT	08	13729	63	72	3	72	46.05	48	14.60
PPT	09	13754	63	72	7	72	45.93	48	14.61
CBT	00	970	63	72	10	72	38.69	38	14.91
CBT	01	486	63	72	10	71	35.76	34	14.95
CBT	02	243	63	72	11	72	41.37	40	14.30
CBT	03	241	63	72	12	68	41.89	41	14.31

Grade 4 Mathematics

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	123940	63	72	0	72	42.86	44	15.60
All	01	14463	63	72	3	72	42.17	43	15.79
All	02	13885	63	72	7	72	42.71	43	15.55
All	03	13889	63	72	5	72	43.03	44	15.74
All	04	13627	63	72	0	72	43.13	44	15.55
All	05	13600	63	72	6	72	42.91	44	15.59
All	06	13645	63	72	5	72	43.08	44	15.62
All	07	13640	63	72	5	72	42.88	44	15.51
All	08	13571	63	72	7	72	42.91	44	15.44
All	09	13620	63	72	5	72	42.94	44	15.61
PPT	00	122829	63	72	0	72	42.92	44	15.59
PPT	01	13876	63	72	3	72	42.64	44	15.67
PPT	02	13620	63	72	7	72	42.76	43	15.56
PPT	03	13630	63	72	5	72	43.07	44	15.75
PPT	04	13627	63	72	0	72	43.13	44	15.55
PPT	05	13600	63	72	6	72	42.91	44	15.59
PPT	06	13645	63	72	5	72	43.08	44	15.62
PPT	07	13640	63	72	5	72	42.88	44	15.51
PPT	08	13571	63	72	7	72	42.91	44	15.44
PPT	09	13620	63	72	5	72	42.94	44	15.61
CBT	00	1111	63	72	8	72	35.53	34	15.46
CBT	01	587	63	72	8	71	31.04	27	14.50
CBT	02	265	63	72	10	72	40.30	39	14.93
CBT	03	259	63	72	9	71	40.82	42	15.00

Grade 5 Mathematics

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	122983	63	72	3	72	38.17	37	16.11
All	01	14591	63	72	3	72	37.25	36	16.50
All	02	13908	63	72	5	72	38.26	37	16.18
All	03	13765	63	72	6	72	38.04	37	16.05
All	04	13408	63	72	4	72	38.14	37	16.02
All	05	13395	63	72	4	72	38.58	38	16.13
All	06	13474	63	72	6	72	38.30	38	16.08
All	07	13446	63	72	5	72	38.15	37	16.05
All	08	13504	63	72	5	72	38.57	38	15.99
All	09	13492	63	72	5	72	38.35	38	15.89
PPT	00	121404	63	72	3	72	38.24	37	16.09
PPT	01	13804	63	72	3	72	37.72	37	16.40
PPT	02	13505	63	72	6	72	38.30	37	16.17
PPT	03	13376	63	72	6	72	38.09	37	16.04
PPT	04	13408	63	72	4	72	38.14	37	16.02
PPT	05	13395	63	72	4	72	38.58	38	16.13
PPT	06	13474	63	72	6	72	38.30	38	16.08
PPT	07	13446	63	72	5	72	38.15	37	16.05
PPT	08	13504	63	72	5	72	38.57	38	15.99
PPT	09	13492	63	72	5	72	38.35	38	15.89
CBT	00	1579	63	72	5	71	32.81	29	16.60
CBT	01	787	63	72	7	71	29.02	23	15.98
CBT	02	403	63	72	5	71	36.86	36	16.47
CBT	03	389	63	72	7	70	36.30	33	16.23

Grade 6 Mathematics

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	125305	63	72	3	72	41.95	43	15.88
All	01	15327	63	72	3	72	40.97	41	16.15
All	02	14304	63	72	6	72	42.24	43	15.79
All	03	14246	63	72	4	72	41.95	43	15.87
All	04	13576	63	72	4	72	41.92	43	15.98
All	05	13604	63	72	6	72	42.19	43	15.80
All	06	13570	63	72	5	72	41.97	43	15.86
All	07	13529	63	72	5	72	42.08	43	15.87
All	08	13577	63	72	7	72	42.28	43	15.75
All	09	13572	63	72	6	72	42.06	43	15.81
PPT	00	122530	63	72	4	72	42.01	43	15.88
PPT	01	13940	63	72	7	72	41.47	42	16.09
PPT	02	13611	63	72	6	72	42.23	43	15.80
PPT	03	13551	63	72	4	72	41.88	43	15.91
PPT	04	13576	63	72	4	72	41.92	43	15.98
PPT	05	13604	63	72	6	72	42.19	43	15.80
PPT	06	13570	63	72	5	72	41.97	43	15.86
PPT	07	13529	63	72	5	72	42.08	43	15.87
PPT	08	13577	63	72	7	72	42.28	43	15.75
PPT	09	13572	63	72	6	72	42.06	43	15.81
CBT	00	2775	63	72	3	72	39.40	39	15.89
CBT	01	1387	63	72	3	72	35.91	34	15.79
CBT	02	693	63	72	11	71	42.36	43	15.43
CBT	03	695	63	72	12	71	43.41	44	15.00

Grade 7 Mathematics

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	124959	63	72	4	72	36.91	35	15.75
All	01	15581	63	72	5	72	36.16	34	15.93
All	02	14369	63	72	6	72	37.09	35	15.69
All	03	14403	63	72	6	72	37.34	36	15.75
All	04	13505	63	72	5	72	37.11	35	15.73
All	05	13431	63	72	6	72	36.90	35	15.88
All	06	13390	63	72	4	72	36.99	35	15.71
All	07	13422	63	72	4	72	36.90	35	15.66
All	08	13447	63	72	6	72	36.82	35	15.60
All	09	13411	63	72	4	72	36.93	35	15.74
PPT	00	121490	63	72	4	72	36.93	35	15.75
PPT	01	13941	63	72	5	72	36.57	35	15.93
PPT	02	13450	63	72	6	72	36.93	35	15.71
PPT	03	13493	63	72	6	72	37.20	35	15.78
PPT	04	13505	63	72	5	72	37.11	35	15.73
PPT	05	13431	63	72	6	72	36.90	35	15.88
PPT	06	13390	63	72	4	72	36.99	35	15.71
PPT	07	13422	63	72	4	72	36.90	35	15.66
PPT	08	13447	63	72	6	72	36.82	35	15.60
PPT	09	13411	63	72	4	72	36.93	35	15.74
CBT	00	3469	63	72	6	72	36.24	34	15.75
CBT	01	1640	63	72	6	71	32.66	28	15.57
CBT	02	919	63	72	10	70	39.46	39	15.27
CBT	03	910	63	72	6	72	39.44	39	15.17

Grade 8 Mathematics

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	123175	63	72	2	72	37.83	37	14.93
All	01	15314	63	72	5	71	36.83	36	14.99
All	02	14222	63	72	4	71	37.76	37	14.93
All	03	14254	63	72	5	71	38.04	37	14.93
All	04	13240	63	72	6	72	37.73	37	14.83
All	05	13242	63	72	2	72	38.14	37	15.09
All	06	13204	63	72	5	71	37.92	37	14.90
All	07	13184	63	72	7	71	38.00	38	14.85
All	08	13258	63	72	7	72	38.02	37	14.94
All	09	13257	63	72	2	71	38.13	38	14.88
PPT	00	119605	63	72	2	72	37.89	37	14.93
PPT	01	13731	63	72	5	71	37.28	36	14.98
PPT	02	13239	63	72	4	71	37.74	37	14.91
PPT	03	13250	63	72	5	71	38.05	37	14.94
PPT	04	13240	63	72	6	72	37.73	37	14.83
PPT	05	13242	63	72	2	72	38.14	37	15.09
PPT	06	13204	63	72	5	71	37.92	37	14.90
PPT	07	13184	63	72	7	71	38.00	38	14.85
PPT	08	13258	63	72	7	72	38.02	37	14.94
PPT	09	13257	63	72	2	71	38.13	38	14.88
CBT	00	3570	63	72	6	70	35.76	34	14.98
CBT	01	1583	63	72	9	70	32.92	30	14.51
CBT	02	983	63	72	6	70	38.06	38	15.13
CBT	03	1004	63	72	9	70	37.99	37	14.82

Grade 4 Science

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	123818	63	68	2	68	47.81	51	13.41
All	01	11427	63	68	7	68	47.12	50	13.71
All	02	10731	63	68	6	68	47.88	51	13.48
All	03	10735	63	68	7	68	47.94	51	13.37
All	04	10007	63	68	5	68	47.58	51	13.29
All	05	10126	63	68	6	68	47.77	51	13.48
All	06	10108	63	68	2	68	47.55	50	13.19
All	07	10145	63	68	2	68	48.02	51	13.44
All	08	10155	63	68	7	68	47.83	51	13.46
All	09	10096	63	68	4	68	48.06	51	13.26
All	10	10086	63	68	6	68	48.26	52	13.41
All	11	10096	63	68	7	68	47.82	51	13.37
All	12	10106	63	68	7	68	47.99	51	13.43
PPT	00	121556	63	68	2	68	47.83	51	13.41
PPT	01	10424	63	68	7	68	47.42	51	13.58
PPT	02	10102	63	68	6	68	47.82	51	13.52
PPT	03	10105	63	68	7	68	47.82	51	13.44
PPT	04	10007	63	68	5	68	47.58	51	13.29
PPT	05	10126	63	68	6	68	47.77	51	13.48
PPT	06	10108	63	68	2	68	47.55	50	13.19
PPT	07	10145	63	68	2	68	48.02	51	13.44
PPT	08	10155	63	68	7	68	47.83	51	13.46
PPT	09	10096	63	68	4	68	48.06	51	13.26
PPT	10	10086	63	68	6	68	48.26	52	13.41
PPT	11	10096	63	68	7	68	47.82	51	13.37
PPT	12	10106	63	68	7	68	47.99	51	13.43
CBT	00	2262	63	68	8	68	46.99	50	13.66
CBT	01	1003	63	68	9	68	44.02	47	14.62
CBT	02	629	63	68	9	67	48.83	52	12.75
CBT	03	630	63	68	8	67	49.87	52	11.93

Grade 8 Science

Mode	Form	N	N Items	Total Points	Min	Max	Mean	Median	STD
All	00	122955	63	68	2	68	44.47	48	14.13
All	01	12251	63	68	6	68	43.33	47	14.64
All	02	11089	63	68	4	68	44.76	48	14.10
All	03	11114	63	68	3	68	44.87	48	13.90
All	04	9851	63	68	5	68	44.46	48	14.11
All	05	9800	63	68	5	68	44.69	48	14.11
All	06	9818	63	68	4	68	44.53	48	14.07
All	07	9856	63	68	4	67	44.53	48	14.10
All	08	9868	63	68	7	68	44.56	48	14.07
All	09	9840	63	68	3	67	44.44	48	14.10
All	10	9869	63	68	2	68	44.70	48	14.08
All	11	9797	63	68	4	68	44.44	48	14.03
All	12	9802	63	68	6	68	44.50	48	14.08
PPT	00	118402	63	68	2	68	44.44	48	14.14
PPT	01	10288	63	68	6	68	43.52	47	14.62
PPT	02	9798	63	68	4	68	44.43	48	14.20
PPT	03	9815	63	68	3	68	44.48	48	13.99
PPT	04	9851	63	68	5	68	44.46	48	14.11
PPT	05	9800	63	68	5	68	44.69	48	14.11
PPT	06	9818	63	68	4	68	44.53	48	14.07
PPT	07	9856	63	68	4	67	44.53	48	14.10
PPT	08	9868	63	68	7	68	44.56	48	14.07
PPT	09	9840	63	68	3	67	44.44	48	14.10
PPT	10	9869	63	68	2	68	44.70	48	14.08
PPT	11	9797	63	68	4	68	44.44	48	14.03
PPT	12	9802	63	68	6	68	44.50	48	14.08
CBT	00	4553	63	68	8	68	45.32	49	13.95
CBT	01	1963	63	68	8	67	42.36	44	14.68
CBT	02	1291	63	68	9	68	47.33	51	12.99
CBT	03	1299	63	68	8	67	47.82	52	12.86

APPENDIX I: DEMOGRAPHIC CHARACTERISTICS OF STUDENTS

Demographic Characteristics of Students Taking the 2016 PSSA: English Language Arts

Demographic or Educational Characteristic	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Female (Number)	60,966	416	61,382	60,103	469	60,572	59,402	723	60,125	59,899	1,294	61,193	59,860	1,487	61,347	58,159	1,655	59,814
Female (Percent)	49	44.6	49	49.1	43.4	49	49	46.4	48.9	48.9	46.1	48.9	49.1	47	49.1	48.6	45.4	48.5
Male (Number)	63,385	517	63,902	62,413	612	63,025	61,909	834	62,743	62,555	1,515	64,070	61,935	1,679	63,614	61,470	1,991	63,461
Male (Percent)	51	55.4	51	50.9	56.6	51	51	53.6	51.1	51.1	53.9	51.1	50.9	53	50.9	51.4	54.6	51.5
American Indian/Alaskan Native - not Hispanic (Number)	182	1	183	173	1	174	199	9	208	167	5	172	172	4	176	185	3	188
American Indian/Alaskan Native - not Hispanic (Percent)	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2
Asian - not Hispanic (Number)	4,707	16	4,723	4,623	15	4,638	4,612	18	4,630	4,775	48	4,823	4,584	54	4,638	4,480	53	4,533
Asian - not Hispanic (Percent)	3.8	1.7	3.8	3.8	1.4	3.8	3.8	1.2	3.8	3.9	1.7	3.9	3.8	1.7	3.7	3.7	1.5	3.7
Black or African American - not Hispanic (Number)	18,310	310	18,620	17,673	285	17,958	17,537	228	17,765	17,328	365	17,693	17,272	367	17,639	17,314	404	17,718
Black or African American - not Hispanic (Percent)	14.7	33.2	14.9	14.4	26.4	14.5	14.5	14.6	14.5	14.2	13	14.1	14.2	11.6	14.1	14.5	11.1	14.4
Hispanic - any race (Number)	13,920	57	13,977	13,358	53	13,411	12,787	135	12,922	12,483	237	12,720	11,954	248	12,202	11,694	242	11,936
Hispanic - any race (Percent)	11.2	6.1	11.2	10.9	4.9	10.9	10.5	8.7	10.5	10.2	8.4	10.2	9.8	7.8	9.8	9.8	6.6	9.7
Multi-Racial - not Hispanic (Number)	5,577	30	5,607	4,901	24	4,925	4,339	37	4,376	3,815	64	3,879	3,347	64	3,411	2,792	80	2,872
Multi-Racial - not Hispanic (Percent)	4.5	3.2	4.5	4	2.2	4	3.6	2.4	3.6	3.1	2.3	3.1	2.7	2	2.7	2.3	2.2	2.3
White - not Hispanic (Number)	81,542	518	82,060	81,681	700	82,381	81,762	1,130	82,892	83,792	2,090	85,882	84,382	2,427	86,809	83,070	2,864	85,934
White - not Hispanic (Percent)	65.6	55.5	65.5	66.7	64.8	66.7	67.4	72.6	67.5	68.4	74.4	68.6	69.3	76.7	69.5	69.4	78.6	69.7
Native Hawaiian or Other Pacific Islander - not Hispanic (Number)	113	1	114	107	3	110	75	0	75	94	0	94	84	2	86	94	0	94
Native Hawaiian or Other Pacific Islander - not Hispanic (Percent)	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0	0.1
IEP - not gifted (Number)	19,320	240	19,560	20,001	344	20,345	19,801	534	20,335	19,336	807	20,143	18,575	849	19,424	18,003	894	18,897
IEP - not gifted (Percent)	15.5	25.7	15.6	16.3	31.8	16.5	16.3	34.3	16.6	15.8	28.7	16.1	15.3	26.8	15.5	15.0	24.5	15.3
Student exited IEP in last 2 years (Number)	2,613	13	2,626	2,915	16	2,931	3,136	33	3,169	3,147	56	3,203	2,736	67	2,803	2,219	70	2,289

Demographic or Educational Characteristic	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Student exited IEP in last 2 years (Percent)	2.1	1.4	2.1	2.4	1.5	2.4	2.6	2.1	2.6	2.6	2	2.6	2.2	2.1	2.2	1.9	1.9	1.9
Title I (Number)	58,911	622	59,533	55,835	710	56,545	50,642	849	51,491	39,536	1,105	40,641	30,574	759	31,333	29,354	803	30,157
Title I (Percent)	47.4	66.7	47.5	45.6	65.7	45.7	41.7	54.5	41.9	32.3	39.3	32.4	25.1	24	25.1	24.5	22	24.5
Title III served (Number)	4,275	18	4,293	3,527	13	3,540	2,887	14	2,901	2,661	47	2,708	2,623	37	2,660	2,658	32	2,690
Title III served (Percent)	3.4	1.9	3.4	2.9	1.2	2.9	2.4	0.9	2.4	2.2	1.7	2.2	2.2	1.2	2.1	2.2	0.9	2.2
Title III not served (Number)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Title III not served (Percent)	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0
Migrant student (Number)	23	2	25	36	0	36	29	0	29	36	0	36	41	2	43	41	1	42
Migrant student (Percent)	0.0	0.2	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0.1	0	0.0	0	0
ELL - enrolled after 5/8/15 (Number)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELL - enrolled after 5/8/15 (Percent)	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0
ELL - enrolled on or before 5/8/15 (Number)	4,512	18	4,530	3,682	14	3,696	3,041	14	3,055	2,764	50	2,814	2,782	47	2,829	2,812	39	2,851
ELL - enrolled on or before 5/8/15 (Percent)	3.6	1.9	3.6	3.0	1.3	3	2.5	0.9	2.5	2.3	1.8	2.2	2.3	1.5	2.3	2.4	1.1	2.3
Exited ESL/bilingual program and in first year of monitoring (Number)	882	4	886	1,369	1	1,370	1,043	5	1,048	602	8	610	394	8	402	340	4	344
Exited ESL/bilingual program and in first year of monitoring (Percent)	0.7	0.4	0.7	1.1	0.1	1.1	0.9	0.3	0.9	0.5	0.3	0.5	0.3	0.3	0.3	0.3	0.1	0.3
Exited ESL/bilingual program and in 2nd year of monitoring (Number)	270	0	270	595	2	597	928	7	935	802	18	820	514	4	518	366	5	371
Exited ESL/bilingual program and in 2nd year of monitoring (Percent)	0.2	0	0.2	0.5	0.2	0.5	0.8	0.4	0.8	0.7	0.6	0.7	0.4	0.1	0.4	0.3	0.1	0.3
Former ELL no longer monitored (Number)	147	0	147	374	1	375	972	5	977	1,843	17	1,860	2,501	35	2,536	2,802	35	2,837
Former ELL no longer monitored (Percent)	0.1	0	0.1	0.3	0.1	0.3	0.8	0.3	0.8	1.5	0.6	1.5	2.1	1.1	2	2.3	1	2.3
Economically disadvantaged (Number)	61,882	537	62,419	59,521	623	60,144	57,464	768	58,232	56,663	1,309	57,972	54,683	1,436	56,119	52,942	1,666	54,608
Economically disadvantaged (Percent)	49.8	57.6	49.8	48.6	57.6	48.7	47.4	49.3	47.4	46.3	46.6	46.3	44.9	45.4	44.9	44.3	45.7	44.3
Historically Underperforming Subgroup (Number)	70,219	625	70,844	67,965	747	68,712	65,579	973	66,552	64,459	1,664	66,123	62,331	1,800	64,131	60,454	2,020	62,474

Demographic or Educational Characteristic	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Historically Underperforming Subgroup (Percent)	56.5	67	56.5	55.5	69.1	55.6	54.1	62.5	54.2	52.6	59.2	52.8	51.2	56.9	51.3	50.5	55.4	50.7
Enrollment in school of residence after 10/1/15 (Number)	3,419	35	3,454	3,216	45	3,261	2,797	65	2,862	2,861	103	2,964	2,921	144	3,065	2,902	160	3,062
Enrollment in school of residence after 10/1/15 (Percent)	2.7	3.8	2.8	2.6	4.2	2.6	2.3	4.2	2.3	2.3	3.7	2.4	2.4	4.5	2.5	2.4	4.4	2.5
Enrollment in district of residence after 10/1/15 (Number)	1,753	27	1,780	1,663	28	1,691	1,547	41	1,588	1,530	64	1,594	1,685	89	1,774	1,708	107	1,815
Enrollment in district of residence after 10/1/15 (Percent)	1.4	2.9	1.4	1.4	2.6	1.4	1.3	2.6	1.3	1.2	2.3	1.3	1.4	2.8	1.4	1.4	2.9	1.5
Enrollment as PA resident after 10/1/15 (Number)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Enrollment as PA resident after 10/1/15 (Percent)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Enrollment in school of residence after 10/1/14 but on/before 10/1/15 (Number)	28,108	133	28,241	27,754	138	27,892	28,485	521	29,006	40,852	696	41,548	31,024	709	31,733	20,759	385	21,144
Enrollment in school of residence after 10/1/14 but on/before 10/1/15 (Percent)	22.6	14.3	22.5	22.7	12.8	22.6	23.5	33.5	23.6	33.4	24.8	33.2	25.5	22.4	25.4	17.4	10.6	17.2
Enrollment in district of residence after 10/1/14 but on/before 10/1/15 (Number)	10,069	99	10,168	9,748	110	9,858	9,312	147	9,459	10,199	314	10,513	8,910	312	9,222	7,463	316	7,779
Enrollment in district of residence after 10/1/14 but on/before 10/1/15 (Percent)	8.1	10.6	8.1	8	10.2	8	7.7	9.4	7.7	8.3	11.2	8.4	7.3	9.9	7.4	6.2	8.7	6.3
Court/agency placed (Number)	40	0	40	25	1	26	31	3	34	43	7	50	92	17	109	157	38	195
Court/agency placed (Percent)	0	0	0	0	0.1	0	0	0.2	0	0	0.2	0	0.1	0.5	0.1	0.1	1	0.2
Students with scores used in state summaries	124,351	933	125,284	122,516	1,081	123,597	121,311	1,557	122,868	122,454	2,809	125,263	121,795	3,166	124,961	119,629	3,646	123,275

Demographic Characteristics of Students Taking the 2016 PSSA: Mathematics

Demographic or Educational Characteristic	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Female (Number)	61,007	423	61,430	60,221	483	60,704	59,418	733	60,151	59,912	1,289	61,201	59,657	1,637	61,294	58,069	1,645	59,714
Female (Percent)	49	43.6	49	49	43.5	49	48.9	46.4	48.9	48.9	46.5	48.8	49.1	47.2	49.1	48.6	46.1	48.5
Male (Number)	63,443	547	63,990	62,608	628	63,236	61,986	846	62,832	62,618	1,486	64,104	61,833	1,832	63,665	61,536	1,925	63,461
Male (Percent)	51	56.4	51	51	56.5	51	51.1	53.6	51.1	51.1	53.5	51.2	50.9	52.8	50.9	51.4	53.9	51.5
American Indian/Alaskan Native - not Hispanic (Number)	182	1	183	173	1	174	199	10	209	165	5	170	171	5	176	183	3	186
American Indian/Alaskan Native - not Hispanic (Percent)	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2
Asian - not Hispanic (Number)	4,720	12	4,732	4,632	13	4,645	4,616	12	4,628	4,777	48	4,825	4,595	52	4,647	4,474	59	4,533
Asian - not Hispanic (Percent)	3.8	1.2	3.8	3.8	1.2	3.7	3.8	0.8	3.8	3.9	1.7	3.9	3.8	1.5	3.7	3.7	1.7	3.7
Black or African American - not Hispanic (Number)	18,356	332	18,688	17,764	311	18,075	17,581	247	17,828	17,356	369	17,725	17,274	389	17,663	17,292	433	17,725
Black or African American - not Hispanic (Percent)	14.7	34.2	14.9	14.5	28	14.6	14.5	15.6	14.5	14.2	13.3	14.1	14.2	11.2	14.1	14.5	12.1	14.4
Hispanic - any race (Number)	13,951	63	14,014	13,421	48	13,469	12,816	136	12,952	12,527	234	12,761	11,910	301	12,211	11,719	243	11,962
Hispanic - any race (Percent)	11.2	6.5	11.2	10.9	4.3	10.9	10.6	8.6	10.5	10.2	8.4	10.2	9.8	8.7	9.8	9.8	6.8	9.7
Multi-Racial - not Hispanic (Number)	5,577	32	5,609	4,931	22	4,953	4,354	36	4,390	3,813	66	3,879	3,333	70	3,403	2,804	78	2,882
Multi-Racial - not Hispanic (Percent)	4.5	3.3	4.5	4	2	4	3.6	2.3	3.6	3.1	2.4	3.1	2.7	2	2.7	2.3	2.2	2.3
White - not Hispanic (Number)	81,551	529	82,080	81,799	715	82,514	81,764	1,137	82,901	83,798	2,053	85,851	84,122	2,651	86,773	83,040	2,754	85,794
White - not Hispanic (Percent)	65.5	54.5	65.4	66.6	64.4	66.6	67.3	72	67.4	68.4	74	68.5	69.2	76.4	69.4	69.4	77.1	69.7
Native Hawaiian or Other Pacific Islander - not Hispanic (Number)	113	1	114	109	1	110	74	1	75	94	0	94	85	1	86	93	0	93
Native Hawaiian or Other Pacific Islander - not Hispanic (Percent)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	0	0.1	0.1	0	0.1
IEP - not gifted (Number)	19,321	289	19,610	20,042	394	20,436	19,773	581	20,354	19,329	837	20,166	18,553	882	19,435	17,956	934	18,890
IEP - not gifted (Percent)	15.5	29.8	15.6	16.3	35.5	16.5	16.3	36.8	16.6	15.8	30.2	16.1	15.3	25.4	15.6	15.0	26.2	15.3
Student exited IEP in last 2 years (Number)	2,613	11	2,624	2,927	13	2,940	3,140	32	3,172	3,149	57	3,206	2,716	80	2,796	2,219	67	2,286
Student exited IEP in last 2 years (Percent)	2.1	1.1	2.1	2.4	1.2	2.4	2.6	2	2.6	2.6	2.1	2.6	2.2	2.3	2.2	1.9	1.9	1.9
Title I (Number)	58,986	680	59,666	56,027	758	56,785	50,710	898	51,608	39,554	1,127	40,681	30,563	794	31,357	29,341	841	30,182
Title I (Percent)	47.4	70.1	47.6	45.6	68.2	45.8	41.8	56.9	42	32.3	40.6	32.5	25.2	22.9	25.1	24.5	23.6	24.5

Demographic or Educational Characteristic	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Title III served (Number)	4,301	16	4,317	3,550	10	3,560	2,911	12	2,923	2,677	45	2,722	2,633	41	2,674	2,663	33	2,696
Title III served (Percent)	3.5	1.6	3.4	2.9	0.9	2.9	2.4	0.8	2.4	2.2	1.6	2.2	2.2	1.2	2.1	2.2	0.9	2.2
Title III not served (Number)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Title III not served (Percent)	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0
Migrant student (Number)	23	2	25	36	0	36	29	0	29	36	0	36	41	2	43	41	1	42
Migrant student (Percent)	0.0	0.2	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0.1	0	0.0	0	0
ELL - enrolled after 5/8/15 (Number)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELL - enrolled after 5/8/15 (Percent)	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0
ELL - enrolled on or before 5/8/15 (Number)	4,534	16	4,550	3,708	11	3,719	3,065	12	3,077	2,783	48	2,831	2,791	52	2,843	2,818	41	2,859
ELL - enrolled on or before 5/8/15 (Percent)	3.6	1.6	3.6	3.0	1	3	2.5	0.8	2.5	2.3	1.7	2.3	2.3	1.5	2.3	2.4	1.1	2.3
Exited ESL/bilingual program and in first year of monitoring (Number)	882	4	886	1,374	1	1,375	1,048	5	1,053	600	8	608	394	8	402	337	4	341
Exited ESL/bilingual program and in first year of monitoring (Percent)	0.7	0.4	0.7	1.1	0.1	1.1	0.9	0.3	0.9	0.5	0.3	0.5	0.3	0.2	0.3	0.3	0.1	0.3
Exited ESL/bilingual program and in 2nd year of monitoring (Number)	270	0	270	595	2	597	926	7	933	803	17	820	510	7	517	367	5	372
Exited ESL/bilingual program and in 2nd year of monitoring (Percent)	0.2	0	0.2	0.5	0.2	0.5	0.8	0.4	0.8	0.7	0.6	0.7	0.4	0.2	0.4	0.3	0.1	0.3
Former ELL no longer monitored (Number)	148	0	148	376	1	377	973	5	978	1,840	18	1,858	2,475	58	2,533	2,801	35	2,836
Former ELL no longer monitored (Percent)	0.1	0	0.1	0.3	0.1	0.3	0.8	0.3	0.8	1.5	0.6	1.5	2.0	1.7	2	2.3	1	2.3
Economically disadvantaged (Number)	61,934	580	62,514	59,696	658	60,354	57,536	805	58,341	56,703	1,304	58,007	54,561	1,536	56,097	52,945	1,651	54,596
Economically disadvantaged (Percent)	49.8	59.8	49.8	48.6	59.2	48.7	47.4	51	47.4	46.3	47	46.3	44.9	44.3	44.9	44.3	46.2	44.3
Historically Underperforming Subgroup (Number)	70,277	677	70,954	68,165	799	68,964	65,648	1,016	66,664	64,506	1,667	66,173	62,221	1,907	64,128	60,431	2,021	62,452
Historically Underperforming Subgroup (Percent)	56.5	69.8	56.6	55.5	71.9	55.6	54.1	64.3	54.2	52.6	60.1	52.8	51.2	55	51.3	50.5	56.6	50.7

Demographic or Educational Characteristic	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Enrollment in school of residence after 10/1/15 (Number)	3,454	40	3,494	3,274	47	3,321	2,824	65	2,889	2,890	106	2,996	2,952	147	3,099	2,920	162	3,082
Enrollment in school of residence after 10/1/15 (Percent)	2.8	4.1	2.8	2.7	4.2	2.7	2.3	4.1	2.3	2.4	3.8	2.4	2.4	4.2	2.5	2.4	4.5	2.5
Enrollment in district of residence after 10/1/15 (Number)	1,771	30	1,801	1,703	31	1,734	1,567	42	1,609	1,544	66	1,610	1,713	92	1,805	1,724	107	1,831
Enrollment in district of residence after 10/1/15 (Percent)	1.4	3.1	1.4	1.4	2.8	1.4	1.3	2.7	1.3	1.3	2.4	1.3	1.4	2.7	1.4	1.4	3	1.5
Enrollment as PA resident after 10/1/15 (Number)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Enrollment as PA resident after 10/1/15 (Percent)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Enrollment in school of residence after 10/1/14 but on/before 10/1/15 (Number)	28,171	139	28,310	27,883	143	28,026	28,500	531	29,031	40,871	690	41,561	30,998	737	31,735	20,723	380	21,103
Enrollment in school of residence after 10/1/14 but on/before 10/1/15 (Percent)	22.6	14.3	22.6	22.7	12.9	22.6	23.5	33.6	23.6	33.4	24.9	33.2	25.5	21.2	25.4	17.3	10.6	17.1
Enrollment in district of residence after 10/1/14 but on/before 10/1/15 (Number)	10,084	104	10,188	9,772	115	9,887	9,333	153	9,486	10,207	307	10,514	8,864	341	9,205	7,455	311	7,766
Enrollment in district of residence after 10/1/14 but on/before 10/1/15 (Percent)	8.1	10.7	8.1	8	10.4	8	7.7	9.7	7.7	8.3	11.1	8.4	7.3	9.8	7.4	6.2	8.7	6.3
Court/agency placed (Number)	32	0	32	24	1	25	33	4	37	42	7	49	90	18	108	164	39	203
Court/agency placed (Percent)	0	0	0	0	0.1	0	0	0.3	0	0	0.3	0	0.1	0.5	0.1	0.1	1.1	0.2
Students with scores used in state summaries	124,450	970	125,420	122,829	1,111	123,940	121,404	1,579	122,983	122,530	2,775	125,305	121,490	3,469	124,959	119,605	3,570	123,175

Demographic Characteristics of Students Taking the 2016 PSSA: Science

Demographic or Educational Characteristic	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Female (Number)	59,635	1,018	60,653	57,488	2,094	59,582
Female (Percent)	49.1	45	49	48.6	46	48.5
Male (Number)	61,921	1,244	63,165	60,914	2,459	63,373
Male (Percent)	50.9	55	51	51.4	54	51.5
American Indian/Alaskan Native - not Hispanic (Number)	172	1	173	180	6	186
American Indian/Alaskan Native - not Hispanic (Percent)	0.1	0	0.1	0.2	0.1	0.2
Asian - not Hispanic (Number)	4,608	36	4,644	4,453	78	4,531
Asian - not Hispanic (Percent)	3.8	1.6	3.8	3.8	1.7	3.7
Black or African American - not Hispanic (Number)	17,697	330	18,027	17,264	453	17,717
Black or African American - not Hispanic (Percent)	14.6	14.6	14.6	14.6	9.9	14.4
Hispanic - any race (Number)	13,265	201	13,466	11,607	331	11,938
Hispanic - any race (Percent)	10.9	8.9	10.9	9.8	7.3	9.7
Multi-Racial - not Hispanic (Number)	4,875	55	4,930	2,777	95	2,872
Multi-Racial - not Hispanic (Percent)	4	2.4	4	2.3	2.1	2.3
White - not Hispanic (Number)	80,832	1,636	82,468	82,030	3,589	85,619
White - not Hispanic (Percent)	66.5	72.3	66.6	69.3	78.8	69.6
Native Hawaiian or Other Pacific Islander - not Hispanic (Number)	107	3	110	91	1	92
Native Hawaiian or Other Pacific Islander - not Hispanic (Percent)	0.1	0.1	0.1	0.1	0	0.1
IEP - not gifted (Number)	19,825	559	20,384	17,780	1,040	18,820
IEP - not gifted (Percent)	16.3	24.7	16.5	15.0	22.8	15.3
Student exited IEP in last 2 years (Number)	2,884	54	2,938	2,204	79	2,283
Student exited IEP in last 2 years (Percent)	2.4	2.4	2.4	1.9	1.7	1.9
Title I (Number)	55,738	978	56,716	29,306	846	30,152
Title I (Percent)	45.9	43.2	45.8	24.8	18.6	24.5
Title III served (Number)	3,491	64	3,555	2,632	56	2,688
Title III served (Percent)	2.9	2.8	2.9	2.2	1.2	2.2
Title III not served (Number)	0	0	0	0	0	0
Title III not served (Percent)	0.0	0	0	0.0	0	0
Migrant student (Number)	36	0	36	41	1	42

Demographic or Educational Characteristic	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Migrant student (Percent)	0.0	0	0	0.0	0	0
ELL - enrolled after 5/8/15 (Number)	0	0	0	0	0	0
ELL - enrolled after 5/8/15 (Percent)	0.0	0	0	0.0	0	0
ELL - enrolled on or before 5/8/15 (Number)	3,649	65	3,714	2,788	64	2,852
ELL - enrolled on or before 5/8/15 (Percent)	3.0	2.9	3	2.4	1.4	2.3
Exited ESL/bilingual program and in first year of monitoring (Number)	1,349	24	1,373	334	4	338
Exited ESL/bilingual program and in first year of monitoring (Percent)	1.1	1.1	1.1	0.3	0.1	0.3
Exited ESL/bilingual program and in 2nd year of monitoring (Number)	585	9	594	364	9	373
Exited ESL/bilingual program and in 2nd year of monitoring (Percent)	0.5	0.4	0.5	0.3	0.2	0.3
Former ELL no longer monitored (Number)	361	15	376	2,770	71	2,841
Former ELL no longer monitored (Percent)	0.3	0.7	0.3	2.3	1.6	2.3
Economically disadvantaged (Number)	59,125	1,141	60,266	52,529	1,931	54,460
Economically disadvantaged (Percent)	48.6	50.4	48.7	44.4	42.4	44.3
Historically Underperforming Subgroup (Number)	67,501	1,361	68,862	59,966	2,344	62,310
Historically Underperforming Subgroup (Percent)	55.5	60.2	55.6	50.6	51.5	50.7
Enrollment in school of residence after 10/1/15 (Number)	3,235	70	3,305	2,929	172	3,101
Enrollment in school of residence after 10/1/15 (Percent)	2.7	3.1	2.7	2.5	3.8	2.5
Enrollment in district of residence after 10/1/15 (Number)	1,677	51	1,728	1,725	112	1,837
Enrollment in district of residence after 10/1/15 (Percent)	1.4	2.3	1.4	1.5	2.5	1.5
Enrollment as PA resident after 10/1/15 (Number)	0	0	0	0	0	0
Enrollment as PA resident after 10/1/15 (Percent)	0	0	0	0	0	0
Enrollment in school of residence after 10/1/14 but on/before 10/1/15 (Number)	27,596	380	27,976	20,604	425	21,029
Enrollment in school of residence after 10/1/14 but on/before 10/1/15 (Percent)	22.7	16.8	22.6	17.4	9.3	17.1
Enrollment in district of residence after 10/1/14 but on/before 10/1/15 (Number)	9,675	201	9,876	7,374	355	7,729
Enrollment in district of residence after 10/1/14 but on/before 10/1/15 (Percent)	8	8.9	8	6.2	7.8	6.3
Court/agency placed (Number)	38	1	39	156	39	195
Court/agency placed (Percent)	0	0	0	0.1	0.9	0.2
Students with scores used in state summaries	121,556	2,262	123,818	118,402	4,553	122,955

APPENDIX J: INCIDENCE OF ACCOMMODATIONS RECEIVED

Incidence of Presentation Accommodations Received on the 2016 PSSA: English Language Arts

Type of Presentation Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Braille format (Number)	7	N/A	7	5	N/A	5	4	N/A	4	6	N/A	6	6	N/A	6	7	N/A	7
Braille format (Percent)	0	N/A	0															
Large print format (Number)	91	N/A	91	85	N/A	85	110	N/A	110	82	N/A	82	99	N/A	99	80	N/A	80
Large print format (Percent)	0.1	N/A	0.1															
Computer Assistive Technology (Number)	9	N/A	9	5	N/A	5	7	N/A	7	7	N/A	7	9	N/A	9	7	N/A	7
Computer Assistive Technology (Percent)	0	N/A	0															
Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	6,125	1	6,126	7,155	36	7,191	7,080	39	7,119	4,208	28	4,236	2,250	36	2,286	2,007	50	2,057
Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	4.9	0.1	4.9	5.8	3.3	5.8	5.8	2.5	5.8	3.4	1	3.4	1.8	1.1	1.8	1.7	1.4	1.7
All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3,272	60	3,332	3,422	73	3,495	2,367	98	2,465	1,630	135	1,765	989	141	1,130	767	127	894
All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	2.6	6.4	2.7	2.8	6.8	2.8	2	6.3	2	1.3	4.8	1.4	0.8	4.5	0.9	0.6	3.5	0.7
Language questions/writing prompts/text-dependent analysis questions signed (Number)	48	0	48	37	0	37	27	3	30	20	1	21	22	1	23	25	1	26
Language questions/writing prompts/text-dependent analysis questions signed (Percent)	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0
Language questions/writing prompts/text-dependent analysis questions interpreted for ELL student (Number)	53	0	53	49	0	49	30	2	32	14	0	14	20	1	21	17	0	17
Language questions/writing prompts/text-dependent analysis questions interpreted for ELL student (Percent)	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0
Amplification device (Number)	72	1	73	56	1	57	44	1	45	24	1	25	21	0	21	25	0	25
Amplification device (Percent)	0.1	0.1	0.1	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0
Magnification device (Number)	12	4	16	16	3	19	15	7	22	7	2	9	6	0	6	10	2	12
Magnification device (Percent)	0	0.4	0	0	0.3	0	0	0.4	0	0	0.1	0	0	0	0	0	0.1	0
Color overlay (Number)	224	N/A	224	140	N/A	140	138	N/A	138	52	N/A	52	20	N/A	20	14	N/A	14

Type of Presentation Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Color overlay (Percent)	0.2	N/A	0.2	0.1	N/A	0.1	0.1	N/A	0.1	0	N/A	0	0	N/A	0	0	N/A	0
Other (per Accommodations Guidelines) (Number)	750	6	756	775	3	778	570	7	577	206	3	209	109	2	111	74	1	75
Other (per Accommodations Guidelines) (Percent)	0.6	0.6	0.6	0.6	0.3	0.6	0.5	0.4	0.5	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0	0.1
Audio (Number)	N/A	160	160	N/A	209	209	N/A	303	303	N/A	641	641	N/A	630	630	N/A	536	536
Audio (Percent)	N/A	17.1	0.1	N/A	19.3	0.2	N/A	19.5	0.2	N/A	22.8	0.5	N/A	19.9	0.5	N/A	14.7	0.4
Color Chooser (Number)	N/A	26	26	N/A	44	44	N/A	60	60	N/A	40	40	N/A	38	38	N/A	49	49
Color Chooser (Percent)	N/A	2.8	0	N/A	4.1	0	N/A	3.9	0	N/A	1.4	0	N/A	1.2	0	N/A	1.3	0
Contrasting Text Chooser (Number)	N/A	25	25	N/A	43	43	N/A	44	44	N/A	43	43	N/A	37	37	N/A	37	37
Contrasting Text Chooser (Percent)	N/A	2.7	0	N/A	4	0	N/A	2.8	0	N/A	1.5	0	N/A	1.2	0	N/A	1	0

Incidence of Presentation Accommodations Received on the 2016 PSSA: Mathematics

Type of Presentation Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Braille format (Number)	6	N/A	6	6	N/A	6	3	N/A	3	3	N/A	3	5	N/A	5	4	N/A	4
Braille format (Percent)	0	N/A	0															
Large print format (Number)	68	N/A	68	77	N/A	77	95	N/A	95	77	N/A	77	90	N/A	90	70	N/A	70
Large print format (Percent)	0.1	N/A	0.1															
Computer Assistive Technology (Number)	3	N/A	3	4	N/A	4	2	N/A	2	4	N/A	4	5	N/A	5	5	N/A	5
Computer Assistive Technology (Percent)	0	N/A	0															
Some test items/questions read aloud (Number)	8,131	3	8,134	8,145	19	8,164	7,514	35	7,549	4,509	23	4,532	2,436	46	2,482	1,881	54	1,935
Some test items/questions read aloud (Percent)	6.5	0.3	6.5	6.6	1.7	6.6	6.2	2.2	6.1	3.7	0.8	3.6	2	1.3	2	1.6	1.5	1.6
All test items/questions read aloud (Number)	6,061	105	6,166	5,599	97	5,696	4,148	144	4,292	2,528	167	2,695	1,489	199	1,688	1,125	149	1,274
All test items/questions read aloud (Percent)	4.9	10.8	4.9	4.6	8.7	4.6	3.4	9.1	3.5	2.1	6	2.2	1.2	5.7	1.4	0.9	4.2	1
Test items/questions signed (Number)	36	9	45	22	17	39	16	13	29	8	21	29	10	15	25	10	22	32
Test items/questions signed (Percent)	0	0.9	0	0	1.5	0	0	0.8	0	0	0.8	0	0	0.4	0	0	0.6	0
Test items/questions interpreted for ELL student (Number)	82	0	82	68	0	68	60	0	60	35	0	35	39	0	39	41	0	41
Test items/questions interpreted for ELL student (Percent)	0.1	0	0.1	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
Amplification device (Number)	42	1	43	45	1	46	33	1	34	20	1	21	16	0	16	14	0	14
Amplification device (Percent)	0	0.1	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0
Magnification device (Number)	14	4	18	13	3	16	17	7	24	9	3	12	6	0	6	3	2	5
Magnification device (Percent)	0	0.4	0	0	0.3	0	0	0.4	0	0	0.1	0	0	0	0	0	0.1	0
Color overlay (Number)	36	N/A	36	27	N/A	27	16	N/A	16	8	N/A	8	1	N/A	1	6	N/A	6
Color overlay (Percent)	0	N/A	0															
Other (per Accommodations Guidelines) (Number)	375	5	380	423	6	429	317	7	324	199	3	202	115	2	117	86	0	86
Other (per Accommodations Guidelines) (Percent)	0.3	0.5	0.3	0.3	0.5	0.3	0.3	0.4	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0	0.1
Spanish version (Number)	192	N/A	192	200	N/A	200	243	N/A	243	279	N/A	279	334	N/A	334	351	N/A	351
Spanish version (Percent)	0.2	N/A	0.2	0.3	N/A	0.3	0.3	N/A	0.3									
Audio (Number)	N/A	235	235	N/A	298	298	N/A	388	388	N/A	662	662	N/A	665	665	N/A	575	575
Audio (Percent)	N/A	24.2	0.2	N/A	26.8	0.2	N/A	24.6	0.3	N/A	23.9	0.5	N/A	19.2	0.5	N/A	16.1	0.5
Video sign language (Number)	N/A	11	11	N/A	18	18	N/A	15	15	N/A	18	18	N/A	17	17	N/A	23	23

Type of Presentation Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Video sign language (Percent)	N/A	1.1	0	N/A	1.6	0	N/A	0.9	0	N/A	0.6	0	N/A	0.5	0	N/A	0.6	0
Color Chooser (Number)	N/A	34	34	N/A	67	67	N/A	72	72	N/A	57	57	N/A	51	51	N/A	47	47
Color Chooser (Percent)	N/A	3.5	0	N/A	6	0.1	N/A	4.6	0.1	N/A	2.1	0	N/A	1.5	0	N/A	1.3	0
Contrasting Text Chooser (Number)	N/A	33	33	N/A	66	66	N/A	59	59	N/A	59	59	N/A	51	51	N/A	47	47
Contrasting Text Chooser (Percent)	N/A	3.4	0	N/A	5.9	0.1	N/A	3.7	0	N/A	2.1	0	N/A	1.5	0	N/A	1.3	0

Incidence of Presentation Accommodations Received on the 2016 PSSA: Science

Type of Presentation Accommodation	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Braille format (Number)	8	N/A	8	6	N/A	6
Braille format (Percent)	0	N/A	0	0	N/A	0
Large print format (Number)	67	N/A	67	60	N/A	60
Large print format (Percent)	0.1	N/A	0.1	0.1	N/A	0
Computer Assistive Technology (Number)	2	N/A	2	2	N/A	2
Computer Assistive Technology (Percent)	0	N/A	0	0	N/A	0
Some test items/questions read aloud (Number)	6,960	88	7,048	1,582	97	1,679
Some test items/questions read aloud (Percent)	5.7	3.9	5.7	1.3	2.1	1.4
All test items/questions read aloud (Number)	5,781	69	5,850	1,136	154	1,290
All test items/questions read aloud (Percent)	4.8	3.1	4.7	1	3.4	1
Test items/questions signed (Number)	17	11	28	12	17	29
Test items/questions signed (Percent)	0	0.5	0	0	0.4	0
Test items/questions interpreted for ELL student (Number)	64	0	64	26	0	26
Test items/questions interpreted for ELL student (Percent)	0.1	0	0.1	0	0	0
Amplification device (Number)	39	3	42	11	0	11
Amplification device (Percent)	0	0.1	0	0	0	0
Magnification device (Number)	12	3	15	5	2	7
Magnification device (Percent)	0	0.1	0	0	0	0
Color overlay (Number)	33	N/A	33	5	N/A	5
Color overlay (Percent)	0	N/A	0	0	N/A	0
Other (per Accommodations Guidelines) (Number)	324	11	335	67	0	67
Other (per Accommodations Guidelines) (Percent)	0.3	0.5	0.3	0.1	0	0.1
Spanish version (Number)	184	N/A	184	351	N/A	351
Spanish version (Percent)	0.2	N/A	0.1	0.3	N/A	0.3
Audio (Number)	N/A	340	340	N/A	623	623
Audio (Percent)	N/A	15	0.3	N/A	13.7	0.5
Video sign language (Number)	N/A	18	18	N/A	23	23
Video sign language (Percent)	N/A	0.8	0	N/A	0.5	0
Color Chooser (Number)	N/A	73	73	N/A	59	59

Type of Presentation Accommodation	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Color Chooser (Percent)	N/A	3.2	0.1	N/A	1.3	0
Contrasting Text Chooser (Number)	N/A	72	72	N/A	46	46
Contrasting Text Chooser (Percent)	N/A	3.2	0.1	N/A	1	0

Incidence of Response Accommodations Received on the 2016 PSSA: English Language Arts

Type of Response Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Test administrator marked multiple-choice responses at student's direction (Number)	144	4	148	381	0	381	282	1	283	173	3	176	120	0	120	90	0	90
Test administrator marked multiple-choice responses at student's direction (Percent)	0.1	0.4	0.1	0.3	0	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0	0.1	0.1	0	0.1
Test administrator transcribed student responses (Number)	416	10	426	708	12	720	805	18	823	770	12	782	638	2	640	568	1	569
Test administrator transcribed student responses (Percent)	0.3	1.1	0.3	0.6	1.1	0.6	0.7	1.2	0.7	0.6	0.4	0.6	0.5	0.1	0.5	0.5	0	0.5
Keyboard, word processor, or computer (Number)	65	N/A	65	171	N/A	171	313	N/A	313	386	N/A	386	394	N/A	394	434	N/A	434
Keyboard, word processor, or computer (Percent)	0.1	N/A	0.1	0.1	N/A	0.1	0.3	N/A	0.3	0.3	N/A	0.3	0.3	N/A	0.3	0.4	N/A	0.4
Braille/Notetaker (Number)	7	N/A	7	5	N/A	5	6	N/A	6	4	N/A	4	5	N/A	5	4	N/A	4
Braille/Notetaker (Percent)	0	N/A	0															
Augmentative communication device (Number)	8	N/A	8	2	N/A	2	6	N/A	6	1	N/A	1	0	N/A	0	3	N/A	3
Augmentative communication device (Percent)	0	N/A	0															
Audio recording of student responses (Number)	3	0	3	0	0	0	0	1	1	1	1	2	0	0	0	1	0	1
Audio recording of student responses (Percent)	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0
Computer Assistive Technology (Number)	8	N/A	8	8	N/A	8	8	N/A	8	10	N/A	10	7	N/A	7	7	N/A	7
Computer Assistive Technology (Percent)	0	N/A	0															
Other (per Accommodations Guidelines) (Number)	219	0	219	329	3	332	342	3	345	141	5	146	112	0	112	85	0	85
Other (per Accommodations Guidelines) (Percent)	0.2	0	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.1	0.2	0.1	0.1	0	0.1	0.1	0	0.1

Incidence of Response Accommodations Received on the 2016 PSSA: Mathematics

Type of Response Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Test administrator marked multiple-choice responses at student's direction (Number)	134	4	138	352	0	352	294	1	295	167	3	170	132	0	132	81	0	81
Test administrator marked multiple-choice responses at student's direction (Percent)	0.1	0.4	0.1	0.3	0	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0	0.1	0.1	0	0.1
Test administrator scribed open-ended responses at student's direction (Number)	399	3	402	303	3	306	227	1	228	169	2	171	126	0	126	80	0	80
Test administrator scribed open-ended responses at student's direction (Percent)	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0	0.1	0.1	0	0.1
Test administrator transcribed student responses (Number)	282	10	292	328	13	341	380	17	397	385	11	396	283	2	285	241	1	242
Test administrator transcribed student responses (Percent)	0.2	1	0.2	0.3	1.2	0.3	0.3	1.1	0.3	0.3	0.4	0.3	0.2	0.1	0.2	0.2	0	0.2
Qualified interpreter translated, transcribed, and/or scribed student's signed responses (Number)	18	0	18	5	0	5	8	1	9	8	0	8	8	0	8	5	0	5
Qualified interpreter translated, transcribed, and/or scribed student's signed responses (Percent)	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0
Qualified interpreter translated, transcribed, and/or scribed ELL student responses (Number)	7	0	7	14	0	14	18	0	18	17	1	18	2	0	2	3	0	3
Qualified interpreter translated, transcribed, and/or scribed ELL student responses (Percent)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Keyboard, word processor, or computer (Number)	25	N/A	25	45	N/A	45	83	N/A	83	112	N/A	112	126	N/A	126	108	N/A	108
Keyboard, word processor, or computer (Percent)	0	N/A	0	0	N/A	0	0.1	N/A	0.1									
Braille/Notetaker (Number)	5	N/A	5	3	N/A	3	3	N/A	3	3	N/A	3	4	N/A	4	3	N/A	3
Braille/Notetaker (Percent)	0	N/A	0															
Augmentative communication device (Number)	3	N/A	3	2	N/A	2	3	N/A	3	0	N/A	0	0	N/A	0	0	N/A	0
Augmentative communication device (Percent)	0	N/A	0															
Audio recording of student responses (Number)	2	0	2	1	1	2	1	1	2	0	1	1	0	0	0	0	0	0
Audio recording of student responses (Percent)	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0
Computer Assistive Technology (Number)	2	N/A	2	1	N/A	1	3	N/A	3	0	N/A	0	5	N/A	5	1	N/A	1
Computer Assistive Technology (Percent)	0	N/A	0															
Translation dictionary for ELL student (Number)	39	0	39	23	0	23	29	0	29	52	0	52	58	1	59	50	1	51
Translation dictionary for ELL student (Percent)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other (per Accommodations Guidelines) (Number)	331	1	332	284	3	287	225	3	228	113	5	118	88	0	88	74	0	74
Other (per Accommodations Guidelines) (Percent)	0.3	0.1	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0	0.1	0.1	0	0.1

Incidence of Response Accommodations Received on the 2016 PSSA: Science

Type of Response Accommodation	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Test administrator marked multiple-choice responses at student's direction (Number)	379	1	380	81	0	81
Test administrator marked multiple-choice responses at student's direction (Percent)	0.3	0	0.3	0.1	0	0.1
Test administrator scribed open-ended responses at student's direction (Number)	357	2	359	92	0	92
Test administrator scribed open-ended responses at student's direction (Percent)	0.3	0.1	0.3	0.1	0	0.1
Test administrator transcribed student responses (Number)	370	14	384	242	1	243
Test administrator transcribed student responses (Percent)	0.3	0.6	0.3	0.2	0	0.2
Qualified interpreter translated, transcribed, and/or scribed student's signed responses (Number)	11	0	11	10	0	10
Qualified interpreter translated, transcribed, and/or scribed student's signed responses (Percent)	0	0	0	0	0	0
Qualified interpreter translated, transcribed, and/or scribed ELL student responses (Number)	11	0	11	10	0	10
Qualified interpreter translated, transcribed, and/or scribed ELL student responses (Percent)	0	0	0	0	0	0
Keyboard, word processor, or computer (Number)	50	N/A	50	112	N/A	112
Keyboard, word processor, or computer (Percent)	0	N/A	0	0.1	N/A	0.1
Braille/Notetaker (Number)	2	N/A	2	3	N/A	3
Braille/Notetaker (Percent)	0	N/A	0	0	N/A	0
Augmentative communication device (Number)	1	N/A	1	0	N/A	0
Augmentative communication device (Percent)	0	N/A	0	0	N/A	0
Audio recording of student responses (Number)	1	1	2	0	0	0
Audio recording of student responses (Percent)	0	0	0	0	0	0
Computer Assistive Technology (Number)	2	N/A	2	1	N/A	1
Computer Assistive Technology (Percent)	0	N/A	0	0	N/A	0
Translation dictionary for ELL student (Number)	25	0	25	45	1	46
Translation dictionary for ELL student (Percent)	0	0	0	0	0	0
Other (per Accommodations Guidelines) (Number)	146	3	149	53	0	53
Other (per Accommodations Guidelines) (Percent)	0.1	0.1	0.1	0	0	0

Incidence of Setting Accommodations Received on the 2016 PSSA: English Language Arts

Type of Setting Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Hospital/home setting (Number)	21	0	21	24	0	24	17	0	17	31	1	32	33	1	34	34	3	37
Hospital/home setting (Percent)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
One-on-one setting (Number)	845	13	858	776	10	786	628	17	645	486	15	501	359	15	374	325	11	336
One-on-one setting (Percent)	0.7	1.4	0.7	0.6	0.9	0.6	0.5	1.1	0.5	0.4	0.5	0.4	0.3	0.5	0.3	0.3	0.3	0.3
Small group setting (Number)	16,662	144	16,806	16,854	192	17,046	16,045	369	16,414	13,864	616	14,480	12,403	632	13,035	11,936	637	12,573
Small group setting (Percent)	13.4	15.4	13.4	13.8	17.8	13.8	13.2	23.7	13.4	11.3	21.9	11.6	10.2	20	10.4	10	17.5	10.2
Other (per Accommodations Guidelines) (Number)	299	5	304	307	8	315	319	4	323	386	54	440	303	2	305	328	1	329
Other (per Accommodations Guidelines) (Percent)	0.2	0.5	0.2	0.3	0.7	0.3	0.3	0.3	0.3	0.3	1.9	0.4	0.2	0.1	0.2	0.3	0	0.3

Incidence of Setting Accommodations Received on the 2016 PSSA: Mathematics

Type of Setting Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Hospital/home setting (Number)	25	1	26	20	0	20	19	0	19	31	1	32	34	1	35	30	3	33
Hospital/home setting (Percent)	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
One-on-one setting (Number)	758	11	769	726	10	736	599	14	613	479	17	496	371	16	387	302	12	314
One-on-one setting (Percent)	0.6	1.1	0.6	0.6	0.9	0.6	0.5	0.9	0.5	0.4	0.6	0.4	0.3	0.5	0.3	0.3	0.3	0.3
Small group setting (Number)	16,507	173	16,680	16,841	251	17,092	15,937	416	16,353	13,692	638	14,330	11,891	615	12,506	11,577	635	12,212
Small group setting (Percent)	13.3	17.8	13.3	13.7	22.6	13.8	13.1	26.3	13.3	11.2	23	11.4	9.8	17.7	10	9.7	17.8	9.9
Other (per Accommodations Guidelines) (Number)	253	5	258	271	8	279	327	3	330	370	53	423	247	2	249	294	1	295
Other (per Accommodations Guidelines) (Percent)	0.2	0.5	0.2	0.2	0.7	0.2	0.3	0.2	0.3	0.3	1.9	0.3	0.2	0.1	0.2	0.2	0	0.2

Incidence of Setting Accommodations Received on the 2016 PSSA: Science

Type of Setting Accommodation	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Hospital/home setting (Number)	22	0	22	31	2	33
Hospital/home setting (Percent)	0	0	0	0	0	0
One-on-one setting (Number)	701	10	711	306	12	318
One-on-one setting (Percent)	0.6	0.4	0.6	0.3	0.3	0.3
Small group setting (Number)	15,926	347	16,273	11,275	688	11,963
Small group setting (Percent)	13.1	15.3	13.1	9.5	15.1	9.7
Other (per Accommodations Guidelines) (Number)	240	8	248	295	1	296
Other (per Accommodations Guidelines) (Percent)	0.2	0.4	0.2	0.2	0	0.2

Incidence of Timing Accommodations Received on the 2016 PSSA: English Language Arts

Type of Timing Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Extended time (Number)	7,489	137	7,626	10,277	105	10,382	12,734	196	12,930	11,649	216	11,865	8,701	241	8,942	8,199	241	8,440
Extended time (Percent)	6	14.7	6.1	8.4	9.7	8.4	10.5	12.6	10.5	9.5	7.7	9.5	7.1	7.6	7.2	6.9	6.6	6.8
Frequent breaks (Number)	3,975	81	4,056	3,997	105	4,102	4,110	189	4,299	2,736	195	2,931	2,126	133	2,259	1,685	148	1,833
Frequent breaks (Percent)	3.2	8.7	3.2	3.3	9.7	3.3	3.4	12.1	3.5	2.2	6.9	2.3	1.7	4.2	1.8	1.4	4.1	1.5
Changed test schedule (Number)	501	0	501	479	1	480	386	1	387	230	2	232	346	6	352	306	22	328
Changed test schedule (Percent)	0.4	0	0.4	0.4	0.1	0.4	0.3	0.1	0.3	0.2	0.1	0.2	0.3	0.2	0.3	0.3	0.6	0.3
Other (per Accommodations Guidelines) (Number)	93	2	95	130	0	130	76	1	77	83	8	91	77	0	77	105	0	105
Other (per Accommodations Guidelines) (Percent)	0.1	0.2	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0	0.1	0.1	0	0.1

Incidence of Timing Accommodations Received on the 2016 PSSA: Mathematics

Type of Timing Accommodation	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Extended time (Number)	5,328	154	5,482	7,532	166	7,698	9,250	257	9,507	6,086	205	6,291	6,601	313	6,914	4,407	230	4,637
Extended time (Percent)	4.3	15.9	4.4	6.1	14.9	6.2	7.6	16.3	7.7	5	7.4	5	5.4	9	5.5	3.7	6.4	3.8
Frequent breaks (Number)	3,722	84	3,806	3,829	123	3,952	3,783	195	3,978	2,538	194	2,732	1,980	130	2,110	1,547	122	1,669
Frequent breaks (Percent)	3	8.7	3	3.1	11.1	3.2	3.1	12.3	3.2	2.1	7	2.2	1.6	3.7	1.7	1.3	3.4	1.4
Changed test schedule (Number)	432	0	432	443	1	444	348	1	349	224	1	225	339	9	348	301	22	323
Changed test schedule (Percent)	0.3	0	0.3	0.4	0.1	0.4	0.3	0.1	0.3	0.2	0	0.2	0.3	0.3	0.3	0.3	0.6	0.3
Other (per Accommodations Guidelines) (Number)	81	2	83	99	0	99	76	1	77	93	7	100	31	0	31	47	0	47
Other (per Accommodations Guidelines) (Percent)	0.1	0.2	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0	0	0	0	0	0

Incidence of Timing Accommodations Received on the 2016 PSSA: Science

Type of Timing Accommodation	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Extended time (Number)	4,235	185	4,420	3,631	217	3,848
Extended time (Percent)	3.5	8.2	3.6	3.1	4.8	3.1
Frequent breaks (Number)	3,456	155	3,611	1,282	145	1,427
Frequent breaks (Percent)	2.8	6.9	2.9	1.1	3.2	1.2
Changed test schedule (Number)	360	1	361	309	13	322
Changed test schedule (Percent)	0.3	0	0.3	0.3	0.3	0.3
Other (per Accommodations Guidelines) (Number)	89	0	89	46	0	46
Other (per Accommodations Guidelines) (Percent)	0.1	0	0.1	0	0	0

APPENDIX K: ACCOMMODATION RATE FOR NON-IEP AND IEP STUDENTS

Accommodation Rate for Non-IEP and IEP Students on the 2016 PSSA: English Language Arts

Student	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Non-IEP Students	105,031	693	105,724	102,515	737	103,252	101,510	1,023	102,533	103,118	2,002	105,120	103,220	2,317	105,537	101,626	2,752	104,378
Non-Accommodated (Number)	93,353	617	93,970	89,048	695	89,743	87,563	897	88,460	91,926	1,765	93,691	95,044	2,115	97,159	93,941	2,559	96,500
Non-Accommodated (Percent)	88.9	89	88.9	86.9	94.3	86.9	86.3	87.7	86.3	89.1	88.2	89.1	92.1	91.3	92.1	92.4	93	92.5
Accommodated (Number)	11,678	76	11,754	13,467	42	13,509	13,947	126	14,073	11,192	237	11,429	8,176	202	8,378	7,685	193	7,878
Accommodated (Percent)	11.1	11	11.1	13.1	5.7	13.1	13.7	12.3	13.7	10.9	11.8	10.9	7.9	8.7	7.9	7.6	7	7.5
IEP Students	19,320	240	19,560	20,001	344	20,345	19,801	534	20,335	19,336	807	20,143	18,575	849	19,424	18,003	894	18,897
Non-Accommodated (Number)	6,991	36	7,027	6,302	62	6,364	5,800	94	5,894	6,297	134	6,431	6,739	180	6,919	6,539	235	6,774
Non-Accommodated (Percent)	36.2	15	35.9	31.5	18	31.3	29.3	17.6	29	32.6	16.6	31.9	36.3	21.2	35.6	36.3	26.3	35.8
Accommodated (Number)	12,329	204	12,533	13,699	282	13,981	14,001	440	14,441	13,039	673	13,712	11,836	669	12,505	11,464	659	12,123
Accommodated (Percent)	63.8	85	64.1	68.5	82	68.7	70.7	82.4	71	67.4	83.4	68.1	63.7	78.8	64.4	63.7	73.7	64.2

Accommodation Rate for Non-IEP and IEP Students on the 2016 PSSA: Mathematics

Student	Gr 3 PPT	Gr 3 CBT	Gr 3 Total	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 5 PPT	Gr 5 CBT	Gr 5 Total	Gr 6 PPT	Gr 6 CBT	Gr 6 Total	Gr 7 PPT	Gr 7 CBT	Gr 7 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Non-IEP Students	105,129	681	105,810	102,787	717	103,504	101,631	998	102,629	103,201	1,938	105,139	102,937	2,587	105,524	101,649	2,636	104,285
Non-Accommodated (Number)	93,420	598	94,018	90,593	624	91,217	90,455	823	91,278	96,477	1,756	98,233	96,541	2,319	98,860	97,264	2,454	99,718
Non-Accommodated (Percent)	88.9	87.8	88.9	88.1	87	88.1	89	82.5	88.9	93.5	90.6	93.4	93.8	89.6	93.7	95.7	93.1	95.6
Accommodated (Number)	11,709	83	11,792	12,194	93	12,287	11,176	175	11,351	6,724	182	6,906	6,396	268	6,664	4,385	182	4,567
Accommodated (Percent)	11.1	12.2	11.1	11.9	13	11.9	11	17.5	11.1	6.5	9.4	6.6	6.2	10.4	6.3	4.3	6.9	4.4
IEP Students	19,321	289	19,610	20,042	394	20,436	19,773	581	20,354	19,329	837	20,166	18,553	882	19,435	17,956	934	18,890
Non-Accommodated (Number)	7,338	32	7,370	6,641	57	6,698	6,082	83	6,165	6,616	127	6,743	7,173	186	7,359	6,993	237	7,230
Non-Accommodated (Percent)	38	11.1	37.6	33.1	14.5	32.8	30.8	14.3	30.3	34.2	15.2	33.4	38.7	21.1	37.9	38.9	25.4	38.3
Accommodated (Number)	11,983	257	12,240	13,401	337	13,738	13,691	498	14,189	12,713	710	13,423	11,380	696	12,076	10,963	697	11,660
Accommodated (Percent)	62	88.9	62.4	66.9	85.5	67.2	69.2	85.7	69.7	65.8	84.8	66.6	61.3	78.9	62.1	61.1	74.6	61.7

Accommodation Rate for Non-IEP and IEP Students on the 2016 PSSA: Science

Student	Gr 4 PPT	Gr 4 CBT	Gr 4 Total	Gr 8 PPT	Gr 8 CBT	Gr 8 Total
Non-IEP Students	101,731	1,703	103,434	100,622	3,513	104,135
Non-Accommodated (Number)	93,042	1,599	94,641	97,039	3,363	100,402
Non-Accommodated (Percent)	91.5	93.9	91.5	96.4	95.7	96.4
Accommodated (Number)	8,689	104	8,793	3,583	150	3,733
Accommodated (Percent)	8.5	6.1	8.5	3.6	4.3	3.6
IEP Students	19,825	559	20,384	17,780	1,040	18,820
Non-Accommodated (Number)	6,951	124	7,075	7,099	262	7,361
Non-Accommodated (Percent)	35.1	22.2	34.7	39.9	25.2	39.1
Accommodated (Number)	12,874	435	13,309	10,681	778	11,459
Accommodated (Percent)	64.9	77.8	65.3	60.1	74.8	60.9

APPENDIX L: INCIDENCE OF ACCOMMODATIONS RECEIVED BY IEP AND ELL STUDENTS

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: English Language Arts Grade 3

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	1,844	3,650	443	188
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	1.8	19.6	11.6	26.5
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	416	2,641	106	109
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.4	14.2	2.8	15.4
PPT - Small group setting (Number)	4,336	10,579	1,252	495
PPT - Small group setting (Percent)	4.3	56.8	32.9	69.8
PPT - Extended time (Number)	4,758	2,405	224	102
PPT - Extended time (Percent)	4.7	12.9	5.9	14.4
PPT - Frequent breaks (Number)	557	3,208	77	133
PPT - Frequent breaks (Percent)	0.6	17.2	2	18.8
PPT - Number assessed	101,228	18,611	3,803	709
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	1	0	0	0
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	0	0	0
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	4	52	1	3
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.6	22.4	10	37.5
CBT - Small group setting (Number)	11	129	1	3
CBT - Small group setting (Percent)	1.6	55.6	10	37.5
CBT - Extended time (Number)	58	79	0	0
CBT - Extended time (Percent)	8.5	34.1	0	0
CBT - Frequent breaks (Number)	6	74	0	1
CBT - Frequent breaks (Percent)	0.9	31.9	0	12.5
CBT - Number assessed	683	232	10	8
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	1,845	3,650	443	188
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	1.8	19.4	11.6	26.2

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	420	2,693	107	112
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.4	14.3	2.8	15.6
Total - Small group setting (Number)	4,347	10,708	1,253	498
Total - Small group setting (Percent)	4.3	56.8	32.9	69.5
Total - Extended time (Number)	4,816	2,484	224	102
Total - Extended time (Percent)	4.7	13.2	5.9	14.2
Total - Frequent breaks (Number)	563	3,282	77	134
Total - Frequent breaks (Percent)	0.6	17.4	2	18.7
Total - Number assessed	101,911	18,843	3,813	717

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: English Language Arts Grade 4

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2,247	4,287	397	224
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	2.3	22.3	13.7	28.4
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	328	2,896	70	128
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.3	15.1	2.4	16.2
PPT - Small group setting (Number)	3,732	11,613	929	580
PPT - Small group setting (Percent)	3.7	60.4	32.1	73.6
PPT - Extended time (Number)	7,231	2,732	204	110
PPT - Extended time (Percent)	7.3	14.2	7	14
PPT - Frequent breaks (Number)	460	3,338	61	138
PPT - Frequent breaks (Percent)	0.5	17.4	2.1	17.5
PPT - Number assessed	99,621	19,213	2,894	788
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	1	32	0	3
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	9.4	0	60
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	5	65	1	2
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.7	19.2	11.1	40
CBT - Small group setting (Number)	12	176	1	3
CBT - Small group setting (Percent)	1.6	51.9	11.1	60
CBT - Extended time (Number)	29	75	0	1
CBT - Extended time (Percent)	4	22.1	0	20
CBT - Frequent breaks (Number)	7	97	0	1
CBT - Frequent breaks (Percent)	1	28.6	0	20
CBT - Number assessed	728	339	9	5
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2,248	4,319	397	227
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	2.2	22.1	13.7	28.6
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	333	2,961	71	130
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.3	15.1	2.4	16.4

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	3,744	11,789	930	583
Total - Small group setting (Percent)	3.7	60.3	32	73.5
Total - Extended time (Number)	7,260	2,807	204	111
Total - Extended time (Percent)	7.2	14.4	7	14
Total - Frequent breaks (Number)	467	3,435	61	139
Total - Frequent breaks (Percent)	0.5	17.6	2.1	17.5
Total - Number assessed	100,349	19,552	2,903	793

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: English Language Arts Grade 5

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	1,597	4,938	289	256
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	1.6	26	12.9	31.8
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	187	2,048	48	84
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	10.8	2.1	10.4
PPT - Small group setting (Number)	2,913	11,888	675	569
PPT - Small group setting (Percent)	2.9	62.6	30.2	70.7
PPT - Extended time (Number)	9,211	3,144	215	164
PPT - Extended time (Percent)	9.3	16.6	9.6	20.4
PPT - Frequent breaks (Number)	425	3,473	56	156
PPT - Frequent breaks (Percent)	0.4	18.3	2.5	19.4
PPT - Number assessed	99,274	18,996	2,236	805
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	1	38	0	0
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	7.2	0	0
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	5	91	0	2
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.5	17.2	0	40
CBT - Small group setting (Number)	49	314	3	3
CBT - Small group setting (Percent)	4.8	59.4	33.3	60
CBT - Extended time (Number)	71	124	0	1
CBT - Extended time (Percent)	7	23.4	0	20
CBT - Frequent breaks (Number)	16	171	0	2
CBT - Frequent breaks (Percent)	1.6	32.3	0	40
CBT - Number assessed	1,014	529	9	5
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	1,598	4,976	289	256
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	1.6	25.5	12.9	31.6
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	192	2,139	48	86
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	11	2.1	10.6

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	2,962	12,202	678	572
Total - Small group setting (Percent)	3	62.5	30.2	70.6
Total - Extended time (Number)	9,282	3,268	215	165
Total - Extended time (Percent)	9.3	16.7	9.6	20.4
Total - Frequent breaks (Number)	441	3,644	56	158
Total - Frequent breaks (Percent)	0.4	18.7	2.5	19.5
Total - Number assessed	100,288	19,525	2,245	810

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: English Language Arts Grade 6

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	649	3,286	101	172
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.6	17.7	5.1	22.1
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	69	1,508	10	43
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	8.1	0.5	5.5
PPT - Small group setting (Number)	1,830	11,183	403	448
PPT - Small group setting (Percent)	1.8	60.3	20.3	57.5
PPT - Extended time (Number)	8,414	2,942	184	109
PPT - Extended time (Percent)	8.3	15.9	9.3	14
PPT - Frequent breaks (Number)	190	2,421	37	88
PPT - Frequent breaks (Percent)	0.2	13	1.9	11.3
PPT - Number assessed	101,133	18,557	1,985	779
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3	23	2	0
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	2.9	5.7	0
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	4	115	8	8
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	14.5	22.9	53.3
CBT - Small group setting (Number)	88	510	12	6
CBT - Small group setting (Percent)	4.5	64.4	34.3	40
CBT - Extended time (Number)	54	160	0	2
CBT - Extended time (Percent)	2.7	20.2	0	13.3
CBT - Frequent breaks (Number)	7	186	0	2
CBT - Frequent breaks (Percent)	0.4	23.5	0	13.3
CBT - Number assessed	1,967	792	35	15
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	652	3,309	103	172
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.6	17.1	5.1	21.7
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	73	1,623	18	51
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	8.4	0.9	6.4
Total - Small group setting (Number)	1,918	11,693	415	454

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Percent)	1.9	60.4	20.5	57.2
Total - Extended time (Number)	8,468	3,102	184	111
Total - Extended time (Percent)	8.2	16	9.1	14
Total - Frequent breaks (Number)	197	2,607	37	90
Total - Frequent breaks (Percent)	0.2	13.5	1.8	11.3
Total - Number assessed	103,100	19,349	2,020	794

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: English Language Arts Grade 7

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	224	1,867	66	93
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	10.5	3.2	12.6
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	15	925	12	37
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	5.2	0.6	5
PPT - Small group setting (Number)	1,229	10,357	429	388
PPT - Small group setting (Percent)	1.2	58.1	21	52.6
PPT - Extended time (Number)	6,213	2,278	124	86
PPT - Extended time (Percent)	6.1	12.8	6.1	11.7
PPT - Frequent breaks (Number)	126	1,891	39	70
PPT - Frequent breaks (Percent)	0.1	10.6	1.9	9.5
PPT - Number assessed	101,175	17,838	2,045	737
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3	25	0	8
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	3.1	0	26.7
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2	126	7	6
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	15.4	41.2	20
CBT - Small group setting (Number)	90	517	3	22
CBT - Small group setting (Percent)	3.9	63.1	17.6	73.3
CBT - Extended time (Number)	39	193	0	9
CBT - Extended time (Percent)	1.7	23.6	0	30
CBT - Frequent breaks (Number)	3	130	0	0
CBT - Frequent breaks (Percent)	0.1	15.9	0	0
CBT - Number assessed	2,300	819	17	30
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	227	1,892	66	101
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	10.1	3.2	13.2
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	17	1,051	19	43
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	5.6	0.9	5.6

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	1,319	10,874	432	410
Total - Small group setting (Percent)	1.3	58.3	21	53.5
Total - Extended time (Number)	6,252	2,471	124	95
Total - Extended time (Percent)	6	13.2	6	12.4
Total - Frequent breaks (Number)	129	2,021	39	70
Total - Frequent breaks (Percent)	0.1	10.8	1.9	9.1
Total - Number assessed	103,475	18,657	2,062	767

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: English Language Arts Grade 8

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	139	1,697	64	107
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	9.8	3	15.2
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	13	716	8	30
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	4.1	0.4	4.3
PPT - Small group setting (Number)	1,090	10,102	376	368
PPT - Small group setting (Percent)	1.1	58.4	17.8	52.4
PPT - Extended time (Number)	5,903	2,066	155	75
PPT - Extended time (Percent)	5.9	11.9	7.3	10.7
PPT - Frequent breaks (Number)	95	1,510	16	64
PPT - Frequent breaks (Percent)	0.1	8.7	0.8	9.1
PPT - Number assessed	99,516	17,301	2,110	702
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	4	44	0	2
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	5	0	11.8
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2	115	7	3
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	13.1	31.8	17.6
CBT - Small group setting (Number)	83	543	4	7
CBT - Small group setting (Percent)	3	61.9	18.2	41.2
CBT - Extended time (Number)	55	183	1	2
CBT - Extended time (Percent)	2	20.9	4.5	11.8
CBT - Frequent breaks (Number)	8	138	0	2
CBT - Frequent breaks (Percent)	0.3	15.7	0	11.8
CBT - Number assessed	2,730	877	22	17
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	143	1,741	64	109
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	9.6	3	15.2
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	15	831	15	33
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	4.6	0.7	4.6

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	1,173	10,645	380	375
Total - Small group setting (Percent)	1.1	58.6	17.8	52.2
Total - Extended time (Number)	5,958	2,249	156	77
Total - Extended time (Percent)	5.8	12.4	7.3	10.7
Total - Frequent breaks (Number)	103	1,648	16	66
Total - Frequent breaks (Percent)	0.1	9.1	0.8	9.2
Total - Number assessed	102,246	18,178	2,132	719

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: Mathematics Grade 3

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3,724	3,536	674	197
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	3.7	19	17.6	27.7
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	963	4,716	218	164
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	1	25.3	5.7	23
PPT - Small group setting (Number)	4,441	10,344	1,250	472
PPT - Small group setting (Percent)	4.4	55.6	32.7	66.3
PPT - Extended time (Number)	3,035	1,999	218	76
PPT - Extended time (Percent)	3	10.7	5.7	10.7
PPT - Frequent breaks (Number)	494	3,046	73	109
PPT - Frequent breaks (Percent)	0.5	16.4	1.9	15.3
PPT - Number assessed	101,307	18,609	3,822	712
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	1	2	0	0
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	0.7	0	0
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	13	86	1	5
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	1.9	30.6	12.5	62.5
CBT - Small group setting (Number)	16	153	1	3
CBT - Small group setting (Percent)	2.4	54.4	12.5	37.5
CBT - Extended time (Number)	65	89	0	0
CBT - Extended time (Percent)	9.7	31.7	0	0
CBT - Frequent breaks (Number)	6	77	0	1
CBT - Frequent breaks (Percent)	0.9	27.4	0	12.5
CBT - Number assessed	673	281	8	8
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3,725	3,538	674	197
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	3.7	18.7	17.6	27.4
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	976	4,802	219	169
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	1	25.4	5.7	23.5

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	4,457	10,497	1,251	475
Total - Small group setting (Percent)	4.4	55.6	32.7	66
Total - Extended time (Number)	3,100	2,088	218	76
Total - Extended time (Percent)	3	11.1	5.7	10.6
Total - Frequent breaks (Number)	500	3,123	73	110
Total - Frequent breaks (Percent)	0.5	16.5	1.9	15.3
Total - Number assessed	101,980	18,890	3,830	720

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: Mathematics Grade 4

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3,196	4,209	487	253
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	3.2	21.9	16.7	31.9
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	725	4,537	157	180
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.7	23.6	5.4	22.7
PPT - Small group setting (Number)	3,826	11,467	972	576
PPT - Small group setting (Percent)	3.8	59.6	33.3	72.6
PPT - Extended time (Number)	5,094	2,157	190	91
PPT - Extended time (Percent)	5.1	11.2	6.5	11.5
PPT - Frequent breaks (Number)	454	3,191	61	123
PPT - Frequent breaks (Percent)	0.5	16.6	2.1	15.5
PPT - Number assessed	99,872	19,249	2,915	793
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	0	18	0	1
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	4.6	0	33.3
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	17	78	1	1
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	2.4	19.9	12.5	33.3
CBT - Small group setting (Number)	29	219	1	2
CBT - Small group setting (Percent)	4.1	56	12.5	66.7
CBT - Extended time (Number)	65	100	0	1
CBT - Extended time (Percent)	9.2	25.6	0	33.3
CBT - Frequent breaks (Number)	8	114	0	1
CBT - Frequent breaks (Percent)	1.1	29.2	0	33.3
CBT - Number assessed	709	391	8	3
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3,196	4,227	487	254
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	3.2	21.5	16.7	31.9
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	742	4,615	158	181
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.7	23.5	5.4	22.7

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	3,855	11,686	973	578
Total - Small group setting (Percent)	3.8	59.5	33.3	72.6
Total - Extended time (Number)	5,159	2,257	190	92
Total - Extended time (Percent)	5.1	11.5	6.5	11.6
Total - Frequent breaks (Number)	462	3,305	61	124
Total - Frequent breaks (Percent)	0.5	16.8	2.1	15.6
Total - Number assessed	100,581	19,640	2,923	796

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: Mathematics Grade 5

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2,041	4,876	337	260
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	2.1	25.7	14.9	32.1
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	351	3,542	114	141
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.4	18.7	5.1	17.4
PPT - Small group setting (Number)	2,977	11,763	643	554
PPT - Small group setting (Percent)	3	62	28.5	68.4
PPT - Extended time (Number)	6,220	2,750	175	105
PPT - Extended time (Percent)	6.3	14.5	7.8	13
PPT - Frequent breaks (Number)	354	3,259	48	122
PPT - Frequent breaks (Percent)	0.4	17.2	2.1	15.1
PPT - Number assessed	99,376	18,963	2,255	810
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3	31	0	1
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.3	5.4	0	16.7
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	12	129	0	3
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	1.2	22.4	0	50
CBT - Small group setting (Number)	60	350	2	4
CBT - Small group setting (Percent)	6	60.9	33.3	66.7
CBT - Extended time (Number)	119	136	0	2
CBT - Extended time (Percent)	12	23.7	0	33.3
CBT - Frequent breaks (Number)	20	172	0	3
CBT - Frequent breaks (Percent)	2	29.9	0	50
CBT - Number assessed	992	575	6	6
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2,044	4,907	337	261
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	2	25.1	14.9	32
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	363	3,671	114	144
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.4	18.8	5	17.6

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	3,037	12,113	645	558
Total - Small group setting (Percent)	3	62	28.5	68.4
Total - Extended time (Number)	6,339	2,886	175	107
Total - Extended time (Percent)	6.3	14.8	7.7	13.1
Total - Frequent breaks (Number)	374	3,431	48	125
Total - Frequent breaks (Percent)	0.4	17.6	2.1	15.3
Total - Number assessed	100,368	19,538	2,261	816

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: Mathematics Grade 6

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	802	3,420	117	170
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.8	18.4	5.9	21.7
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	150	2,293	21	64
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	12.4	1.1	8.2
PPT - Small group setting (Number)	1,753	11,119	395	425
PPT - Small group setting (Percent)	1.7	60	19.8	54.1
PPT - Extended time (Number)	3,817	2,073	108	88
PPT - Extended time (Percent)	3.8	11.2	5.4	11.2
PPT - Frequent breaks (Number)	155	2,276	27	80
PPT - Frequent breaks (Percent)	0.2	12.3	1.4	10.2
PPT - Number assessed	101,203	18,544	1,998	785
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3	18	2	0
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	2.2	6.3	0
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	4	148	8	7
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	18	25	43.8
CBT - Small group setting (Number)	90	529	12	7
CBT - Small group setting (Percent)	4.7	64.4	37.5	43.8
CBT - Extended time (Number)	33	170	0	2
CBT - Extended time (Percent)	1.7	20.7	0	12.5
CBT - Frequent breaks (Number)	7	185	0	2
CBT - Frequent breaks (Percent)	0.4	22.5	0	12.5
CBT - Number assessed	1,906	821	32	16
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	805	3,438	119	170
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.8	17.8	5.9	21.2
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	154	2,441	29	71
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	12.6	1.4	8.9

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	1,843	11,648	407	432
Total - Small group setting (Percent)	1.8	60.1	20	53.9
Total - Extended time (Number)	3,850	2,243	108	90
Total - Extended time (Percent)	3.7	11.6	5.3	11.2
Total - Frequent breaks (Number)	162	2,461	27	82
Total - Frequent breaks (Percent)	0.2	12.7	1.3	10.2
Total - Number assessed	103,109	19,365	2,030	801

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: Mathematics Grade 7

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	216	1,985	138	97
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	11.1	6.7	13.2
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	65	1,343	30	51
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	7.5	1.5	6.9
PPT - Small group setting (Number)	1,153	9,948	417	373
PPT - Small group setting (Percent)	1.1	55.8	20.3	50.8
PPT - Extended time (Number)	4,428	1,909	175	89
PPT - Extended time (Percent)	4.4	10.7	8.5	12.1
PPT - Frequent breaks (Number)	118	1,764	32	66
PPT - Frequent breaks (Percent)	0.1	9.9	1.6	9
PPT - Number assessed	100,880	17,819	2,057	734
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	0	37	0	9
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	4.4	0	28.1
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	3	178	7	11
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	20.9	35	34.4
CBT - Small group setting (Number)	79	509	3	24
CBT - Small group setting (Percent)	3.1	59.9	15	75
CBT - Extended time (Number)	122	182	1	8
CBT - Extended time (Percent)	4.8	21.4	5	25
CBT - Frequent breaks (Number)	3	127	0	0
CBT - Frequent breaks (Percent)	0.1	14.9	0	0
CBT - Number assessed	2,567	850	20	32
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	216	2,022	138	106
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	10.8	6.6	13.8
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	68	1,521	37	62
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	8.1	1.8	8.1

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	1,232	10,457	420	397
Total - Small group setting (Percent)	1.2	56	20.2	51.8
Total - Extended time (Number)	4,550	2,091	176	97
Total - Extended time (Percent)	4.4	11.2	8.5	12.7
Total - Frequent breaks (Number)	121	1,891	32	66
Total - Frequent breaks (Percent)	0.1	10.1	1.5	8.6
Total - Number assessed	103,447	18,669	2,077	766

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: Mathematics Grade 8

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	105	1,607	85	84
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	9.3	4	12
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	39	1,029	12	45
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	6	0.6	6.4
PPT - Small group setting (Number)	1,061	9,841	342	333
PPT - Small group setting (Percent)	1.1	57	16.2	47.4
PPT - Extended time (Number)	2,729	1,487	138	53
PPT - Extended time (Percent)	2.7	8.6	6.5	7.5
PPT - Frequent breaks (Number)	97	1,377	16	57
PPT - Frequent breaks (Percent)	0.1	8	0.8	8.1
PPT - Number assessed	99,533	17,254	2,116	702
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	1	51	0	2
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	5.6	0	10.5
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2	137	7	3
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	15	31.8	15.8
CBT - Small group setting (Number)	78	545	4	8
CBT - Small group setting (Percent)	3	59.6	18.2	42.1
CBT - Extended time (Number)	50	179	1	0
CBT - Extended time (Percent)	1.9	19.6	4.5	0
CBT - Frequent breaks (Number)	3	118	0	1
CBT - Frequent breaks (Percent)	0.1	12.9	0	5.3
CBT - Number assessed	2,614	915	22	19
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	106	1,658	85	86
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	9.1	4	11.9
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	41	1,166	19	48
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	6.4	0.9	6.7

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Number)	1,139	10,386	346	341
Total - Small group setting (Percent)	1.1	57.2	16.2	47.3
Total - Extended time (Number)	2,779	1,666	139	53
Total - Extended time (Percent)	2.7	9.2	6.5	7.4
Total - Frequent breaks (Number)	100	1,495	16	58
Total - Frequent breaks (Percent)	0.1	8.2	0.7	8
Total - Number assessed	102,147	18,169	2,138	721

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: Science Grade 4

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2,583	3,670	488	219
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	2.6	19.3	17	27.9
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	661	4,743	179	198
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.7	24.9	6.3	25.2
PPT - Small group setting (Number)	3,359	11,077	949	541
PPT - Small group setting (Percent)	3.4	58.2	33.1	68.9
PPT - Extended time (Number)	2,263	1,753	142	77
PPT - Extended time (Percent)	2.3	9.2	5	9.8
PPT - Frequent breaks (Number)	383	2,913	48	112
PPT - Frequent breaks (Percent)	0.4	15.3	1.7	14.3
PPT - Number assessed	98,867	19,040	2,864	785
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	4	75	0	9
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	13.7	0	69.2
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	4	63	1	1
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.2	11.5	1.9	7.7
CBT - Small group setting (Number)	44	291	2	10
CBT - Small group setting (Percent)	2.7	53.3	3.8	76.9
CBT - Extended time (Number)	56	126	1	2
CBT - Extended time (Percent)	3.4	23.1	1.9	15.4
CBT - Frequent breaks (Number)	9	144	0	2
CBT - Frequent breaks (Percent)	0.5	26.4	0	15.4
CBT - Number assessed	1,651	546	52	13
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2,587	3,745	488	228
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	2.6	19.1	16.7	28.6
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	665	4,806	180	199
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.7	24.5	6.2	24.9
Total - Small group setting (Number)	3,403	11,368	951	551

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Percent)	3.4	58	32.6	69
Total - Extended time (Number)	2,319	1,879	143	79
Total - Extended time (Percent)	2.3	9.6	4.9	9.9
Total - Frequent breaks (Number)	392	3,057	48	114
Total - Frequent breaks (Percent)	0.4	15.6	1.6	14.3
Total - Number assessed	100,518	19,586	2,916	798

Incidence of IEP and ELL Students Receiving Selected Accommodations on the 2016 PSSA: Science Grade 8

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	96	1,359	60	67
PPT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	7.9	2.8	9.9
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	39	1,033	18	46
PPT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	6	0.9	6.8
PPT - Small group setting (Number)	1,021	9,583	338	333
PPT - Small group setting (Percent)	1	56	16	49.2
PPT - Extended time (Number)	1,929	1,507	141	54
PPT - Extended time (Percent)	2	8.8	6.7	8
PPT - Frequent breaks (Number)	87	1,132	8	55
PPT - Frequent breaks (Percent)	0.1	6.6	0.4	8.1
PPT - Number assessed	98,511	17,103	2,111	677
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	0	82	4	11
CBT - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	8.1	12.5	34.4
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	2	139	7	6
CBT - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	13.8	21.9	18.8
CBT - Small group setting (Number)	78	583	8	19
CBT - Small group setting (Percent)	2.2	57.8	25	59.4
CBT - Extended time (Number)	17	199	0	1
CBT - Extended time (Percent)	0.5	19.7	0	3.1
CBT - Frequent breaks (Number)	4	139	0	2
CBT - Frequent breaks (Percent)	0.1	13.8	0	6.3
CBT - Number assessed	3,481	1,008	32	32
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Number)	96	1,441	64	78
Total - Some language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0.1	8	3	11
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Number)	41	1,172	25	52
Total - All language questions/writing prompts/text-dependent analysis questions read aloud (Percent)	0	6.5	1.2	7.3
Total - Small group setting (Number)	1,099	10,166	346	352

Accommodation Received by Administration Mode	General Education (non-IEP or ELL)	IEP and non-ELL	ELL and non-IEP	Both IEP and ELL
Total - Small group setting (Percent)	1.1	56.1	16.1	49.6
Total - Extended time (Number)	1,946	1,706	141	55
Total - Extended time (Percent)	1.9	9.4	6.6	7.8
Total - Frequent breaks (Number)	91	1,271	8	57
Total - Frequent breaks (Percent)	0.1	7	0.4	8
Total - Number assessed	101,992	18,111	2,143	709

APPENDIX M: CUT SCORES AND SCALE TRANSFORMATIONS

Subject	Grade	Scaling Intercept	Scaling slope	LOSS	Scaled Score Cut: Basic	Scaled Score Cut: Prof.	Scaled Score Cut: Adv.
Mathematics	3	956.31	100	600	923	1000	1110
Mathematics	4	981.92	100	600	908	1000	1107
Mathematics	5	961.69	100	600	901	1000	1113
Mathematics	6	931.41	100	600	897	1000	1105
Mathematics	7	956.16	100	600	904	1000	1109
Mathematics	11	951.76	100	600	906	1000	1108
ELA	3	962.47	100	600	905	1000	1143
ELA	4	957.49	100	600	887	1000	1107
ELA	5	958.32	100	600	893	1000	1139
ELA	6	940.78	100	600	875	1000	1115
ELA	7	947.65	100	600	845	1000	1130
ELA	11	961.11	100	600	886	1000	1130
Science	7	1225.65	176.75	1050	1150	1275	1483
Science	8	1196.64	191.54	925	1150	1275	1464

APPENDIX N: RAW-TO-SCALED SCORE CONVERSION TABLES

Grade 3 English Language Arts

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-5.8467	1.8421	600	184	0	0.0	0	0.0	0
1	-4.6013	1.0286	600	103	0	0.0	0	0.0	0
2	-3.8515	0.7452	600	75	0	0.0	0	0.0	0
3	-3.3919	0.6215	623	62	2	0.0	2	0.0	1
4	-3.0525	0.5483	657	55	7	0.0	9	0.0	1
5	-2.7796	0.4988	685	50	12	0.0	21	0.0	1
6	-2.5494	0.4624	708	46	39	0.0	60	0.0	1
7	-2.3488	0.4343	728	43	61	0.0	121	0.1	1
8	-2.1701	0.4118	745	41	122	0.1	243	0.2	1
9	-2.0083	0.3933	762	39	218	0.2	461	0.4	1
10	-1.8597	0.3779	777	38	387	0.3	848	0.7	1
11	-1.7219	0.3648	790	36	545	0.4	1393	1.1	1
12	-1.5930	0.3536	803	35	825	0.7	2218	1.8	1
13	-1.4715	0.3438	815	34	972	0.8	3190	2.5	2
14	-1.3562	0.3354	827	34	1169	0.9	4359	3.5	3
15	-1.2463	0.3279	838	33	1408	1.1	5767	4.6	4
16	-1.1409	0.3214	848	32	1584	1.3	7351	5.9	5
17	-1.0395	0.3157	859	32	1677	1.3	9028	7.2	7
18	-0.9414	0.3106	868	31	1899	1.5	10927	8.7	8
19	-0.8463	0.3062	878	31	1926	1.5	12853	10.3	9
20	-0.7538	0.3023	887	30	2106	1.7	14959	11.9	11
21	-0.6635	0.2989	896	30	2047	1.6	17006	13.6	13
22	-0.5750	0.2960	905	30	2142	1.7	19148	15.3	14
23	-0.4882	0.2935	914	29	2252	1.8	21400	17.1	16
24	-0.4027	0.2914	922	29	2264	1.8	23664	18.9	18
25	-0.3183	0.2896	931	29	2430	1.9	26094	20.8	20
26	-0.2349	0.2882	939	29	2546	2.0	28640	22.9	22
27	-0.1521	0.2872	947	29	2583	2.1	31223	24.9	24
28	-0.0698	0.2865	955	29	2638	2.1	33861	27.0	26
29	0.0121	0.2861	964	29	2852	2.3	36713	29.3	28
30	0.0940	0.2860	972	29	2804	2.2	39517	31.5	30
31	0.1758	0.2863	980	29	3000	2.4	42517	33.9	33
32	0.2580	0.2868	988	29	3155	2.5	45672	36.5	35
33	0.3405	0.2877	997	29	3286	2.6	48958	39.1	38
34	0.4236	0.2889	1005	29	3318	2.6	52276	41.7	40

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
35	0.5075	0.2904	1013	29	3445	2.7	55721	44.5	43
36	0.5924	0.2923	1022	29	3422	2.7	59143	47.2	46
37	0.6784	0.2945	1030	29	3636	2.9	62779	50.1	49
38	0.7659	0.2971	1039	30	3627	2.9	66406	53.0	52
39	0.8551	0.3001	1048	30	3827	3.1	70233	56.1	55
40	0.9461	0.3035	1057	30	3933	3.1	74166	59.2	58
41	1.0394	0.3074	1066	31	4072	3.3	78238	62.4	61
42	1.1353	0.3118	1076	31	4128	3.3	82366	65.7	64
43	1.2340	0.3167	1086	32	4154	3.3	86520	69.1	67
44	1.3360	0.3223	1096	32	4179	3.3	90699	72.4	71
45	1.4419	0.3285	1107	33	4036	3.2	94735	75.6	74
46	1.5520	0.3355	1118	34	3934	3.1	98669	78.8	77
47	1.6671	0.3433	1129	34	3914	3.1	102583	81.9	80
48	1.7880	0.3522	1141	35	3669	2.9	106252	84.8	83
49	1.9155	0.3622	1154	36	3559	2.8	109811	87.6	86
50	2.0507	0.3735	1168	37	3130	2.5	112941	90.1	89
51	2.1950	0.3865	1182	39	2939	2.3	115880	92.5	91
52	2.3500	0.4013	1197	40	2579	2.1	118459	94.6	94
53	2.5179	0.4186	1214	42	2049	1.6	120508	96.2	95
54	2.7015	0.4388	1233	44	1637	1.3	122145	97.5	97
55	2.9046	0.4630	1253	46	1191	1.0	123336	98.4	98
56	3.1324	0.4926	1276	49	850	0.7	124186	99.1	99
57	3.3931	0.5300	1302	53	536	0.4	124722	99.6	99
58	3.6999	0.5800	1332	58	317	0.3	125039	99.8	99
59	4.0768	0.6524	1370	65	155	0.1	125194	99.9	99
60	4.5776	0.7737	1420	77	63	0.1	125257	100.0	99
61	5.3726	1.0513	1500	105	25	0.0	125282	100.0	99
62	6.6518	1.8556	1628	186	2	0.0	125284	100.0	99

Grade 4 English Language Arts

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-6.3385	1.8421	600	184	1	0.0	1	0.0	1
1	-5.0931	1.0286	600	103	0	0.0	1	0.0	1
2	-4.3434	0.7450	600	75	0	0.0	1	0.0	1
3	-3.8844	0.6208	600	62	0	0.0	1	0.0	1
4	-3.5462	0.5470	603	55	0	0.0	1	0.0	1
5	-3.2752	0.4965	630	50	5	0.0	6	0.0	1
6	-3.0475	0.4592	653	46	2	0.0	8	0.0	1
7	-2.8502	0.4301	672	43	14	0.0	22	0.0	1
8	-2.6755	0.4066	690	41	30	0.0	52	0.0	1
9	-2.5182	0.3871	706	39	40	0.0	92	0.1	1
10	-2.3748	0.3706	720	37	74	0.1	166	0.1	1
11	-2.2427	0.3565	733	36	134	0.1	300	0.2	1
12	-2.1201	0.3443	745	34	183	0.1	483	0.4	1
13	-2.0053	0.3335	757	33	290	0.2	773	0.6	1
14	-1.8972	0.3241	768	32	319	0.3	1092	0.9	1
15	-1.7949	0.3157	778	32	443	0.4	1535	1.2	1
16	-1.6977	0.3082	788	31	607	0.5	2142	1.7	1
17	-1.6048	0.3015	797	30	714	0.6	2856	2.3	2
18	-1.5157	0.2955	806	30	750	0.6	3606	2.9	3
19	-1.4300	0.2901	814	29	877	0.7	4483	3.6	3
20	-1.3473	0.2852	823	29	934	0.8	5417	4.4	4
21	-1.2672	0.2808	831	28	990	0.8	6407	5.2	5
22	-1.1895	0.2768	839	28	1094	0.9	7501	6.1	6
23	-1.1138	0.2733	846	27	1169	0.9	8670	7.0	7
24	-1.0400	0.2700	853	27	1154	0.9	9824	7.9	7
25	-0.9679	0.2672	861	27	1187	1.0	11011	8.9	8
26	-0.8972	0.2646	868	26	1298	1.1	12309	10.0	9
27	-0.8279	0.2623	875	26	1374	1.1	13683	11.1	11
28	-0.7596	0.2602	882	26	1437	1.2	15120	12.2	12
29	-0.6924	0.2584	888	26	1468	1.2	16588	13.4	13
30	-0.6260	0.2569	895	26	1535	1.2	18123	14.7	14
31	-0.5604	0.2555	901	26	1480	1.2	19603	15.9	15
32	-0.4954	0.2544	908	25	1607	1.3	21210	17.2	17
33	-0.4309	0.2535	914	25	1665	1.3	22875	18.5	18
34	-0.3668	0.2528	921	25	1701	1.4	24576	19.9	19
35	-0.3030	0.2523	927	25	1757	1.4	26333	21.3	21
36	-0.2394	0.2520	934	25	1843	1.5	28176	22.8	22

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	-0.1759	0.2519	940	25	1818	1.5	29994	24.3	24
38	-0.1124	0.2520	946	25	1945	1.6	31939	25.8	25
39	-0.0489	0.2522	953	25	2152	1.7	34091	27.6	27
40	0.0149	0.2527	959	25	2199	1.8	36290	29.4	28
41	0.0789	0.2533	965	25	2264	1.8	38554	31.2	30
42	0.1432	0.2541	972	25	2277	1.8	40831	33.0	32
43	0.2080	0.2551	978	26	2416	2.0	43247	35.0	34
44	0.2734	0.2563	985	26	2603	2.1	45850	37.1	36
45	0.3394	0.2576	991	26	2549	2.1	48399	39.2	38
46	0.4062	0.2592	998	26	2694	2.2	51093	41.3	40
47	0.4738	0.2610	1005	26	2783	2.3	53876	43.6	42
48	0.5425	0.2630	1012	26	2964	2.4	56840	46.0	45
49	0.6122	0.2652	1019	27	2936	2.4	59776	48.4	47
50	0.6832	0.2676	1026	27	3103	2.5	62879	50.9	50
51	0.7555	0.2703	1033	27	3254	2.6	66133	53.5	52
52	0.8294	0.2733	1040	27	3220	2.6	69353	56.1	55
53	0.9049	0.2765	1048	28	3272	2.6	72625	58.8	57
54	0.9824	0.2800	1056	28	3355	2.7	75980	61.5	60
55	1.0619	0.2839	1064	28	3422	2.8	79402	64.2	63
56	1.1436	0.2881	1072	29	3406	2.8	82808	67.0	66
57	1.2279	0.2926	1080	29	3454	2.8	86262	69.8	68
58	1.3150	0.2976	1089	30	3505	2.8	89767	72.6	71
59	1.4051	0.3029	1098	30	3388	2.7	93155	75.4	74
60	1.4986	0.3088	1107	31	3413	2.8	96568	78.1	77
61	1.5959	0.3151	1117	32	3244	2.6	99812	80.8	79
62	1.6973	0.3220	1127	32	3048	2.5	102860	83.2	82
63	1.8034	0.3294	1138	33	2881	2.3	105741	85.6	84
64	1.9145	0.3375	1149	34	2740	2.2	108481	87.8	87
65	2.0314	0.3462	1161	35	2365	1.9	110846	89.7	89
66	2.1545	0.3557	1173	36	2211	1.8	113057	91.5	91
67	2.2846	0.3659	1186	37	1897	1.5	114954	93.0	92
68	2.4225	0.3769	1200	38	1705	1.4	116659	94.4	94
69	2.569	0.3887	1214	39	1327	1.0737	117986	95.4602	95
70	2.725	0.4014	1230	40	1235	0.9992	119221	96.4595	96
71	2.8916	0.4151	1247	42	1047	0.8471	120268	97.3066	97
72	3.07	0.4298	1264	43	878	0.7104	121146	98.0169	98
73	3.2616	0.4458	1284	45	646	0.5227	121792	98.5396	98
74	3.4681	0.4633	1304	46	507	0.4102	122299	98.9498	99

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
75	3.6918	0.4829	1327	48	413	0.3342	122712	99.284	99
76	3.9356	0.505	1351	51	315	0.2549	123027	99.5388	99
77	4.2035	0.5306	1378	53	188	0.1521	123215	99.6909	99
78	4.5008	0.5607	1408	56	145	0.1173	123360	99.8082	99
79	4.8353	0.597	1441	60	103	0.0833	123463	99.8916	99
80	5.2184	0.6427	1479	64	58	0.0469	123521	99.9385	99
81	5.6708	0.7065	1525	71	28	0.0227	123549	99.9612	99
82	6.2414	0.8146	1582	81	23	0.0186	123572	99.9798	99
83	7.0949	1.0755	1667	108	16	0.0129	123588	99.9927	99
84	8.4062	1.8663	1798	187	9	0.0073	123597	100	99

Grade 5 English Language Arts

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-6.2053	1.8328	600	183	0	0.0	0	0.0	0
1	-4.9834	1.0128	600	101	0	0.0	0	0.0	0
2	-4.2644	0.7253	600	73	0	0.0	0	0.0	0
3	-3.8327	0.5999	600	60	1	0.0	1	0.0	1
4	-3.5182	0.5265	607	53	2	0.0	3	0.0	1
5	-3.2674	0.4775	632	48	2	0.0	5	0.0	1
6	-3.0567	0.4422	653	44	3	0.0	8	0.0	1
7	-2.8732	0.4155	671	42	8	0.0	16	0.0	1
8	-2.7094	0.3947	687	39	17	0.0	33	0.0	1
9	-2.5603	0.3779	702	38	40	0.0	73	0.1	1
10	-2.4229	0.3641	716	36	68	0.1	141	0.1	1
11	-2.2945	0.3526	729	35	104	0.1	245	0.2	1
12	-2.1737	0.3428	741	34	148	0.1	393	0.3	1
13	-2.0591	0.3344	752	33	229	0.2	622	0.5	1
14	-1.9498	0.3270	763	33	290	0.2	912	0.7	1
15	-1.8451	0.3204	774	32	370	0.3	1282	1.0	1
16	-1.7443	0.3146	784	31	441	0.4	1723	1.4	1
17	-1.6471	0.3092	794	31	570	0.5	2293	1.9	2
18	-1.5529	0.3044	803	30	688	0.6	2981	2.4	2
19	-1.4617	0.2999	812	30	759	0.6	3740	3.0	3
20	-1.3730	0.2957	821	30	859	0.7	4599	3.7	3
21	-1.2867	0.2918	830	29	954	0.8	5553	4.5	4
22	-1.2026	0.2882	838	29	1147	0.9	6700	5.5	5
23	-1.1205	0.2848	846	28	1231	1.0	7931	6.5	6
24	-1.0403	0.2817	854	28	1389	1.1	9320	7.6	7
25	-0.9618	0.2787	862	28	1446	1.2	10766	8.8	8
26	-0.8849	0.2760	870	28	1555	1.3	12321	10.0	9
27	-0.8095	0.2734	877	27	1606	1.3	13927	11.3	11
28	-0.7354	0.2710	885	27	1655	1.3	15582	12.7	12
29	-0.6625	0.2688	892	27	1724	1.4	17306	14.1	13
30	-0.5908	0.2668	899	27	1738	1.4	19044	15.5	15
31	-0.5201	0.2650	906	27	1772	1.4	20816	16.9	16
32	-0.4503	0.2633	913	26	1790	1.5	22606	18.4	18
33	-0.3814	0.2618	920	26	1828	1.5	24434	19.9	19
34	-0.3132	0.2605	927	26	1869	1.5	26303	21.4	21
35	-0.2456	0.2594	934	26	1965	1.6	28268	23.0	22
36	-0.1786	0.2584	940	26	1937	1.6	30205	24.6	24

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	-0.1120	0.2576	947	26	2017	1.6	32222	26.2	25
38	-0.0458	0.2570	954	26	1996	1.6	34218	27.8	27
39	0.0201	0.2565	960	26	2007	1.6	36225	29.5	29
40	0.0858	0.2562	967	26	2084	1.7	38309	31.2	30
41	0.1514	0.2561	973	26	2098	1.7	40407	32.9	32
42	0.2170	0.2561	980	26	2238	1.8	42645	34.7	34
43	0.2827	0.2564	987	26	2324	1.9	44969	36.6	36
44	0.3485	0.2568	993	26	2383	1.9	47352	38.5	38
45	0.4145	0.2573	1000	26	2529	2.1	49881	40.6	40
46	0.4810	0.2581	1006	26	2535	2.1	52416	42.7	42
47	0.5478	0.2590	1013	26	2565	2.1	54981	44.7	44
48	0.6152	0.2602	1020	26	2637	2.1	57618	46.9	46
49	0.6832	0.2615	1027	26	2659	2.2	60277	49.1	48
50	0.7520	0.2631	1034	26	2857	2.3	63134	51.4	50
51	0.8217	0.2649	1040	26	2828	2.3	65962	53.7	53
52	0.8923	0.2669	1048	27	2935	2.4	68897	56.1	55
53	0.9641	0.2691	1055	27	3075	2.5	71972	58.6	57
54	1.0372	0.2717	1062	27	3138	2.6	75110	61.1	60
55	1.1118	0.2745	1070	27	3169	2.6	78279	63.7	62
56	1.1880	0.2776	1077	28	3115	2.5	81394	66.2	65
57	1.2660	0.2810	1085	28	3193	2.6	84587	68.8	68
58	1.3460	0.2848	1093	28	3097	2.5	87684	71.4	70
59	1.4283	0.2890	1101	29	3208	2.6	90892	74.0	73
60	1.5132	0.2936	1110	29	3135	2.6	94027	76.5	75
61	1.6008	0.2986	1118	30	3061	2.5	97088	79.0	78
62	1.6916	0.3041	1127	30	2973	2.4	100061	81.4	80
63	1.7859	0.3101	1137	31	2905	2.4	102966	83.8	83
64	1.8840	0.3166	1147	32	2719	2.2	105685	86.0	85
65	1.9866	0.3238	1157	32	2525	2.1	108210	88.1	87
66	2.0939	0.3317	1168	33	2372	1.9	110582	90.0	89
67	2.2068	0.3402	1179	34	2073	1.7	112655	91.7	91
68	2.3257	0.3495	1191	35	1932	1.6	114587	93.3	92
69	2.4514	0.3597	1203	36	1626	1.3234	116213	94.5836	94
70	2.5847	0.3708	1217	37	1451	1.1809	117664	95.7646	95
71	2.7267	0.3829	1231	38	1166	0.949	118830	96.7135	96
72	2.8783	0.3961	1246	40	1013	0.8245	119843	97.538	97
73	3.041	0.4106	1262	41	747	0.608	120590	98.146	98
74	3.2161	0.4267	1280	43	647	0.5266	121237	98.6726	98

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
75	3.4058	0.4446	1299	44	489	0.398	121726	99.0705	99
76	3.6123	0.4648	1320	46	371	0.302	122097	99.3725	99
77	3.8392	0.4883	1342	49	266	0.2165	122363	99.589	99
78	4.0911	0.5163	1367	52	190	0.1546	122553	99.7436	99
79	4.3753	0.5512	1396	55	123	0.1001	122676	99.8437	99
80	4.7039	0.5974	1429	60	83	0.0676	122759	99.9113	99
81	5.0996	0.6651	1468	67	54	0.0439	122813	99.9552	99
82	5.6146	0.7809	1520	78	34	0.0277	122847	99.9829	99
83	6.4173	1.0531	1600	105	14	0.0114	122861	99.9943	99
84	7.697	1.8549	1728	185	7	0.0057	122868	100	99

Grade 6 English Language Arts

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-6.2455	1.8385	600	184	0	0.0	0	0.0	0
1	-5.0089	1.0231	600	102	0	0.0	0	0.0	0
2	-4.2692	0.7392	600	74	1	0.0	1	0.0	1
3	-3.8176	0.6158	600	62	0	0.0	1	0.0	1
4	-3.4843	0.5434	600	54	0	0.0	1	0.0	1
5	-3.2161	0.4946	619	49	2	0.0	3	0.0	1
6	-2.9896	0.4588	642	46	4	0.0	7	0.0	1
7	-2.7920	0.4310	662	43	5	0.0	12	0.0	1
8	-2.6160	0.4087	679	41	12	0.0	24	0.0	1
9	-2.4567	0.3901	695	39	26	0.0	50	0.0	1
10	-2.3107	0.3744	710	37	46	0.0	96	0.1	1
11	-2.1757	0.3607	723	36	77	0.1	173	0.1	1
12	-2.0499	0.3488	736	35	118	0.1	291	0.2	1
13	-1.9320	0.3383	748	34	153	0.1	444	0.4	1
14	-1.8208	0.3289	759	33	196	0.2	640	0.5	1
15	-1.7154	0.3204	769	32	245	0.2	885	0.7	1
16	-1.6152	0.3128	779	31	377	0.3	1262	1.0	1
17	-1.5195	0.3060	789	31	419	0.3	1681	1.3	1
18	-1.4278	0.2997	798	30	515	0.4	2196	1.8	2
19	-1.3397	0.2941	807	29	601	0.5	2797	2.2	2
20	-1.2547	0.2889	815	29	683	0.5	3480	2.8	3
21	-1.1726	0.2843	824	28	817	0.7	4297	3.4	3
22	-1.0930	0.2800	831	28	895	0.7	5192	4.1	4
23	-1.0157	0.2761	839	28	967	0.8	6159	4.9	5
24	-0.9405	0.2726	847	27	1063	0.8	7222	5.8	5
25	-0.8670	0.2694	854	27	1125	0.9	8347	6.7	6
26	-0.7952	0.2666	861	27	1175	0.9	9522	7.6	7
27	-0.7249	0.2640	868	26	1237	1.0	10759	8.6	8
28	-0.6558	0.2616	875	26	1263	1.0	12022	9.6	9
29	-0.5879	0.2596	882	26	1321	1.1	13343	10.7	10
30	-0.5210	0.2577	889	26	1359	1.1	14702	11.7	11
31	-0.4550	0.2561	895	26	1460	1.2	16162	12.9	12
32	-0.3898	0.2547	902	25	1470	1.2	17632	14.1	13
33	-0.3253	0.2535	908	25	1537	1.2	19169	15.3	15
34	-0.2613	0.2524	915	25	1560	1.2	20729	16.5	16
35	-0.1978	0.2516	921	25	1707	1.4	22436	17.9	17
36	-0.1347	0.2509	927	25	1656	1.3	24092	19.2	19

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	-0.0718	0.2505	934	25	1764	1.4	25856	20.6	20
38	-0.0092	0.2501	940	25	1885	1.5	27741	22.1	21
39	0.0533	0.2500	946	25	1947	1.6	29688	23.7	23
40	0.1158	0.2500	952	25	1939	1.5	31627	25.2	24
41	0.1784	0.2502	959	25	1968	1.6	33595	26.8	26
42	0.2410	0.2505	965	25	2136	1.7	35731	28.5	28
43	0.3039	0.2510	971	25	2283	1.8	38014	30.3	29
44	0.3670	0.2516	977	25	2289	1.8	40303	32.2	31
45	0.4305	0.2524	984	25	2477	2.0	42780	34.2	33
46	0.4945	0.2534	990	25	2653	2.1	45433	36.3	35
47	0.5590	0.2546	997	25	2639	2.1	48072	38.4	37
48	0.6241	0.2559	1003	26	2701	2.2	50773	40.5	39
49	0.6900	0.2574	1010	26	2838	2.3	53611	42.8	42
50	0.7567	0.2591	1016	26	2930	2.3	56541	45.1	44
51	0.8243	0.2610	1023	26	3093	2.5	59634	47.6	46
52	0.8930	0.2632	1030	26	3085	2.5	62719	50.1	49
53	0.9629	0.2655	1037	27	3263	2.6	65982	52.7	51
54	1.0341	0.2681	1044	27	3398	2.7	69380	55.4	54
55	1.1067	0.2710	1051	27	3425	2.7	72805	58.1	57
56	1.1810	0.2741	1059	27	3372	2.7	76177	60.8	59
57	1.2571	0.2776	1066	28	3438	2.7	79615	63.6	62
58	1.3352	0.2814	1074	28	3524	2.8	83139	66.4	65
59	1.4156	0.2856	1082	29	3485	2.8	86624	69.2	68
60	1.4984	0.2902	1091	29	3427	2.7	90051	71.9	71
61	1.5841	0.2953	1099	30	3384	2.7	93435	74.6	73
62	1.6729	0.3008	1108	30	3388	2.7	96823	77.3	76
63	1.7652	0.3069	1117	31	3207	2.6	100030	79.9	79
64	1.8615	0.3137	1127	31	3210	2.6	103240	82.4	81
65	1.9622	0.3211	1137	32	2874	2.3	106114	84.7	84
66	2.0679	0.3294	1148	33	2786	2.2	108900	86.9	86
67	2.1794	0.3385	1159	34	2608	2.1	111508	89.0	88
68	2.2974	0.3487	1171	35	2410	1.9	113918	90.9	90
69	2.4229	0.36	1183	36	2048	1.635	115966	92.578	92
70	2.557	0.3725	1196	37	1875	1.4969	117841	94.0749	93
71	2.7009	0.3865	1211	39	1619	1.2925	119460	95.3673	95
72	2.8563	0.402	1226	40	1393	1.1121	120853	96.4794	96
73	3.0248	0.4192	1243	42	1095	0.8742	121948	97.3536	97
74	3.2085	0.4382	1262	44	891	0.7113	122839	98.0649	98

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
75	3.4095	0.4589	1282	46	734	0.586	123573	98.6508	98
76	3.6305	0.4814	1304	48	508	0.4055	124081	99.0564	99
77	3.874	0.506	1328	51	332	0.265	124413	99.3214	99
78	4.1439	0.5335	1355	53	306	0.2443	124719	99.5657	99
79	4.4456	0.5661	1385	57	205	0.1637	124924	99.7294	99
80	4.7894	0.6087	1420	61	128	0.1022	125052	99.8316	99
81	5.1967	0.672	1460	67	81	0.0647	125133	99.8962	99
82	5.7186	0.7838	1513	78	72	0.0575	125205	99.9537	99
83	6.5237	1.0533	1593	105	42	0.0335	125247	99.9872	99
84	7.8029	1.8544	1721	185	16	0.0128	125263	100	99

Grade 7 English Language Arts

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-6.4571	1.8399	600	184	0	0.0	0	0.0	0
1	-5.2171	1.0252	600	103	0	0.0	0	0.0	0
2	-4.4735	0.7415	600	74	0	0.0	0	0.0	0
3	-4.0188	0.6180	600	62	0	0.0	0	0.0	0
4	-3.6832	0.5453	600	55	0	0.0	0	0.0	0
5	-3.4132	0.4963	606	50	1	0.0	1	0.0	1
6	-3.1851	0.4604	629	46	0	0.0	1	0.0	1
7	-2.9861	0.4329	649	43	2	0.0	3	0.0	1
8	-2.8084	0.4108	667	41	7	0.0	10	0.0	1
9	-2.6472	0.3928	683	39	15	0.0	25	0.0	1
10	-2.4989	0.3777	698	38	27	0.0	52	0.0	1
11	-2.3612	0.3648	712	36	40	0.0	92	0.1	1
12	-2.2322	0.3538	724	35	69	0.1	161	0.1	1
13	-2.1105	0.3441	737	34	125	0.1	286	0.2	1
14	-1.9950	0.3357	748	34	162	0.1	448	0.4	1
15	-1.8849	0.3282	759	33	206	0.2	654	0.5	1
16	-1.7794	0.3215	770	32	279	0.2	933	0.7	1
17	-1.6780	0.3154	780	32	355	0.3	1288	1.0	1
18	-1.5803	0.3100	790	31	442	0.4	1730	1.4	1
19	-1.4857	0.3051	799	31	512	0.4	2242	1.8	2
20	-1.3940	0.3006	808	30	629	0.5	2871	2.3	2
21	-1.3049	0.2965	817	30	672	0.5	3543	2.8	3
22	-1.2181	0.2928	826	29	799	0.6	4342	3.5	3
23	-1.1334	0.2893	834	29	930	0.7	5272	4.2	4
24	-1.0506	0.2861	843	29	1007	0.8	6279	5.0	5
25	-0.9695	0.2832	851	28	1107	0.9	7386	5.9	5
26	-0.8901	0.2806	859	28	1236	1.0	8622	6.9	6
27	-0.8121	0.2781	866	28	1300	1.0	9922	7.9	7
28	-0.7354	0.2758	874	28	1386	1.1	11308	9.0	8
29	-0.6599	0.2737	882	27	1473	1.2	12781	10.2	10
30	-0.5855	0.2719	889	27	1636	1.3	14417	11.5	11
31	-0.5120	0.2701	896	27	1713	1.4	16130	12.9	12
32	-0.4395	0.2686	904	27	1795	1.4	17925	14.3	14
33	-0.3677	0.2672	911	27	1822	1.5	19747	15.8	15
34	-0.2967	0.2659	918	27	1993	1.6	21740	17.4	17
35	-0.2263	0.2649	925	26	2085	1.7	23825	19.1	18
36	-0.1564	0.2639	932	26	2104	1.7	25929	20.7	20

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	-0.0869	0.2631	939	26	2194	1.8	28123	22.5	22
38	-0.0179	0.2625	946	26	2274	1.8	30397	24.3	23
39	0.0509	0.2620	953	26	2400	1.9	32797	26.2	25
40	0.1194	0.2616	960	26	2373	1.9	35170	28.1	27
41	0.1878	0.2614	966	26	2446	2.0	37616	30.1	29
42	0.2561	0.2613	973	26	2467	2.0	40083	32.1	31
43	0.3244	0.2614	980	26	2576	2.1	42659	34.1	33
44	0.3927	0.2616	987	26	2703	2.2	45362	36.3	35
45	0.4613	0.2620	994	26	2761	2.2	48123	38.5	37
46	0.5300	0.2625	1001	26	2740	2.2	50863	40.7	40
47	0.5991	0.2632	1008	26	2983	2.4	53846	43.1	42
48	0.6686	0.2641	1015	26	2934	2.3	56780	45.4	44
49	0.7386	0.2651	1022	27	3053	2.4	59833	47.9	47
50	0.8092	0.2663	1029	27	3203	2.6	63036	50.4	49
51	0.8805	0.2678	1036	27	3135	2.5	66171	53.0	52
52	0.9527	0.2694	1043	27	3237	2.6	69408	55.5	54
53	1.0257	0.2713	1050	27	3278	2.6	72686	58.2	57
54	1.0999	0.2733	1058	27	3325	2.7	76011	60.8	59
55	1.1752	0.2757	1065	28	3468	2.8	79479	63.6	62
56	1.2519	0.2783	1073	28	3336	2.7	82815	66.3	65
57	1.3302	0.2813	1081	28	3372	2.7	86187	69.0	68
58	1.4102	0.2845	1089	28	3336	2.7	89523	71.6	70
59	1.4922	0.2882	1097	29	3314	2.7	92837	74.3	73
60	1.5764	0.2922	1105	29	3257	2.6	96094	76.9	76
61	1.6630	0.2966	1114	30	3146	2.5	99240	79.4	78
62	1.7525	0.3016	1123	30	3043	2.4	102283	81.9	81
63	1.8451	0.3071	1132	31	2864	2.3	105147	84.1	83
64	1.9412	0.3132	1142	31	2730	2.2	107877	86.3	85
65	2.0414	0.3200	1152	32	2540	2.0	110417	88.4	87
66	2.1462	0.3275	1162	33	2288	1.8	112705	90.2	89
67	2.2561	0.3359	1173	34	2134	1.7	114839	91.9	91
68	2.3721	0.3452	1185	35	1916	1.5	116755	93.4	93
69	2.4948	0.3556	1197	36	1657	1.326	118412	94.7592	94
70	2.6253	0.3671	1210	37	1462	1.17	119874	95.9291	95
71	2.7647	0.38	1224	38	1241	0.9931	121115	96.9222	96
72	2.9145	0.3943	1239	39	1047	0.8379	122162	97.7601	97
73	3.0762	0.4101	1255	41	796	0.637	122958	98.3971	98
74	3.2515	0.4276	1273	43	585	0.4681	123543	98.8652	99

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
75	3.4426	0.4469	1292	45	433	0.3465	123976	99.2118	99
76	3.6519	0.4683	1313	47	290	0.2321	124266	99.4438	99
77	3.8823	0.4921	1336	49	236	0.1889	124502	99.6327	99
78	4.1378	0.5195	1361	52	169	0.1352	124671	99.7679	99
79	4.4247	0.5529	1390	55	119	0.0952	124790	99.8632	99
80	4.754	0.5969	1423	60	67	0.0536	124857	99.9168	99
81	5.1476	0.6623	1462	66	50	0.04	124907	99.9568	99
82	5.6572	0.7764	1513	78	32	0.0256	124939	99.9824	99
83	6.4515	1.0485	1593	105	20	0.016	124959	99.9984	99
84	7.7239	1.8519	1720	185	2	0.0016	124961	100	99

Grade 8 English Language Arts

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-6.5957	1.8369	600	184	0	0.0	0	0.0	0
1	-5.3633	1.0201	600	102	0	0.0	0	0.0	0
2	-4.6297	0.7350	600	74	0	0.0	0	0.0	0
3	-4.1843	0.6109	600	61	0	0.0	0	0.0	0
4	-3.8569	0.5380	600	54	2	0.0	2	0.0	1
5	-3.5946	0.4889	602	49	0	0.0	2	0.0	1
6	-3.3734	0.4531	624	45	2	0.0	4	0.0	1
7	-3.1808	0.4256	643	43	1	0.0	5	0.0	1
8	-3.0092	0.4036	660	40	7	0.0	12	0.0	1
9	-2.8537	0.3855	676	39	7	0.0	19	0.0	1
10	-2.7111	0.3702	690	37	23	0.0	42	0.0	1
11	-2.5789	0.3572	703	36	41	0.0	83	0.1	1
12	-2.4554	0.3459	716	35	65	0.1	148	0.1	1
13	-2.3392	0.3360	727	34	94	0.1	242	0.2	1
14	-2.2293	0.3272	738	33	166	0.1	408	0.3	1
15	-2.1249	0.3193	749	32	194	0.2	602	0.5	1
16	-2.0252	0.3122	759	31	249	0.2	851	0.7	1
17	-1.9298	0.3058	768	31	318	0.3	1169	0.9	1
18	-1.8380	0.3000	777	30	368	0.3	1537	1.2	1
19	-1.7496	0.2947	786	29	424	0.3	1961	1.6	1
20	-1.6642	0.2898	795	29	464	0.4	2425	2.0	2
21	-1.5815	0.2854	803	29	571	0.5	2996	2.4	2
22	-1.5013	0.2813	811	28	618	0.5	3614	2.9	3
23	-1.4232	0.2776	819	28	709	0.6	4323	3.5	3
24	-1.3470	0.2742	826	27	745	0.6	5068	4.1	4
25	-1.2727	0.2711	834	27	847	0.7	5915	4.8	4
26	-1.2000	0.2682	841	27	952	0.8	6867	5.6	5
27	-1.1288	0.2656	848	27	981	0.8	7848	6.4	6
28	-1.0588	0.2633	855	26	1069	0.9	8917	7.2	7
29	-0.9901	0.2611	862	26	1155	0.9	10072	8.2	8
30	-0.9224	0.2592	869	26	1191	1.0	11263	9.1	9
31	-0.8557	0.2575	876	26	1262	1.0	12525	10.2	10
32	-0.7898	0.2560	882	26	1359	1.1	13884	11.3	11
33	-0.7246	0.2546	889	25	1471	1.2	15355	12.5	12
34	-0.6600	0.2535	895	25	1441	1.2	16796	13.6	13
35	-0.5961	0.2525	902	25	1560	1.3	18356	14.9	14
36	-0.5325	0.2517	908	25	1632	1.3	19988	16.2	16

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	-0.4693	0.2511	914	25	1695	1.4	21683	17.6	17
38	-0.4064	0.2506	920	25	1745	1.4	23428	19.0	18
39	-0.3437	0.2503	927	25	1888	1.5	25316	20.5	20
40	-0.2811	0.2502	933	25	1893	1.5	27209	22.1	21
41	-0.2185	0.2502	939	25	2020	1.6	29229	23.7	23
42	-0.1558	0.2504	946	25	2115	1.7	31344	25.4	25
43	-0.0931	0.2507	952	25	2194	1.8	33538	27.2	26
44	-0.0301	0.2512	958	25	2300	1.9	35838	29.1	28
45	0.0332	0.2519	964	25	2368	1.9	38206	31.0	30
46	0.0969	0.2528	971	25	2435	2.0	40641	33.0	32
47	0.1610	0.2538	977	25	2588	2.1	43229	35.1	34
48	0.2258	0.2551	984	26	2641	2.1	45870	37.2	36
49	0.2912	0.2565	990	26	2650	2.1	48520	39.4	38
50	0.3574	0.2581	997	26	2825	2.3	51345	41.7	41
51	0.4244	0.2599	1004	26	2866	2.3	54211	44.0	43
52	0.4925	0.2619	1010	26	3006	2.4	57217	46.4	45
53	0.5617	0.2642	1017	26	3075	2.5	60292	48.9	48
54	0.6321	0.2667	1024	27	3104	2.5	63396	51.4	50
55	0.7039	0.2694	1032	27	3192	2.6	66588	54.0	53
56	0.7773	0.2724	1039	27	3147	2.6	69735	56.6	55
57	0.8524	0.2757	1046	28	3214	2.6	72949	59.2	58
58	0.9294	0.2793	1054	28	3158	2.6	76107	61.7	60
59	1.0085	0.2833	1062	28	3200	2.6	79307	64.3	63
60	1.0900	0.2876	1070	29	3328	2.7	82635	67.0	66
61	1.1741	0.2924	1079	29	3313	2.7	85948	69.7	68
62	1.2610	0.2975	1087	30	3288	2.7	89236	72.4	71
63	1.3513	0.3032	1096	30	3323	2.7	92559	75.1	74
64	1.4451	0.3095	1106	31	3193	2.6	95752	77.7	76
65	1.5430	0.3163	1115	32	3019	2.4	98771	80.1	79
66	1.6454	0.3239	1126	32	2990	2.4	101761	82.5	81
67	1.7530	0.3322	1136	33	2872	2.3	104633	84.9	84
68	1.8664	0.3415	1148	34	2715	2.2	107348	87.1	86
69	1.9865	0.3517	1160	35	2465	1.9996	109813	89.0797	88
70	2.1142	0.363	1173	36	2349	1.9055	112162	90.9852	90
71	2.2505	0.3756	1186	38	2131	1.7287	114293	92.7139	92
72	2.3968	0.3896	1201	39	1852	1.5023	116145	94.2162	93
73	2.5547	0.4052	1217	41	1680	1.3628	117825	95.579	95
74	2.7258	0.4224	1234	42	1342	1.0886	119167	96.6676	96

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
75	2.9123	0.4415	1252	44	1136	0.9215	120303	97.5891	97
76	3.1166	0.4628	1273	46	884	0.7171	121187	98.3062	98
77	3.3419	0.4869	1295	49	604	0.49	121791	98.7962	99
78	3.5924	0.5148	1320	51	484	0.3926	122275	99.1888	99
79	3.8747	0.5489	1349	55	349	0.2831	122624	99.4719	99
80	4.2	0.5939	1381	59	242	0.1963	122866	99.6682	99
81	4.5903	0.6601	1420	66	169	0.1371	123035	99.8053	99
82	5.0976	0.7751	1471	78	127	0.103	123162	99.9083	99
83	5.8903	1.0479	1550	105	83	0.0673	123245	99.9757	99
84	7.1621	1.8518	1677	185	30	0.0243	123275	100	99

Grade 3 Mathematics

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-6.2427	1.8333	600	183	0	0.0	0	0.0	0
1	-5.0192	1.0139	600	101	0	0.0	0	0.0	0
2	-4.2980	0.7267	600	73	0	0.0	0	0.0	0
3	-3.8643	0.6014	600	60	1	0.0	1	0.0	1
4	-3.5482	0.5278	601	53	2	0.0	3	0.0	1
5	-3.2965	0.4783	627	48	1	0.0	4	0.0	1
6	-3.0853	0.4423	648	44	12	0.0	16	0.0	1
7	-2.9020	0.4148	666	41	10	0.0	26	0.0	1
8	-2.7392	0.3930	682	39	27	0.0	53	0.0	1
9	-2.5918	0.3753	697	38	51	0.0	104	0.1	1
10	-2.4566	0.3605	711	36	90	0.1	194	0.2	1
11	-2.3311	0.3481	723	35	165	0.1	359	0.3	1
12	-2.2137	0.3375	735	34	272	0.2	631	0.5	1
13	-2.1029	0.3283	746	33	376	0.3	1007	0.8	1
14	-1.9978	0.3204	757	32	518	0.4	1525	1.2	1
15	-1.8974	0.3134	767	31	653	0.5	2178	1.7	1
16	-1.8011	0.3072	776	31	761	0.6	2939	2.3	2
17	-1.7085	0.3018	785	30	900	0.7	3839	3.1	3
18	-1.6189	0.2970	794	30	1095	0.9	4934	3.9	3
19	-1.5320	0.2927	803	29	1196	1.0	6130	4.9	4
20	-1.4474	0.2888	812	29	1244	1.0	7374	5.9	5
21	-1.3650	0.2854	820	29	1294	1.0	8668	6.9	6
22	-1.2844	0.2824	828	28	1352	1.1	10020	8.0	7
23	-1.2054	0.2797	836	28	1448	1.2	11468	9.1	9
24	-1.1279	0.2773	844	28	1467	1.2	12935	10.3	10
25	-1.0515	0.2752	851	28	1592	1.3	14527	11.6	11
26	-0.9763	0.2734	859	27	1606	1.3	16133	12.9	12
27	-0.9020	0.2718	866	27	1585	1.3	17718	14.1	13
28	-0.8285	0.2704	873	27	1727	1.4	19445	15.5	15
29	-0.7557	0.2692	881	27	1772	1.4	21217	16.9	16
30	-0.6835	0.2683	888	27	1844	1.5	23061	18.4	18
31	-0.6117	0.2675	895	27	1871	1.5	24932	19.9	19
32	-0.5403	0.2669	902	27	1950	1.6	26882	21.4	21
33	-0.4692	0.2665	909	27	2014	1.6	28896	23.0	22
34	-0.3983	0.2662	916	27	2000	1.6	30896	24.6	24
35	-0.3274	0.2662	924	27	2107	1.7	33003	26.3	25
36	-0.2565	0.2663	931	27	2217	1.8	35220	28.1	27

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	-0.1856	0.2665	938	27	2188	1.7	37408	29.8	29
38	-0.1144	0.2670	945	27	2278	1.8	39686	31.6	31
39	-0.0430	0.2676	952	27	2391	1.9	42077	33.5	33
40	0.0288	0.2683	959	27	2421	1.9	44498	35.5	35
41	0.1010	0.2693	966	27	2422	1.9	46920	37.4	36
42	0.1739	0.2704	974	27	2507	2.0	49427	39.4	38
43	0.2473	0.2717	981	27	2447	2.0	51874	41.4	40
44	0.3216	0.2733	988	27	2656	2.1	54530	43.5	42
45	0.3967	0.2750	996	28	2668	2.1	57198	45.6	45
46	0.4729	0.2770	1004	28	2747	2.2	59945	47.8	47
47	0.5502	0.2792	1011	28	2759	2.2	62704	50.0	49
48	0.6288	0.2816	1019	28	2794	2.2	65498	52.2	51
49	0.7088	0.2843	1027	28	2824	2.3	68322	54.5	53
50	0.7905	0.2874	1035	29	2942	2.3	71264	56.8	56
51	0.8741	0.2908	1044	29	2976	2.4	74240	59.2	58
52	0.9597	0.2945	1052	29	3041	2.4	77281	61.6	60
53	1.0477	0.2987	1061	30	2946	2.3	80227	64.0	63
54	1.1383	0.3034	1070	30	2998	2.4	83225	66.4	65
55	1.2319	0.3086	1080	31	3074	2.5	86299	68.8	68
56	1.3290	0.3145	1089	31	3102	2.5	89401	71.3	70
57	1.4300	0.3212	1099	32	3095	2.5	92496	73.7	73
58	1.5355	0.3288	1110	33	3091	2.5	95587	76.2	75
59	1.6464	0.3374	1121	34	3264	2.6	98851	78.8	78
60	1.7636	0.3474	1133	35	3208	2.6	102059	81.4	80
61	1.8883	0.3590	1145	36	3144	2.5	105203	83.9	83
62	2.0220	0.3727	1159	37	3113	2.5	108316	86.4	85
63	2.1668	0.3889	1173	39	2979	2.4	111295	88.7	88
64	2.3255	0.4085	1189	41	2929	2.3	114224	91.1	90
65	2.5021	0.4326	1207	43	2613	2.1	116837	93.2	92
66	2.7022	0.4629	1227	46	2417	1.9	119254	95.1	94
67	2.9342	0.5021	1250	50	2087	1.7	121341	96.7	96
68	3.2122	0.5549	1278	55	1723	1.4	123064	98.1	97
69	3.5613	0.6313	1312	63	1208	0.9632	124272	99.0847	99
70	4.0362	0.7575	1360	76	757	0.6036	125029	99.6882	99
71	4.8079	1.0408	1437	104	315	0.2512	125344	99.9394	99
72	6.0723	1.8501	1564	185	76	0.0606	125420	100	99

Grade 4 Mathematics

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-6.2839	1.8327	600	183	1	0.0	1	0.0	1
1	-5.0622	1.0126	600	101	0	0.0	1	0.0	1
2	-4.3436	0.7249	600	72	0	0.0	1	0.0	1
3	-3.9126	0.5991	600	60	1	0.0	2	0.0	1
4	-3.5994	0.5250	622	53	0	0.0	2	0.0	1
5	-3.3506	0.4751	647	48	6	0.0	8	0.0	1
6	-3.1425	0.4387	668	44	7	0.0	15	0.0	1
7	-2.9626	0.4108	686	41	24	0.0	39	0.0	1
8	-2.8031	0.3885	702	39	48	0.0	87	0.1	1
9	-2.6593	0.3704	716	37	95	0.1	182	0.1	1
10	-2.5278	0.3552	729	36	200	0.2	382	0.3	1
11	-2.4063	0.3424	741	34	314	0.3	696	0.6	1
12	-2.2929	0.3313	753	33	474	0.4	1170	0.9	1
13	-2.1863	0.3218	763	32	654	0.5	1824	1.5	1
14	-2.0855	0.3134	773	31	862	0.7	2686	2.2	2
15	-1.9897	0.3060	783	31	1105	0.9	3791	3.1	3
16	-1.8981	0.2994	792	30	1244	1.0	5035	4.1	4
17	-1.8102	0.2936	801	29	1486	1.2	6521	5.3	5
18	-1.7256	0.2884	809	29	1655	1.3	8176	6.6	6
19	-1.6438	0.2837	818	28	1759	1.4	9935	8.0	7
20	-1.5645	0.2795	825	28	1737	1.4	11672	9.4	9
21	-1.4874	0.2758	833	28	1897	1.5	13569	10.9	10
22	-1.4122	0.2725	841	27	1969	1.6	15538	12.5	12
23	-1.3388	0.2696	848	27	1984	1.6	17522	14.1	13
24	-1.2669	0.2669	855	27	2037	1.6	19559	15.8	15
25	-1.1962	0.2646	862	26	2058	1.7	21617	17.4	17
26	-1.1267	0.2626	869	26	2080	1.7	23697	19.1	18
27	-1.0582	0.2609	876	26	2041	1.6	25738	20.8	20
28	-0.9906	0.2594	883	26	2004	1.6	27742	22.4	22
29	-0.9236	0.2581	890	26	2227	1.8	29969	24.2	23
30	-0.8573	0.2571	896	26	2165	1.7	32134	25.9	25
31	-0.7914	0.2563	903	26	2074	1.7	34208	27.6	27
32	-0.7258	0.2557	909	26	2189	1.8	36397	29.4	28
33	-0.6605	0.2553	916	26	2166	1.7	38563	31.1	30
34	-0.5954	0.2551	922	26	2253	1.8	40816	32.9	32
35	-0.5303	0.2551	929	26	2265	1.8	43081	34.8	34
36	-0.4652	0.2553	935	26	2221	1.8	45302	36.6	36

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	-0.3999	0.2556	942	26	2174	1.8	47476	38.3	37
38	-0.3345	0.2561	948	26	2327	1.9	49803	40.2	39
39	-0.2688	0.2567	955	26	2232	1.8	52035	42.0	41
40	-0.2027	0.2576	962	26	2245	1.8	54280	43.8	43
41	-0.1361	0.2585	968	26	2305	1.9	56585	45.7	45
42	-0.0689	0.2597	975	26	2402	1.9	58987	47.6	47
43	-0.0011	0.2611	982	26	2483	2.0	61470	49.6	49
44	0.0674	0.2626	989	26	2376	1.9	63846	51.5	51
45	0.1368	0.2643	996	26	2419	2.0	66265	53.5	52
46	0.2072	0.2663	1003	27	2433	2.0	68698	55.4	54
47	0.2787	0.2685	1010	27	2449	2.0	71147	57.4	56
48	0.3514	0.2709	1017	27	2496	2.0	73643	59.4	58
49	0.4255	0.2735	1024	27	2494	2.0	76137	61.4	60
50	0.5011	0.2764	1032	28	2589	2.1	78726	63.5	62
51	0.5784	0.2796	1040	28	2458	2.0	81184	65.5	65
52	0.6575	0.2832	1048	28	2492	2.0	83676	67.5	67
53	0.7388	0.2870	1056	29	2673	2.2	86349	69.7	69
54	0.8224	0.2913	1064	29	2611	2.1	88960	71.8	71
55	0.9086	0.2959	1073	30	2569	2.1	91529	73.8	73
56	0.9976	0.3010	1082	30	2580	2.1	94109	75.9	75
57	1.0899	0.3067	1091	31	2546	2.1	96655	78.0	77
58	1.1859	0.3131	1101	31	2701	2.2	99356	80.2	79
59	1.2862	0.3203	1111	32	2520	2.0	101876	82.2	81
60	1.3914	0.3286	1121	33	2554	2.1	104430	84.3	83
61	1.5026	0.3384	1132	34	2487	2.0	106917	86.3	85
62	1.6210	0.3500	1144	35	2515	2.0	109432	88.3	87
63	1.7483	0.3642	1157	36	2345	1.9	111777	90.2	89
64	1.8872	0.3817	1171	38	2308	1.9	114085	92.0	91
65	2.0412	0.4039	1186	40	2067	1.7	116152	93.7	93
66	2.2156	0.4324	1203	43	1944	1.6	118096	95.3	95
67	2.4185	0.4702	1224	47	1670	1.3	119766	96.6	96
68	2.6635	0.5223	1248	52	1493	1.2	121259	97.8	97
69	2.9753	0.5993	1279	60	1167	0.9416	122426	98.7784	98
70	3.4087	0.7281	1323	73	824	0.6648	123250	99.4433	99
71	4.1348	1.0179	1395	102	492	0.397	123742	99.8402	99
72	5.3657	1.8369	1518	184	198	0.1598	123940	100	99

Grade 5 Mathematics

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-5.5962	1.8309	600	183	0	0.0	0	0.0	0
1	-4.3790	1.0094	600	101	0	0.0	0	0.0	0
2	-3.6668	0.7205	600	72	0	0.0	0	0.0	0
3	-3.2420	0.5939	637	59	1	0.0	1	0.0	1
4	-2.9348	0.5193	668	52	2	0.0	3	0.0	1
5	-2.6919	0.4689	693	47	11	0.0	14	0.0	1
6	-2.4896	0.4322	713	43	17	0.0	31	0.0	1
7	-2.3151	0.4041	730	40	50	0.0	81	0.1	1
8	-2.1610	0.3818	746	38	146	0.1	227	0.2	1
9	-2.0223	0.3635	759	36	230	0.2	457	0.4	1
10	-1.8958	0.3484	772	35	437	0.4	894	0.7	1
11	-1.7789	0.3356	784	34	736	0.6	1630	1.3	1
12	-1.6701	0.3246	795	32	1030	0.8	2660	2.2	2
13	-1.5678	0.3152	805	32	1396	1.1	4056	3.3	3
14	-1.4711	0.3070	815	31	1794	1.5	5850	4.8	4
15	-1.3791	0.2997	824	30	2173	1.8	8023	6.5	6
16	-1.2912	0.2934	833	29	2469	2.0	10492	8.5	8
17	-1.2068	0.2878	841	29	2615	2.1	13107	10.7	10
18	-1.1254	0.2828	849	28	2776	2.3	15883	12.9	12
19	-1.0466	0.2784	857	28	2845	2.3	18728	15.2	14
20	-0.9702	0.2745	865	27	2672	2.2	21400	17.4	16
21	-0.8959	0.2710	872	27	2708	2.2	24108	19.6	19
22	-0.8232	0.2679	879	27	2674	2.2	26782	21.8	21
23	-0.7522	0.2652	886	27	2627	2.1	29409	23.9	23
24	-0.6825	0.2628	893	26	2464	2.0	31873	25.9	25
25	-0.6141	0.2606	900	26	2555	2.1	34428	28.0	27
26	-0.5466	0.2588	907	26	2390	1.9	36818	29.9	29
27	-0.4801	0.2571	914	26	2368	1.9	39186	31.9	31
28	-0.4144	0.2558	920	26	2334	1.9	41520	33.8	33
29	-0.3493	0.2546	927	25	2291	1.9	43811	35.6	35
30	-0.2847	0.2536	933	25	2248	1.8	46059	37.5	37
31	-0.2206	0.2529	940	25	2393	1.9	48452	39.4	38
32	-0.1568	0.2523	946	25	2254	1.8	50706	41.2	40
33	-0.0933	0.2519	952	25	2241	1.8	52947	43.1	42
34	-0.0299	0.2517	959	25	2236	1.8	55183	44.9	44
35	0.0334	0.2516	965	25	2195	1.8	57378	46.7	46
36	0.0968	0.2517	971	25	2281	1.9	59659	48.5	48

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	0.1602	0.2520	978	25	2194	1.8	61853	50.3	49
38	0.2238	0.2524	984	25	2266	1.8	64119	52.1	51
39	0.2877	0.2531	990	25	2153	1.8	66272	53.9	53
40	0.3519	0.2538	997	25	2146	1.7	68418	55.6	55
41	0.4166	0.2548	1003	25	2070	1.7	70488	57.3	56
42	0.4818	0.2559	1010	26	2199	1.8	72687	59.1	58
43	0.5476	0.2573	1016	26	2132	1.7	74819	60.8	60
44	0.6142	0.2588	1023	26	2123	1.7	76942	62.6	62
45	0.6816	0.2605	1030	26	2106	1.7	79048	64.3	63
46	0.7499	0.2624	1037	26	2099	1.7	81147	66.0	65
47	0.8194	0.2646	1044	26	2211	1.8	83358	67.8	67
48	0.8900	0.2670	1051	27	2238	1.8	85596	69.6	69
49	0.9621	0.2698	1058	27	2132	1.7	87728	71.3	70
50	1.0356	0.2728	1065	27	2069	1.7	89797	73.0	72
51	1.1109	0.2761	1073	28	2099	1.7	91896	74.7	74
52	1.1882	0.2798	1081	28	2057	1.7	93953	76.4	76
53	1.2676	0.2840	1088	28	2188	1.8	96141	78.2	77
54	1.3496	0.2886	1097	29	2081	1.7	98222	79.9	79
55	1.4343	0.2937	1105	29	2066	1.7	100288	81.5	81
56	1.5222	0.2994	1114	30	2025	1.6	102313	83.2	82
57	1.6137	0.3058	1123	31	1970	1.6	104283	84.8	84
58	1.7093	0.3130	1133	31	2016	1.6	106299	86.4	86
59	1.8098	0.3211	1143	32	1937	1.6	108236	88.0	87
60	1.9159	0.3305	1153	33	1836	1.5	110072	89.5	89
61	2.0286	0.3412	1165	34	1768	1.4	111840	90.9	90
62	2.1493	0.3538	1177	35	1725	1.4	113565	92.3	92
63	2.2796	0.3687	1190	37	1626	1.3	115191	93.7	93
64	2.4220	0.3866	1204	39	1513	1.2	116704	94.9	94
65	2.5799	0.4086	1220	41	1404	1.1	118108	96.0	95
66	2.7579	0.4363	1237	44	1302	1.1	119410	97.1	97
67	2.9636	0.4724	1258	47	1071	0.9	120481	98.0	98
68	3.2096	0.5219	1283	52	923	0.8	121404	98.7	98
69	3.519	0.5952	1314	60	679	0.5521	122083	99.2682	99
70	3.9443	0.7202	1356	72	508	0.4131	122591	99.6813	99
71	4.6543	1.0074	1427	101	282	0.2293	122873	99.9106	99
72	5.8673	1.8287	1548	183	110	0.0894	122983	100	99

Grade 6 Mathematics

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-5.8818	1.8327	600	183	0	0.0	0	0.0	0
1	-4.6600	1.0126	600	101	0	0.0	0	0.0	0
2	-3.9415	0.7248	600	72	0	0.0	0	0.0	0
3	-3.5107	0.5989	600	60	1	0.0	1	0.0	1
4	-3.1977	0.5247	612	52	2	0.0	3	0.0	1
5	-2.9493	0.4747	636	47	4	0.0	7	0.0	1
6	-2.7416	0.4383	657	44	8	0.0	15	0.0	1
7	-2.5619	0.4103	675	41	38	0.0	53	0.0	1
8	-2.4028	0.3881	691	39	70	0.1	123	0.1	1
9	-2.2593	0.3700	705	37	109	0.1	232	0.2	1
10	-2.1281	0.3549	719	35	215	0.2	447	0.4	1
11	-2.0067	0.3422	731	34	380	0.3	827	0.7	1
12	-1.8934	0.3312	742	33	598	0.5	1425	1.1	1
13	-1.7868	0.3218	753	32	847	0.7	2272	1.8	1
14	-1.6860	0.3136	763	31	1125	0.9	3397	2.7	2
15	-1.5900	0.3063	772	31	1304	1.0	4701	3.8	3
16	-1.4981	0.2999	782	30	1618	1.3	6319	5.0	4
17	-1.4099	0.2943	790	29	1809	1.4	8128	6.5	6
18	-1.3248	0.2892	799	29	2011	1.6	10139	8.1	7
19	-1.2425	0.2847	807	28	2078	1.7	12217	9.7	9
20	-1.1626	0.2807	815	28	2158	1.7	14375	11.5	11
21	-1.0848	0.2771	823	28	2179	1.7	16554	13.2	12
22	-1.0089	0.2739	831	27	2103	1.7	18657	14.9	14
23	-0.9347	0.2710	838	27	2171	1.7	20828	16.6	16
24	-0.8620	0.2685	845	27	2136	1.7	22964	18.3	17
25	-0.7905	0.2662	852	27	2134	1.7	25098	20.0	19
26	-0.7202	0.2642	859	26	2162	1.7	27260	21.8	21
27	-0.6509	0.2624	866	26	2097	1.7	29357	23.4	23
28	-0.5825	0.2608	873	26	2131	1.7	31488	25.1	24
29	-0.5148	0.2594	880	26	2096	1.7	33584	26.8	26
30	-0.4478	0.2583	887	26	2093	1.7	35677	28.5	28
31	-0.3814	0.2573	893	26	2073	1.7	37750	30.1	29
32	-0.3154	0.2565	900	26	2060	1.6	39810	31.8	31
33	-0.2498	0.2558	906	26	2076	1.7	41886	33.4	33
34	-0.1845	0.2554	913	26	2174	1.7	44060	35.2	34
35	-0.1193	0.2551	919	26	2244	1.8	46304	37.0	36
36	-0.0543	0.2549	926	25	2214	1.8	48518	38.7	38

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	0.0107	0.2549	932	25	2152	1.7	50670	40.4	40
38	0.0757	0.2551	939	26	2206	1.8	52876	42.2	41
39	0.1408	0.2554	945	26	2186	1.7	55062	43.9	43
40	0.2062	0.2559	952	26	2243	1.8	57305	45.7	45
41	0.2719	0.2567	959	26	2245	1.8	59550	47.5	47
42	0.3380	0.2576	965	26	2437	1.9	61987	49.5	48
43	0.4046	0.2587	972	26	2326	1.9	64313	51.3	50
44	0.4719	0.2601	979	26	2315	1.8	66628	53.2	52
45	0.5399	0.2617	985	26	2395	1.9	69023	55.1	54
46	0.6089	0.2636	992	26	2412	1.9	71435	57.0	56
47	0.6789	0.2658	999	27	2439	1.9	73874	59.0	58
48	0.7502	0.2683	1006	27	2433	1.9	76307	60.9	60
49	0.8230	0.2712	1014	27	2464	2.0	78771	62.9	62
50	0.8974	0.2745	1021	27	2496	2.0	81267	64.9	64
51	0.9738	0.2783	1029	28	2448	2.0	83715	66.8	66
52	1.0524	0.2826	1037	28	2544	2.0	86259	68.8	68
53	1.1336	0.2874	1045	29	2562	2.0	88821	70.9	70
54	1.2178	0.2929	1053	29	2586	2.1	91407	72.9	72
55	1.3053	0.2990	1062	30	2512	2.0	93919	75.0	74
56	1.3968	0.3059	1071	31	2487	2.0	96406	76.9	76
57	1.4927	0.3137	1081	31	2572	2.1	98978	79.0	78
58	1.5939	0.3226	1091	32	2558	2.0	101536	81.0	80
59	1.7012	0.3326	1102	33	2585	2.1	104121	83.1	82
60	1.8156	0.3441	1113	34	2565	2.0	106686	85.1	84
61	1.9384	0.3572	1125	36	2522	2.0	109208	87.2	86
62	2.0713	0.3722	1139	37	2451	2.0	111659	89.1	88
63	2.2163	0.3897	1153	39	2408	1.9	114067	91.0	90
64	2.3759	0.4100	1169	41	2257	1.8	116324	92.8	92
65	2.5537	0.4338	1187	43	2135	1.7	118459	94.5	94
66	2.7540	0.4620	1207	46	1968	1.6	120427	96.1	95
67	2.9831	0.4963	1230	50	1621	1.3	122048	97.4	97
68	3.2506	0.5400	1256	54	1258	1.0	123306	98.4	98
69	3.5747	0.6026	1289	60	982	0.7837	124288	99.1884	99
70	3.9995	0.7116	1331	71	607	0.4844	124895	99.6728	99
71	4.6798	0.9814	1399	98	322	0.257	125217	99.9298	99
72	5.8406	1.8004	1515	180	88	0.0702	125305	100	99

Grade 7 Mathematics

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-5.6950	1.8310	600	183	0	0.0	0	0.0	0
1	-4.4775	1.0097	600	101	0	0.0	0	0.0	0
2	-3.7648	0.7208	600	72	0	0.0	0	0.0	0
3	-3.3397	0.5942	622	59	0	0.0	0	0.0	0
4	-3.0322	0.5195	653	52	3	0.0	3	0.0	1
5	-2.7890	0.4692	677	47	3	0.0	6	0.0	1
6	-2.5864	0.4324	698	43	22	0.0	28	0.0	1
7	-2.4118	0.4042	715	40	49	0.0	77	0.1	1
8	-2.2576	0.3818	730	38	108	0.1	185	0.1	1
9	-2.1189	0.3635	744	36	213	0.2	398	0.3	1
10	-1.9924	0.3483	757	35	385	0.3	783	0.6	1
11	-1.8756	0.3354	769	34	630	0.5	1413	1.1	1
12	-1.7668	0.3244	779	32	939	0.8	2352	1.9	2
13	-1.6647	0.3149	790	31	1272	1.0	3624	2.9	2
14	-1.5682	0.3066	799	31	1794	1.4	5418	4.3	4
15	-1.4765	0.2993	809	30	2237	1.8	7655	6.1	5
16	-1.3888	0.2929	817	29	2571	2.1	10226	8.2	7
17	-1.3047	0.2872	826	29	2814	2.3	13040	10.4	9
18	-1.2237	0.2822	834	28	3105	2.5	16145	12.9	12
19	-1.1453	0.2777	842	28	3145	2.5	19290	15.4	14
20	-1.0693	0.2738	849	27	3318	2.7	22608	18.1	17
21	-0.9953	0.2702	857	27	3172	2.5	25780	20.6	19
22	-0.9231	0.2671	864	27	3195	2.6	28975	23.2	22
23	-0.8525	0.2643	871	26	3100	2.5	32075	25.7	24
24	-0.7833	0.2619	878	26	3007	2.4	35082	28.1	27
25	-0.7153	0.2597	885	26	2930	2.3	38012	30.4	29
26	-0.6484	0.2578	891	26	2876	2.3	40888	32.7	32
27	-0.5823	0.2562	898	26	2745	2.2	43633	34.9	34
28	-0.5170	0.2548	904	25	2676	2.1	46309	37.1	36
29	-0.4524	0.2537	911	25	2509	2.0	48818	39.1	38
30	-0.3883	0.2527	917	25	2608	2.1	51426	41.2	40
31	-0.3247	0.2520	924	25	2544	2.0	53970	43.2	42
32	-0.2613	0.2514	930	25	2383	1.9	56353	45.1	44
33	-0.1982	0.2511	936	25	2399	1.9	58752	47.0	46
34	-0.1352	0.2509	943	25	2354	1.9	61106	48.9	48
35	-0.0723	0.2509	949	25	2224	1.8	63330	50.7	50
36	-0.0093	0.2511	955	25	2316	1.9	65646	52.5	52

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	0.0538	0.2514	962	25	2215	1.8	67861	54.3	53
38	0.1171	0.2520	968	25	2222	1.8	70083	56.1	55
39	0.1808	0.2527	974	25	2175	1.7	72258	57.8	57
40	0.2449	0.2536	981	25	2168	1.7	74426	59.6	59
41	0.3094	0.2547	987	25	2184	1.7	76610	61.3	60
42	0.3746	0.2559	994	26	2131	1.7	78741	63.0	62
43	0.4404	0.2574	1000	26	2060	1.6	80801	64.7	64
44	0.5071	0.2591	1007	26	2045	1.6	82846	66.3	65
45	0.5747	0.2609	1014	26	1987	1.6	84833	67.9	67
46	0.6433	0.2631	1020	26	2112	1.7	86945	69.6	69
47	0.7132	0.2654	1027	27	2038	1.6	88983	71.2	70
48	0.7843	0.2680	1035	27	2040	1.6	91023	72.8	72
49	0.8569	0.2709	1042	27	2025	1.6	93048	74.5	74
50	0.9311	0.2740	1049	27	1964	1.6	95012	76.0	75
51	1.0071	0.2775	1057	28	1984	1.6	96996	77.6	77
52	1.0852	0.2814	1065	28	1914	1.5	98910	79.2	78
53	1.1656	0.2856	1073	29	1900	1.5	100810	80.7	80
54	1.2485	0.2904	1081	29	1858	1.5	102668	82.2	81
55	1.3343	0.2956	1090	30	1925	1.5	104593	83.7	83
56	1.4234	0.3014	1099	30	1868	1.5	106461	85.2	84
57	1.5161	0.3079	1108	31	1856	1.5	108317	86.7	86
58	1.6132	0.3152	1117	32	1905	1.5	110222	88.2	87
59	1.7151	0.3235	1128	32	1743	1.4	111965	89.6	89
60	1.8228	0.3330	1138	33	1645	1.3	113610	90.9	90
61	1.9373	0.3440	1150	34	1617	1.3	115227	92.2	92
62	2.0599	0.3568	1162	36	1613	1.3	116840	93.5	93
63	2.1925	0.3719	1175	37	1434	1.1	118274	94.7	94
64	2.3375	0.3901	1190	39	1377	1.1	119651	95.8	95
65	2.4983	0.4125	1206	41	1282	1.0	120933	96.8	96
66	2.6799	0.4408	1224	44	1147	0.9	122080	97.7	97
67	2.8900	0.4776	1245	48	944	0.8	123024	98.5	98
68	3.1416	0.5281	1270	53	718	0.6	123742	99.0	99
69	3.4587	0.6028	1302	60	568	0.4545	124310	99.4806	99
70	3.895	0.7292	1346	73	368	0.2945	124678	99.7751	99
71	4.6208	1.0168	1418	102	209	0.1673	124887	99.9424	99
72	5.8491	1.8355	1541	184	72	0.0576	124959	100	99

Grade 8 Mathematics

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-6.1508	1.8334	600	183	0	0.0	0	0.0	0
1	-4.9272	1.0139	600	101	0	0.0	0	0.0	0
2	-4.2060	0.7267	600	73	2	0.0	2	0.0	1
3	-3.7725	0.6012	600	60	0	0.0	2	0.0	1
4	-3.4566	0.5275	606	53	1	0.0	3	0.0	1
5	-3.2052	0.4778	631	48	5	0.0	8	0.0	1
6	-2.9945	0.4417	652	44	15	0.0	23	0.0	1
7	-2.8119	0.4140	671	41	51	0.0	74	0.1	1
8	-2.6497	0.3920	687	39	93	0.1	167	0.1	1
9	-2.5032	0.3741	701	37	172	0.1	339	0.3	1
10	-2.3690	0.3591	715	36	334	0.3	673	0.5	1
11	-2.2446	0.3465	727	35	533	0.4	1206	1.0	1
12	-2.1283	0.3357	739	34	811	0.7	2017	1.6	1
13	-2.0188	0.3263	750	33	1091	0.9	3108	2.5	2
14	-1.9151	0.3181	760	32	1450	1.2	4558	3.7	3
15	-1.8162	0.3109	770	31	1872	1.5	6430	5.2	4
16	-1.7216	0.3045	780	30	1949	1.6	8379	6.8	6
17	-1.6306	0.2989	789	30	2281	1.9	10660	8.7	8
18	-1.5428	0.2938	797	29	2473	2.0	13133	10.7	10
19	-1.4578	0.2893	806	29	2527	2.1	15660	12.7	12
20	-1.3753	0.2853	814	29	2604	2.1	18264	14.8	14
21	-1.2949	0.2817	822	28	2650	2.2	20914	17.0	16
22	-1.2165	0.2784	830	28	2682	2.2	23596	19.2	18
23	-1.1398	0.2755	838	28	2576	2.1	26172	21.2	20
24	-1.0646	0.2730	845	27	2561	2.1	28733	23.3	22
25	-0.9907	0.2707	853	27	2583	2.1	31316	25.4	24
26	-0.9180	0.2687	860	27	2527	2.1	33843	27.5	26
27	-0.8464	0.2669	867	27	2642	2.1	36485	29.6	29
28	-0.7755	0.2653	874	27	2579	2.1	39064	31.7	31
29	-0.7055	0.2640	881	26	2695	2.2	41759	33.9	33
30	-0.6361	0.2629	888	26	2540	2.1	44299	36.0	35
31	-0.5672	0.2621	895	26	2596	2.1	46895	38.1	37
32	-0.4987	0.2614	902	26	2641	2.1	49536	40.2	39
33	-0.4305	0.2609	909	26	2668	2.2	52204	42.4	41
34	-0.3626	0.2606	916	26	2667	2.2	54871	44.5	43
35	-0.2947	0.2605	922	26	2559	2.1	57430	46.6	46
36	-0.2268	0.2606	929	26	2552	2.1	59982	48.7	48

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	-0.1589	0.2609	936	26	2684	2.2	62666	50.9	50
38	-0.0907	0.2614	943	26	2474	2.0	65140	52.9	52
39	-0.0222	0.2620	950	26	2531	2.1	67671	54.9	54
40	0.0467	0.2630	956	26	2500	2.0	70171	57.0	56
41	0.1161	0.2641	963	26	2504	2.0	72675	59.0	58
42	0.1862	0.2654	970	27	2399	1.9	75074	60.9	60
43	0.2571	0.2670	977	27	2461	2.0	77535	62.9	62
44	0.3289	0.2689	985	27	2444	2.0	79979	64.9	64
45	0.4017	0.2710	992	27	2346	1.9	82325	66.8	66
46	0.4758	0.2734	999	27	2428	2.0	84753	68.8	68
47	0.5513	0.2761	1007	28	2279	1.9	87032	70.7	70
48	0.6283	0.2792	1015	28	2316	1.9	89348	72.5	72
49	0.7072	0.2826	1022	28	2279	1.9	91627	74.4	73
50	0.7881	0.2864	1031	29	2217	1.8	93844	76.2	75
51	0.8713	0.2906	1039	29	2196	1.8	96040	78.0	77
52	0.9571	0.2953	1047	30	2186	1.8	98226	79.7	79
53	1.0459	0.3006	1056	30	2130	1.7	100356	81.5	81
54	1.1380	0.3064	1066	31	2042	1.7	102398	83.1	82
55	1.2338	0.3129	1075	31	2148	1.7	104546	84.9	84
56	1.3340	0.3202	1085	32	1937	1.6	106483	86.4	86
57	1.4391	0.3283	1096	33	1964	1.6	108447	88.0	87
58	1.5498	0.3373	1107	34	1855	1.5	110302	89.5	89
59	1.6670	0.3476	1118	35	1734	1.4	112036	91.0	90
60	1.7918	0.3593	1131	36	1708	1.4	113744	92.3	92
61	1.9257	0.3727	1144	37	1599	1.3	115343	93.6	93
62	2.0703	0.3883	1159	39	1422	1.2	116765	94.8	94
63	2.2282	0.4068	1175	41	1339	1.1	118104	95.9	95
64	2.4026	0.4292	1192	43	1247	1.0	119351	96.9	96
65	2.5985	0.4570	1212	46	1115	0.9	120466	97.8	97
66	2.8234	0.4928	1234	49	903	0.7	121369	98.5	98
67	3.0894	0.5408	1261	54	689	0.6	122058	99.1	99
68	3.4174	0.6083	1294	61	527	0.4	122585	99.5	99
69	3.8478	0.7103	1337	71	333	0.2703	122918	99.7914	99
70	4.4708	0.8816	1399	88	189	0.1534	123107	99.9448	99
71	5.5334	1.2132	1505	121	64	0.052	123171	99.9968	99
72	7.1027	1.9698	1662	197	4	0.0032	123175	100	99

Grade 4 Science

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-5.7071	1.8324	1050	324	0	0.0	0	0.0	0
1	-4.4861	1.0121	1050	179	0	0.0	0	0.0	0
2	-3.7685	0.7242	1050	128	2	0.0	2	0.0	1
3	-3.3385	0.5982	1050	106	0	0.0	2	0.0	1
4	-3.0263	0.5240	1050	93	1	0.0	3	0.0	1
5	-2.7786	0.4739	1050	84	1	0.0	4	0.0	1
6	-2.5716	0.4375	1050	77	4	0.0	8	0.0	1
7	-2.3927	0.4095	1050	72	11	0.0	19	0.0	1
8	-2.2343	0.3872	1050	68	29	0.0	48	0.0	1
9	-2.0915	0.3690	1050	65	56	0.0	104	0.1	1
10	-1.9611	0.3538	1050	63	83	0.1	187	0.2	1
11	-1.8405	0.3409	1050	60	144	0.1	331	0.3	1
12	-1.7281	0.3299	1050	58	240	0.2	571	0.5	1
13	-1.6225	0.3203	1050	57	308	0.2	879	0.7	1
14	-1.5226	0.3119	1050	55	385	0.3	1264	1.0	1
15	-1.4276	0.3046	1050	54	526	0.4	1790	1.4	1
16	-1.3369	0.2981	1050	53	652	0.5	2442	2.0	2
17	-1.2498	0.2923	1050	52	729	0.6	3171	2.6	2
18	-1.1659	0.2871	1050	51	822	0.7	3993	3.2	3
19	-1.0848	0.2825	1050	50	841	0.7	4834	3.9	4
20	-1.0062	0.2784	1050	49	893	0.7	5727	4.6	4
21	-0.9297	0.2747	1061	49	929	0.8	6656	5.4	5
22	-0.8552	0.2714	1074	48	964	0.8	7620	6.2	6
23	-0.7823	0.2685	1087	47	1058	0.9	8678	7.0	7
24	-0.7109	0.2659	1100	47	1081	0.9	9759	7.9	7
25	-0.6409	0.2636	1112	47	1111	0.9	10870	8.8	8
26	-0.5719	0.2616	1125	46	1152	0.9	12022	9.7	9
27	-0.5039	0.2599	1137	46	1183	1.0	13205	10.7	10
28	-0.4368	0.2584	1148	46	1226	1.0	14431	11.7	11
29	-0.3703	0.2572	1160	45	1207	1.0	15638	12.6	12
30	-0.3045	0.2562	1172	45	1268	1.0	16906	13.7	13
31	-0.2391	0.2554	1183	45	1354	1.1	18260	14.7	14
32	-0.1740	0.2548	1195	45	1471	1.2	19731	15.9	15
33	-0.1092	0.2544	1206	45	1480	1.2	21211	17.1	17
34	-0.0445	0.2543	1218	45	1437	1.2	22648	18.3	18
35	0.0202	0.2544	1229	45	1591	1.3	24239	19.6	19
36	0.0849	0.2546	1241	45	1706	1.4	25945	21.0	20

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	0.1499	0.2551	1252	45	1697	1.4	27642	22.3	22
38	0.2151	0.2558	1264	45	1841	1.5	29483	23.8	23
39	0.2808	0.2567	1275	45	1921	1.6	31404	25.4	25
40	0.3470	0.2578	1287	46	1998	1.6	33402	27.0	26
41	0.4138	0.2592	1299	46	2020	1.6	35422	28.6	28
42	0.4814	0.2608	1311	46	2192	1.8	37614	30.4	29
43	0.5499	0.2627	1323	46	2313	1.9	39927	32.2	31
44	0.6195	0.2648	1335	47	2441	2.0	42368	34.2	33
45	0.6902	0.2673	1348	47	2614	2.1	44982	36.3	35
46	0.7624	0.2701	1360	48	2728	2.2	47710	38.5	37
47	0.8362	0.2732	1373	48	2929	2.4	50639	40.9	40
48	0.9117	0.2767	1387	49	3041	2.5	53680	43.4	42
49	0.9893	0.2806	1401	50	3048	2.5	56728	45.8	45
50	1.0693	0.2850	1415	50	3234	2.6	59962	48.4	47
51	1.1519	0.2899	1429	51	3519	2.8	63481	51.3	50
52	1.2376	0.2955	1444	52	3620	2.9	67101	54.2	53
53	1.3267	0.3018	1460	53	3857	3.1	70958	57.3	56
54	1.4200	0.3090	1477	55	3963	3.2	74921	60.5	59
55	1.5179	0.3172	1494	56	4183	3.4	79104	63.9	62
56	1.6214	0.3265	1512	58	4297	3.5	83401	67.4	66
57	1.7316	0.3374	1532	60	4528	3.7	87929	71.0	69
58	1.8496	0.3501	1553	62	4615	3.7	92544	74.7	73
59	1.9773	0.3651	1575	65	4687	3.8	97231	78.5	77
60	2.1171	0.3832	1600	68	4715	3.8	101946	82.3	80
61	2.2724	0.4054	1627	72	4520	3.7	106466	86.0	84
62	2.4479	0.4334	1658	77	4307	3.5	110773	89.5	88
63	2.6512	0.4700	1694	83	3924	3.2	114697	92.6	91
64	2.8951	0.5202	1737	92	3389	2.7	118086	95.4	94
65	3.2032	0.5946	1792	105	2680	2.2	120766	97.5	96
66	3.6288	0.7211	1867	127	1816	1.5	122582	99.0	98
67	4.3418	1.0098	1993	178	921	0.7	123503	99.7	99
68	5.5595	1.8311	2208	324	315	0.3	123818	100.0	99

Grade 8 Science

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
0	-5.8692	1.8311	925	351	0	0.0	0	0.0	0
1	-4.6514	1.0098	925	193	0	0.0	0	0.0	0
2	-3.9385	0.7210	925	138	1	0.0	1	0.0	1
3	-3.5130	0.5945	925	114	2	0.0	3	0.0	1
4	-3.2051	0.5199	925	100	5	0.0	8	0.0	1
5	-2.9616	0.4696	925	90	4	0.0	12	0.0	1
6	-2.7587	0.4329	925	83	15	0.0	27	0.0	1
7	-2.5837	0.4047	925	78	21	0.0	48	0.0	1
8	-2.4292	0.3823	925	73	50	0.0	98	0.1	1
9	-2.2901	0.3641	925	70	118	0.1	216	0.2	1
10	-2.1632	0.3489	925	67	176	0.1	392	0.3	1
11	-2.0460	0.3360	925	64	270	0.2	662	0.5	1
12	-1.9369	0.3250	925	62	431	0.4	1093	0.9	1
13	-1.8344	0.3155	925	60	589	0.5	1682	1.4	1
14	-1.7375	0.3072	925	59	760	0.6	2442	2.0	2
15	-1.6454	0.2999	925	57	887	0.7	3329	2.7	2
16	-1.5574	0.2935	925	56	1095	0.9	4424	3.6	3
17	-1.4729	0.2879	925	55	1219	1.0	5643	4.6	4
18	-1.3915	0.2829	930	54	1299	1.1	6942	5.6	5
19	-1.3127	0.2784	945	53	1424	1.2	8366	6.8	6
20	-1.2363	0.2745	960	53	1437	1.2	9803	8.0	7
21	-1.1620	0.2710	974	52	1438	1.2	11241	9.1	9
22	-1.0894	0.2679	988	51	1505	1.2	12746	10.4	10
23	-1.0184	0.2651	1002	51	1455	1.2	14201	11.5	11
24	-0.9487	0.2628	1015	50	1459	1.2	15660	12.7	12
25	-0.8802	0.2607	1028	50	1513	1.2	17173	14.0	13
26	-0.8128	0.2589	1041	50	1501	1.2	18674	15.2	15
27	-0.7462	0.2574	1054	49	1514	1.2	20188	16.4	16
28	-0.6803	0.2561	1066	49	1536	1.2	21724	17.7	17
29	-0.6150	0.2551	1079	49	1499	1.2	23223	18.9	18
30	-0.5501	0.2543	1091	49	1561	1.3	24784	20.2	20
31	-0.4856	0.2537	1104	49	1584	1.3	26368	21.4	21
32	-0.4213	0.2534	1116	49	1651	1.3	28019	22.8	22
33	-0.3571	0.2533	1128	49	1701	1.4	29720	24.2	23
34	-0.2930	0.2534	1141	49	1715	1.4	31435	25.6	25
35	-0.2287	0.2537	1153	49	1738	1.4	33173	27.0	26
36	-0.1642	0.2543	1165	49	1827	1.5	35000	28.5	28

Raw Score	IRT Difficulty Estimate	IRT Difficulty SE	Scale Score	Scale Score SE	Frequency	Percent	Cumulative Frequency	Cumulative Percent	Percentile
37	-0.0993	0.2550	1178	49	1908	1.6	36908	30.0	29
38	-0.0340	0.2560	1190	49	1986	1.6	38894	31.6	31
39	0.0318	0.2573	1203	49	2045	1.7	40939	33.3	32
40	0.0984	0.2588	1215	50	2040	1.7	42979	35.0	34
41	0.1658	0.2605	1228	50	2117	1.7	45096	36.7	36
42	0.2342	0.2625	1241	50	2124	1.7	47220	38.4	38
43	0.3037	0.2648	1255	51	2416	2.0	49636	40.4	39
44	0.3745	0.2674	1268	51	2465	2.0	52101	42.4	41
45	0.4468	0.2703	1282	52	2567	2.1	54668	44.5	43
46	0.5207	0.2736	1296	52	2697	2.2	57365	46.7	46
47	0.5966	0.2773	1311	53	2821	2.3	60186	48.9	48
48	0.6746	0.2815	1326	54	2922	2.4	63108	51.3	50
49	0.7551	0.2861	1341	55	3137	2.6	66245	53.9	53
50	0.8384	0.2912	1357	56	3420	2.8	69665	56.7	55
51	0.9249	0.2969	1374	57	3595	2.9	73260	59.6	58
52	1.0149	0.3034	1391	58	3752	3.1	77012	62.6	61
53	1.1092	0.3106	1409	59	4016	3.3	81028	65.9	64
54	1.2082	0.3188	1428	61	4077	3.3	85105	69.2	68
55	1.3128	0.3281	1448	63	4301	3.5	89406	72.7	71
56	1.4239	0.3387	1469	65	4399	3.6	93805	76.3	75
57	1.5427	0.3509	1492	67	4344	3.5	98149	79.8	78
58	1.6707	0.3651	1517	70	4395	3.6	102544	83.4	82
59	1.8100	0.3817	1543	73	4403	3.6	106947	87.0	85
60	1.9632	0.4016	1573	77	4019	3.3	110966	90.2	89
61	2.1340	0.4258	1605	82	3605	2.9	114571	93.2	92
62	2.3279	0.4558	1643	87	2997	2.4	117568	95.6	94
63	2.5530	0.4946	1686	95	2283	1.9	119851	97.5	97
64	2.8230	0.5470	1737	105	1628	1.3	121479	98.8	98
65	3.1628	0.6234	1802	119	914	0.7	122393	99.5	99
66	3.6273	0.7505	1891	144	408	0.3	122801	99.9	99
67	4.3887	1.0362	2037	198	135	0.1	122936	100.0	99
68	5.6472	1.8482	2278	354	19	0.0	122955	100.0	99

APPENDIX O: LINKING ITEM STATISTICS

Grade 3 English Language Arts

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
754538	MC	0	4	0	6	2015	0.59	0.59	0.2188	0.2698
707805	MC	0	5	0	20	2015	0.41	0.39	1.1151	1.3107
221391	MC	0	6	0	16	2015	0.54	0.56	0.4847	0.4892
819161	MC	0	10	0	17	2015	0.57	0.56	0.3387	0.4453
573972	MC	0	22	0	22	2015	0.68	0.68	-0.4225	-0.3450
379727	MC	0	23	0	23	2015	0.46	0.45	0.8178	0.8789
850031	MC	0	24	0	24	2015	0.80	0.79	-0.9882	-0.9686
566466	MC	0	25	0	25	2015	0.83	0.82	-1.1993	-1.1294
115802	MC	0	26	0	26	2015	0.74	0.75	-0.6930	-0.7379
757091	MC	0	28	0	28	2015	0.54	0.54	0.4542	0.4703
742578	MC	0	29	0	29	2015	0.71	0.70	-0.4076	-0.3129
466106	MC	0	30	0	30	2015	0.70	0.69	-0.3792	-0.3074
887340	MC	0	31	0	31	2015	0.52	0.51	0.5760	0.7129
357251	MC	0	33	0	33	2015	0.57	0.58	0.3198	0.3052
456864	MC	0	35	6	42	2015	0.73	0.76	-0.5182	-0.7353
559708	MC	0	36	6	43	2015	0.88	0.89	-1.7046	-1.8805
235168	MC	0	37	6	44	2015	0.65	0.66	-0.0657	-0.1500
437359	MC	0	38	6	46	2015	0.33	0.38	1.5086	1.3064
855411	MC	0	39	6	47	2015	0.50	0.55	0.6345	0.4189
698424	MC	0	40	6	48	2015	0.66	0.69	-0.1648	-0.3403
132002	MC	1	7	0	5	2015	0.50	0.48	0.6462	0.7401
886289	MC	2	7	2	7	2015	0.71	0.70	-0.4315	-0.3992
259566	MC	3	7	0	3	2015	0.69	0.68	-0.3228	-0.2577
484595	MC	4	7	0	8	2015	0.82	0.82	-1.1554	-1.2117
617122	MC	5	7	0	1	2015	0.83	0.83	-1.2270	-1.2308
150991	MC	6	7	0	10	2015	0.78	0.79	-0.8759	-0.9221
460611	MC	7	7	0	4	2015	0.53	0.55	0.5133	0.4367
632509	MC	8	7	0	15	2015	0.75	0.75	-0.6872	-0.6417
224272	MC	9	7	0	9	2015	0.73	0.77	-0.5433	-0.7993
861675	ESR	0	27	0	27	2015	0.54	0.54	0.4320	0.4795
489081	ESR	0	32	0	32	2015	0.61	0.60	0.1513	0.2241
467571	OE	0	34	0	34	2015	0.48	0.45	0.8706	1.0859

Grade 4 English Language Arts

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
925824	MC	0	5	0	15	2015	0.45	0.49	0.8004	0.7112
434445	MC	0	8	ID	6	2015	0.53	0.48	0.5421	0.7728
731522	MC	0	17	0	18	2015	0.59	0.60	0.0732	0.1300
986540	MC	0	18	0	8	2015	0.48	0.49	0.7756	0.7266
600299	MC	0	22	0	22	2015	0.75	0.75	-0.7673	-0.6885
941572	MC	0	23	0	23	2015	0.49	0.48	0.5509	0.6312
915938	MC	0	24	0	24	2015	0.61	0.59	0.1230	0.2501
469726	MC	0	25	0	25	2015	0.86	0.86	-1.5619	-1.5309
270476	MC	0	26	0	26	2015	0.75	0.75	-0.7535	-0.7784
301560	MC	0	27	0	27	2015	0.71	0.70	-0.4391	-0.3925
924031	MC	0	29	0	29	2015	0.65	0.66	-0.1585	-0.1759
667164	MC	0	30	0	30	2015	0.54	0.54	0.3996	0.4487
667560	MC	0	31	0	31	2015	0.61	0.59	0.1460	0.2101
515039	MC	0	32	0	32	2015	0.72	0.71	-0.4189	-0.3704
196406	MC	0	33	0	33	2015	0.53	0.53	0.4248	0.4560
180439	MC	0	35	0	35	2015	0.56	0.56	0.3265	0.4407
230521	MC	0	36	0	36	2015	0.64	0.63	0.0315	0.0245
499400	MC	0	44	5	53	2015	0.38	0.38	1.2701	1.2786
970823	MC	0	45	5	54	2015	0.57	0.62	0.2697	0.0446
407457	MC	0	46	5	55	2015	0.74	0.77	-0.6762	-0.8527
399871	MC	0	47	5	56	2015	0.69	0.69	-0.3762	-0.3063
124907	MC	0	48	5	58	2015	0.60	0.63	0.1338	0.0029
244249	MC	0	49	5	59	2015	0.79	0.81	-1.0113	-1.0949
192089	MC	1	7	0	4	2015	0.69	0.70	-0.3400	-0.4122
481459	MC	2	7	0	3	2015	0.72	0.73	-0.5499	-0.5373
211603	MC	3	7	0	5	2015	0.71	0.71	-0.4834	-0.4226
755526	MC	4	7	0	17	2015	0.58	0.63	0.2682	-0.0138
440631	MC	5	7	0	16	2015	0.60	0.59	0.1078	0.2058
537742	MC	6	7	0	2	2015	0.71	0.73	-0.4714	-0.5145
412389	MC	7	7	0	12	2015	0.68	0.74	-0.2234	-0.6084
740139	MC	8	7	0	11	2015	0.36	0.38	1.3170	1.2885
940261	MC	9	7	0	1	2015	0.85	0.83	-1.3990	-1.2621
492826	ESR	0	28	0	28	2015	0.75	0.74	-0.4468	-0.3569
143629	ESR	0	34	0	34	2015	0.72	0.71	-0.4909	-0.4608

Grade 5 English Language Arts

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
260541	MC	0	5	0	15	2015	0.34	0.38	1.4533	1.3637
570611	MC	0	12	ID	9	2015	0.47	0.48	0.8577	0.8043
925111	MC	0	15	0	10	2015	0.70	0.66	-0.3849	-0.1469
678958	MC	0	18	0	8	2015	0.61	0.59	0.1987	0.2403
691136	MC	0	22	0	22	2015	0.92	0.91	-2.1505	-2.0516
407731	MC	0	23	0	23	2015	0.68	0.69	-0.2813	-0.3770
872098	MC	0	24	0	24	2015	0.82	0.80	-1.2392	-1.1312
100788	MC	0	25	0	25	2015	0.43	0.42	1.1161	1.1917
131905	MC	0	27	0	27	2015	0.73	0.71	-0.3142	-0.2479
188757	MC	0	28	0	28	2015	0.68	0.67	-0.2329	-0.1846
170496	MC	0	29	0	29	2015	0.82	0.81	-1.1535	-1.1326
227283	MC	0	32	0	32	2015	0.58	0.57	0.3340	0.3748
702790	MC	0	33	0	33	2015	0.57	0.56	0.4433	0.4346
963981	MC	0	34	0	34	2015	0.51	0.49	0.6842	0.7525
585555	MC	0	35	0	35	2015	0.85	0.84	-1.3496	-1.3309
537751	MC	0	45	3	51	2015	0.50	0.52	0.7370	0.5959
983390	MC	0	46	3	52	2015	0.66	0.67	-0.1315	-0.1757
198740	MC	0	47	3	53	2015	0.59	0.61	0.2881	0.1228
483459	MC	0	48	3	54	2015	0.82	0.83	-1.1185	-1.2608
577866	MC	0	49	3	56	2015	0.66	0.60	-0.1074	0.2070
944561	MC	0	50	3	58	2015	0.71	0.70	-0.3779	-0.3811
985964	MC	1	7	0	5	2015	0.64	0.58	0.0754	0.3086
711667	MC	2	7	0	4	2015	0.62	0.63	0.0799	0.0613
375667	MC	3	7	0	20	2015	0.67	0.68	-0.0379	-0.2388
754633	MC	4	7	0	6	2015	0.62	0.61	0.0667	0.1260
526554	MC	5	7	0	12	2015	0.63	0.64	0.0133	-0.0160
408396	MC	6	7	0	1	2015	0.56	0.61	0.4605	0.1316
248967	MC	7	7	0	13	2015	0.78	0.78	-0.7547	-0.8936
806827	MC	8	7	0	14	2015	0.76	0.76	-0.7052	-0.7142
593267	MC	9	7	0	11	2015	0.72	0.76	-0.4978	-0.7065
562370	ESR	0	26	0	26	2015	0.70	0.69	-0.1706	-0.1203
332467	ESR	0	30	0	30	2015	0.71	0.70	-0.3702	-0.3368
250991	ESR	0	31	0	31	2015	0.59	0.58	0.1556	0.1813

Grade 6 English Language Arts

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
841026	MC	0	3	0	9	2015	0.62	0.64	0.3068	0.1635
146023	MC	0	8	ID	6	2015	0.78	0.76	-0.6526	-0.5435
208867	MC	0	9	0	10	2015	0.74	0.72	-0.3772	-0.2876
129987	MC	0	20	0	15	2015	0.45	0.46	1.0613	1.1243
254211	MC	0	28	0	28	2015	0.91	0.91	-2.0796	-1.9115
462657	MC	0	29	0	29	2015	0.37	0.38	1.6180	1.5659
592331	MC	0	30	0	30	2015	0.67	0.65	-0.1059	0.0668
521426	MC	0	31	0	31	2015	0.83	0.82	-1.0267	-0.9060
843228	MC	0	32	0	32	2015	0.42	0.43	1.2038	1.1592
915828	MC	0	33	0	33	2015	0.70	0.69	-0.1778	-0.0810
357833	MC	0	36	0	36	2015	0.81	0.80	-0.7834	-0.7037
114984	MC	0	37	0	37	2015	0.65	0.65	0.0275	0.1003
584841	MC	0	38	0	38	2015	0.58	0.56	0.5239	0.6390
744209	MC	0	39	0	39	2015	0.76	0.77	-0.5687	-0.5207
642119	MC	0	41	0	41	2015	0.57	0.56	0.4899	0.5564
594215	MC	0	42	0	42	2015	0.60	0.61	0.3261	0.3554
803052	MC	0	43	0	43	2015	0.55	0.56	0.6138	0.6110
268991	MC	0	45	8	51	2015	0.83	0.86	-1.1044	-1.2925
444811	MC	0	46	8	53	2015	0.69	0.72	-0.1355	-0.2755
487670	MC	0	47	8	54	2015	0.45	0.47	1.0679	1.0160
413852	MC	0	48	8	55	2015	0.62	0.64	0.2452	0.1924
223795	MC	0	49	8	57	2015	0.57	0.61	0.4896	0.3427
631531	MC	0	50	8	60	2015	0.54	0.52	0.6648	0.7837
626288	MC	1	7	0	2	2015	0.55	0.55	0.6193	0.6144
462535	MC	2	7	0	11	2015	0.65	0.67	0.1002	0.0123
324524	MC	3	7	0	13	2015	0.74	0.75	-0.3311	-0.4325
172476	MC	4	7	0	20	2015	0.85	0.89	-1.2028	-1.5238
184584	MC	5	7	0	16	2015	0.39	0.43	1.4402	1.2552
600799	MC	6	7	0	17	2015	0.85	0.87	-1.2677	-1.3635
705436	MC	7	7	0	5	2015	0.80	0.79	-0.8366	-0.7405
932265	MC	8	7	0	1	2015	0.47	0.49	1.0037	0.9053
139442	MC	9	7	0	14	2015	0.66	0.65	0.0231	0.1363
554120	ESR	0	34	0	34	2015	0.68	0.68	-0.0192	0.0429
284219	ESR	0	35	0	35	2015	0.68	0.69	-0.0445	-0.0455
152730	ESR	0	40	0	40	2015	0.58	0.55	0.4862	0.6435
668303	ESR	0	44	0	44	2015	0.52	0.54	0.7291	0.6368

Grade 7 English Language Arts

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
218123	MC	0	1	0	8	2015	0.88	0.89	-1.5753	-1.6824
460874	MC	0	4	ID	18	2015	0.60	0.61	0.2693	0.2388
575498	MC	0	17	0	12	2015	0.53	0.51	0.5930	0.7132
275926	MC	0	19	0	20	2015	0.43	0.44	1.0812	1.1360
148520	MC	0	22	0	22	2015	0.55	0.55	0.4838	0.5509
253042	MC	0	23	0	23	2015	0.39	0.40	1.4108	1.4056
403443	MC	0	24	0	24	2015	0.90	0.90	-1.8791	-1.7901
273314	MC	0	25	0	25	2015	0.53	0.53	0.5577	0.6428
823978	MC	0	26	0	26	2015	0.77	0.77	-0.6363	-0.5374
368524	MC	0	29	0	29	2015	0.43	0.46	1.0876	1.0298
797196	MC	0	30	0	30	2015	0.75	0.75	-0.7061	-0.6333
561287	MC	0	31	0	31	2015	0.76	0.75	-0.7603	-0.6901
927017	MC	0	32	0	32	2015	0.61	0.61	0.2398	0.2947
978224	MC	0	33	0	33	2015	0.36	0.35	1.4119	1.5158
104100	MC	0	34	0	34	2015	0.42	0.41	1.1777	1.2468
948712	MC	0	35	0	35	2015	0.69	0.68	-0.2323	-0.1521
235946	MC	0	45	3	51	2015	0.52	0.55	0.6662	0.5791
114704	MC	0	46	3	52	2015	0.60	0.64	0.2458	0.0819
678122	MC	0	47	3	53	2015	0.78	0.79	-0.7553	-0.8229
709389	MC	0	48	3	54	2015	0.52	0.54	0.6673	0.6268
704712	MC	0	49	3	55	2015	0.56	0.59	0.4841	0.3357
724993	MC	0	50	3	56	2015	0.74	0.77	-0.5061	-0.6414
433058	MC	1	7	0	7	2015	0.83	0.83	-1.1328	-1.1280
824982	MC	2	7	0	17	2015	0.67	0.67	-0.1163	-0.0512
247910	MC	3	7	0	11	2015	0.60	0.63	0.2223	0.1381
150735	MC	4	7	0	16	2015	0.62	0.70	0.2087	-0.2400
238151	MC	5	7	0	13	2015	0.32	0.33	1.5779	1.6395
119002	MC	6	7	0	6	2015	0.66	0.67	-0.0300	-0.0536
155023	MC	7	7	0	10	2015	0.76	0.76	-0.6733	-0.5910
610011	MC	8	7	0	3	2015	0.66	0.68	-0.0804	-0.0682
397932	MC	9	7	0	2	2015	0.69	0.72	-0.1746	-0.3615
639059	ESR	0	27	0	27	2015	0.66	0.66	-0.1141	-0.0797
139984	ESR	0	28	0	28	2015	0.81	0.82	-1.2043	-1.1036
790613	ESR	0	36	0	36	2015	0.47	0.48	0.8683	0.8768

Grade 8 English Language Arts

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
641049	MC	0	3	0	4	2015	0.63	0.64	-0.0517	-0.1087
556645	MC	0	5	ID	5	2015	0.57	0.58	0.2319	0.2297
614634	MC	0	9	0	2	2015	0.71	0.71	-0.5066	-0.4647
767285	MC	0	19	0	20	2015	0.48	0.52	0.6866	0.5998
682639	MC	0	22	0	22	2015	0.74	0.74	-0.6699	-0.6667
645610	MC	0	24	0	24	2015	0.80	0.79	-0.9738	-0.9619
461726	MC	0	25	0	25	2015	0.77	0.77	-0.8086	-0.8059
942629	MC	0	26	0	26	2015	0.64	0.64	-0.0589	-0.0783
561942	MC	0	27	0	27	2015	0.85	0.84	-1.4484	-1.3786
376630	MC	0	28	0	28	2015	0.79	0.78	-1.1372	-1.0764
448894	MC	0	30	0	30	2015	0.42	0.42	0.9980	1.0550
740653	MC	0	31	0	31	2015	0.57	0.56	0.0148	0.1114
374700	MC	0	32	0	32	2015	0.67	0.64	-0.2183	-0.0846
985902	MC	0	33	0	33	2015	0.55	0.55	0.2152	0.2712
383680	MC	0	34	0	34	2015	0.36	0.37	1.2392	1.3268
552225	MC	0	35	0	35	2015	0.54	0.53	0.4338	0.5676
357198	MC	0	37	0	37	2015	0.33	0.33	1.4687	1.5743
169400	MC	0	45	8	50	2015	0.36	0.39	1.2806	1.1739
965912	MC	0	46	8	53	2015	0.52	0.53	0.4866	0.4856
228716	MC	0	47	8	54	2015	0.81	0.81	-1.1294	-1.1590
213916	MC	0	48	8	56	2015	0.83	0.82	-1.2582	-1.2277
245214	MC	0	49	8	57	2015	0.68	0.69	-0.3347	-0.3616
734318	MC	0	50	8	58	2015	0.54	0.55	0.4064	0.3798
655280	MC	1	7	0	1	2015	0.83	0.79	-1.1915	-1.0162
366094	MC	2	7	0	15	2015	0.72	0.74	-0.4990	-0.6353
945903	MC	3	7	0	19	2015	0.47	0.49	0.7320	0.6650
540312	MC	4	7	0	13	2015	0.28	0.31	1.7425	1.6120
430222	MC	5	7	0	16	2015	0.71	0.76	-0.4898	-0.7711
509423	MC	6	7	0	10	2015	0.73	0.76	-0.5784	-0.7534
627171	MC	7	7	0	9	2015	0.77	0.77	-0.8424	-0.8528
191409	MC	8	7	0	11	2015	0.58	0.56	0.2257	0.3538
482214	MC	9	7	0	17	2015	0.38	0.41	1.1618	1.0708
580365	ESR	0	23	0	23	2015	0.68	0.68	-0.6329	-0.6064
724319	ESR	0	29	0	29	2015	0.72	0.72	-0.5538	-0.5380
846132	ESR	0	36	0	36	2015	0.77	0.77	-0.6382	-0.6614

Grade 3 Mathematics

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
355328	MC	0	6	0	6	2015	0.49	0.52	0.5573	0.4895
736463	MC	0	7	ID	7	2015	0.49	0.48	0.5155	0.5548
830365	MC	0	12	0	12	2015	0.50	0.48	0.5081	0.6735
854757	MC	0	16	0	16	2015	0.45	0.47	0.7724	0.7964
527931	MC	0	22	0	22	2015	0.43	0.49	0.8787	0.6235
281658	MC	0	24	0	24	2015	0.51	0.49	0.5432	0.7254
776696	MC	0	28	0	28	2015	0.74	0.78	-0.8249	-1.1269
600778	MC	0	31	0	31	2015	0.73	0.75	-0.7280	-0.8208
297956	MC	0	55	0	55	2015	0.44	0.46	0.8461	0.7975
145587	MC	0	57	0	57	2015	0.49	0.55	0.5793	0.3604
198545	MC	0	58	0	58	2015	0.63	0.61	-0.1581	0.0605
332473	MC	0	59	0	59	2015	0.57	0.57	0.0790	0.2078
824131	MC	0	61	0	61	2015	0.54	0.56	0.2847	0.3370
934180	MC	0	62	0	62	2015	0.66	0.69	-0.3611	-0.4753
971935	MC	0	70	0	70	2015	0.51	0.53	0.3143	0.4043
867608	MC	0	72	0	72	2015	0.50	0.51	0.5211	0.5838
514360	MC	1	45	7	45	2015	0.64	0.64	-0.2703	-0.2236
634035	MC	1	49	7	49	2015	0.68	0.59	-0.4756	0.0668
501367	MC	2	41	3	41	2015	0.75	0.71	-0.8660	-0.6046
465857	MC	2	48	7	48	2015	0.66	0.71	-0.3888	-0.5666
335836	MC	3	41	6	41	2015	0.48	0.42	0.6066	1.0041
283616	MC	3	48	3	48	2015	0.85	0.85	-1.6329	-1.6662
982177	MC	4	44	7	44	2015	0.84	0.86	-1.5698	-1.7763
329396	MC	4	47	7	47	2015	0.77	0.76	-1.0345	-0.8982
580406	MC	5	45	9	45	2015	0.60	0.64	0.0055	-0.1762
367128	MC	5	50	1	50	2015	0.52	0.55	0.3332	0.3109
876128	MC	6	43	9	43	2015	0.72	0.75	-0.6954	-0.8041
526249	MC	6	48	1	48	2015	0.56	0.51	0.1305	0.5515
760595	MC	7	40	7	40	2015	0.76	0.78	-0.9888	-1.0062
150284	MC	7	47	1	47	2015	0.35	0.41	1.2525	1.1162
375000	MC	8	39	6	39	2015	0.44	0.49	0.8127	0.6682
285323	MC	8	49	6	49	2015	0.82	0.86	-1.3508	-1.7085
798075	MC	9	39	8	39	2015	0.40	0.44	1.0281	0.9274
529807	MC	9	46	3	46	2015	0.71	0.73	-0.6255	-0.7258
967694	OE	0	25	0	25	2015	0.32	0.33	1.5374	1.6185
194218	OE	0	26	0	26	2015	0.42	0.45	0.8732	0.7789

Grade 4 Mathematics

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
680464	MC	0	3	0	3	2015	0.73	0.72	-1.1090	-1.0851
314598	MC	0	9	ID	9	2015	0.47	0.49	0.2023	0.1261
680444	MC	0	11	0	11	2015	0.70	0.72	-0.9726	-1.0875
763410	MC	0	17	0	17	2015	0.85	0.84	-1.8586	-1.9209
611359	MC	0	21	0	21	2015	0.42	0.41	0.5155	0.6006
360656	MC	0	22	0	22	2015	0.49	0.50	0.1842	0.0178
452111	MC	0	31	0	31	2015	0.53	0.57	-0.0378	-0.3046
153626	MC	0	32	0	32	2015	0.69	0.70	-0.8587	-1.0072
690740	MC	0	36	0	36	2015	0.51	0.36	0.0381	0.7854
900360	MC	0	55	0	55	2015	0.57	0.54	-0.2101	-0.1258
511977	MC	0	56	0	56	2015	0.75	0.72	-1.1157	-1.0925
824455	MC	0	59	0	59	2015	0.64	0.64	-0.5629	-0.7283
773920	MC	0	62	0	62	2015	0.58	0.64	-0.2643	-0.6857
226641	MC	0	67	0	67	2015	0.53	0.52	-0.0179	0.0534
365742	MC	0	70	0	70	2015	0.52	0.53	0.0354	-0.0423
167397	MC	0	73	0	73	2015	0.31	0.32	1.0082	1.1176
494598	MC	1	40	8	39	2015	0.58	0.56	-0.2699	-0.2695
227923	MC	1	46	3	46	2015	0.63	0.62	-0.5700	-0.6107
180559	MC	2	40	1	40	2015	0.42	0.41	0.4910	0.5838
734659	MC	2	49	8	49	2015	0.34	0.30	0.9695	1.2372
111327	MC	3	40	8	40	2015	0.57	0.61	-0.2273	-0.4836
408302	MC	3	50	1	50	2015	0.52	0.53	-0.0585	-0.0563
351998	MC	4	40	9	40	2015	0.38	0.37	0.7574	0.8422
224989	MC	4	47	4	47	2015	0.49	0.51	0.1393	0.0454
116320	MC	5	43	3	43	2015	0.41	0.43	0.5832	0.4822
324855	MC	5	50	2	50	2015	0.35	0.33	0.8769	1.0243
898049	MC	6	45	4	45	2015	0.58	0.59	-0.2974	-0.3810
979532	MC	6	50	3	50	2015	0.44	0.44	0.3832	0.4455
448037	MC	7	43	8	43	2015	0.45	0.44	0.3868	0.4091
242273	MC	7	50	6	50	2015	0.57	0.56	-0.2205	-0.2649
297978	MC	8	40	7	40	2015	0.55	0.56	-0.1137	-0.2266
485970	MC	8	47	7	47	2015	0.46	0.47	0.3372	0.2183
867718	MC	9	40	1	39	2015	0.39	0.40	0.5980	0.6064
643985	MC	9	45	5	45	2015	0.39	0.39	0.6814	0.7006
238586	OE	0	25	0	25	2015	0.19	0.19	1.6473	1.7319
140906	OE	0	76	0	76	2015	0.44	0.43	0.3621	0.4342

Grade 5 Mathematics

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
169715	MC	0	3	0	3	2015	0.67	0.67	-0.6612	-0.5962
142016	MC	0	13	ID	13	2015	0.52	0.53	0.1415	0.0619
748436	MC	0	16	0	16	2015	0.56	0.58	-0.0807	-0.1404
778608	MC	0	17	0	17	2015	0.63	0.63	-0.4574	-0.3268
983614	MC	0	21	0	21	2015	0.57	0.56	-0.0637	-0.0220
806755	MC	0	22	0	22	2015	0.70	0.69	-0.8694	-0.7353
940305	MC	0	23	0	23	2015	0.67	0.67	-0.6641	-0.6173
628335	MC	0	28	0	28	2015	0.72	0.70	-0.9558	-0.8986
575313	MC	0	29	0	29	2015	0.46	0.45	0.4028	0.4414
857255	MC	0	35	0	35	2015	0.66	0.66	-0.6441	-0.5790
959085	MC	0	53	0	53	2015	0.58	0.61	-0.2823	-0.3387
421445	MC	0	54	0	54	2015	0.72	0.73	-0.9074	-0.9308
224842	MC	0	61	0	61	2015	0.51	0.46	0.1525	0.5353
721430	MC	0	64	0	64	2015	0.41	0.44	0.7102	0.6208
426213	MC	0	66	0	66	2015	0.46	0.47	0.4328	0.4070
860647	MC	0	68	0	68	2015	0.55	0.55	-0.0894	-0.0021
968694	MC	1	42	3	42	2015	0.52	0.51	0.0945	0.1684
488233	MC	1	48	3	48	2015	0.31	0.34	1.2007	1.0972
230736	MC	2	45	1	45	2015	0.77	0.75	-1.3131	-1.1471
490676	MC	2	50	9	50	2015	0.34	0.39	1.0502	0.8868
250775	MC	3	40	1	39	2015	0.32	0.35	1.1182	1.0601
957030	MC	3	47	6	47	2015	0.48	0.50	0.3367	0.2383
631816	MC	4	40	8	40	2015	0.38	0.39	0.8440	0.8328
865337	MC	4	48	4	48	2015	0.37	0.42	0.8666	0.6991
431417	MC	5	43	6	43	2015	0.65	0.66	-0.5395	-0.5365
168643	MC	5	48	2	48	2015	0.62	0.63	-0.4338	-0.3794
148745	MC	6	46	7	46	2015	0.52	0.52	0.1129	0.1602
202982	MC	6	49	4	49	2015	0.39	0.42	0.7565	0.7144
717148	MC	7	40	1	40	2015	0.46	0.42	0.3772	0.6651
828274	MC	7	46	6	46	2015	0.32	0.41	1.1858	0.7342
171745	MC	8	44	4	44	2015	0.55	0.57	-0.0502	-0.0655
859999	MC	8	50	3	50	2015	0.61	0.65	-0.3585	-0.4988
663273	MC	9	45	3	45	2015	0.32	0.33	1.1712	1.1989
142372	MC	9	49	1	49	2015	0.63	0.63	-0.4803	-0.4288
660007	OE	0	25	0	25	2015	0.29	0.31	1.3375	1.2548
197479	OE	0	26	0	26	2015	0.30	0.30	1.4398	1.4971

Grade 6 Mathematics

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
973670	MC	0	2	0	2	2015	0.52	0.56	0.3487	0.1128
788504	MC	0	10	ID	10	2015	0.68	0.68	-0.4089	-0.5256
926315	MC	0	12	0	12	2015	0.68	0.69	-0.4693	-0.6744
362842	MC	0	18	0	18	2015	0.76	0.72	-0.8548	-0.9822
179818	MC	0	24	0	24	2015	0.78	0.80	-1.0347	-1.2247
572565	MC	0	28	0	28	2015	0.55	0.54	0.1994	0.1953
711086	MC	0	29	0	29	2015	0.64	0.70	-0.2705	-0.7047
311573	MC	0	35	0	35	2015	0.60	0.61	-0.0686	-0.1497
784919	MC	0	38	0	38	2015	0.64	0.65	-0.3161	-0.3779
351144	MC	0	54	0	54	2015	0.46	0.48	0.6681	0.5618
752722	MC	0	55	0	55	2015	0.77	0.75	-1.0229	-1.0570
472580	MC	0	56	0	56	2015	0.50	0.48	0.3993	0.5608
179709	MC	0	57	0	57	2015	0.46	0.47	0.5807	0.5664
316121	MC	0	62	0	62	2015	0.55	0.57	0.1654	-0.0140
195368	MC	0	68	0	68	2015	0.71	0.70	-0.7066	-0.7422
819932	MC	0	70	0	70	2015	0.69	0.70	-0.6290	-0.7411
150592	MC	1	45	6	45	2015	0.70	0.70	-0.5668	-0.7309
660916	MC	1	49	9	49	2015	0.53	0.58	0.2852	-0.0609
310629	MC	2	43	6	43	2015	0.46	0.52	0.6424	0.3551
343187	MC	2	48	1	48	2015	0.57	0.56	0.0331	0.1161
530572	MC	3	44	2	44	2015	0.38	0.37	1.0078	1.1273
923178	MC	3	49	3	49	2015	0.59	0.58	-0.0129	-0.0101
108600	MC	4	40	3	39	2015	0.48	0.46	0.5207	0.6418
586357	MC	4	48	8	48	2015	0.46	0.44	0.6497	0.7226
965057	MC	5	45	3	45	2015	0.62	0.61	-0.1648	-0.1750
440099	MC	5	50	6	50	2015	0.55	0.52	0.1726	0.3093
552116	MC	6	43	7	43	2015	0.65	0.65	-0.2867	-0.3677
464259	MC	6	47	1	47	2015	0.58	0.60	0.0012	-0.1443
885828	MC	7	42	1	42	2015	0.50	0.44	0.3880	0.7518
917513	MC	7	48	5	48	2015	0.50	0.48	0.4290	0.5165
739160	MC	8	42	2	42	2015	0.43	0.42	0.7687	0.8917
698109	MC	8	47	8	47	2015	0.57	0.42	0.1146	0.8501
904889	MC	9	45	2	45	2015	0.45	0.43	0.6429	0.8143
555111	MC	9	49	8	49	2015	0.61	0.64	-0.0967	-0.3521
489550	OE	0	25	0	25	2015	0.26	0.26	1.7466	1.9870
904232	OE	0	26	0	26	2015	0.35	0.35	1.1292	1.2594

Grade 7 Mathematics

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
528942	MC	0	1	0	1	2015	0.57	0.58	-0.4340	-0.4244
295597	MC	0	6	ID	5	2015	0.45	0.47	0.2005	0.1581
630255	MC	0	10	0	10	2015	0.43	0.47	0.2746	0.1587
695792	MC	0	16	0	16	2015	0.52	0.52	-0.1641	-0.0952
520450	MC	0	19	0	19	2015	0.46	0.47	0.1240	0.2073
697481	MC	0	24	0	24	2015	0.54	0.56	-0.1050	-0.2290
348699	MC	0	28	0	28	2015	0.66	0.66	-0.7542	-0.8050
188416	MC	0	34	0	34	2015	0.63	0.63	-0.6281	-0.5780
652588	MC	0	35	0	35	2015	0.57	0.58	-0.3293	-0.3497
813992	MC	0	36	0	36	2015	0.40	0.40	0.5613	0.5984
865576	MC	0	52	0	52	2015	0.55	0.53	-0.2597	-0.0665
818813	MC	0	56	0	56	2015	0.37	0.36	0.6595	0.8763
882737	MC	0	66	0	66	2015	0.41	0.44	0.4602	0.3316
436154	MC	0	67	0	67	2015	0.47	0.57	0.2011	-0.3521
614644	MC	0	71	0	71	2015	0.54	0.63	-0.1721	-0.6409
750320	MC	0	74	0	74	2015	0.43	0.43	0.4272	0.5094
679537	MC	1	41	1	41	2015	0.67	0.66	-0.8619	-0.7952
704127	MC	1	44	7	44	2015	0.32	0.32	0.9653	1.0066
637376	MC	2	40	9	39	2015	0.79	0.78	-1.5145	-1.4550
796550	MC	2	48	6	48	2015	0.34	0.36	0.8259	0.7957
182725	MC	3	42	1	42	2015	0.56	0.60	-0.3088	-0.4378
972295	MC	3	46	5	46	2015	0.34	0.33	0.8165	0.9760
662245	MC	4	42	9	42	2015	0.67	0.67	-0.8191	-0.8045
773517	MC	4	47	6	47	2015	0.32	0.38	0.9293	0.6867
929316	MC	5	40	4	39	2015	0.49	0.49	0.1010	0.0796
591504	MC	5	44	2	44	2015	0.42	0.42	0.3955	0.4519
266595	MC	6	40	8	39	2015	0.49	0.50	0.0726	0.0389
932460	MC	6	44	6	44	2015	0.65	0.65	-0.6966	-0.7441
441635	MC	7	41	7	41	2015	0.58	0.59	-0.3583	-0.4342
155157	MC	7	43	7	43	2015	0.46	0.45	0.2059	0.2916
671180	MC	8	40	5	39	2015	0.44	0.48	0.3302	0.1702
810346	MC	8	46	2	46	2015	0.35	0.35	0.7404	0.8328
465627	MC	9	44	3	44	2015	0.71	0.71	-1.0244	-1.0824
337313	MC	9	47	9	47	2015	0.38	0.38	0.6415	0.6851
776330	OE	0	25	0	25	2015	0.24	0.25	1.3516	1.4934
340884	OE	0	26	0	26	2015	0.54	0.52	-0.1032	0.0280

Grade 8 Mathematics

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
841464	MC	0	2	0	2	2015	0.41	0.41	0.3625	0.3697
789626	MC	0	8	ID	8	2015	0.63	0.60	-0.6664	-0.6304
646065	MC	0	9	0	9	2015	0.56	0.55	-0.2836	-0.2633
171345	MC	0	10	0	10	2015	0.40	0.42	0.4041	0.3184
697168	MC	0	14	0	14	2015	0.79	0.78	-1.5969	-1.7403
502337	MC	0	16	0	16	2015	0.46	0.50	0.1514	-0.1329
248360	MC	0	21	0	21	2015	0.46	0.46	0.1154	-0.0064
718510	MC	0	22	0	22	2015	0.70	0.70	-1.0748	-1.0780
808966	MC	0	34	0	34	2015	0.43	0.42	0.2775	0.3137
256362	MC	0	36	0	36	2015	0.48	0.49	0.0357	-0.0568
904565	MC	0	38	0	38	2015	0.75	0.75	-1.2928	-1.3702
306010	MC	0	53	0	53	2015	0.48	0.49	0.1388	0.1140
458785	MC	0	55	0	55	2015	0.55	0.54	-0.2825	-0.3580
294145	MC	0	64	0	64	2015	0.48	0.44	0.0496	0.1835
739898	MC	0	68	0	68	2015	0.49	0.50	-0.0337	-0.1296
998102	MC	0	73	0	73	2015	0.49	0.49	-0.0980	0.0859
190165	MC	1	40	7	40	2015	0.46	0.50	0.1374	-0.1397
305547	MC	1	49	6	49	2015	0.38	0.41	0.5472	0.3613
193449	MC	2	44	5	44	2015	0.34	0.32	0.7778	0.8647
300043	MC	2	50	5	50	2015	0.54	0.52	-0.2087	-0.2007
668945	MC	3	40	8	40	2015	0.38	0.36	0.5536	0.6776
358044	MC	3	47	3	47	2015	0.48	0.51	0.0573	-0.0986
540137	MC	4	40	2	40	2015	0.64	0.66	-0.7374	-0.9146
689712	MC	4	45	9	45	2015	0.32	0.38	0.8548	0.5253
560777	MC	5	41	8	41	2015	0.52	0.48	-0.1217	0.0625
378937	MC	5	49	7	49	2015	0.43	0.40	0.2950	0.4426
274707	MC	6	45	8	45	2015	0.37	0.36	0.5889	0.6766
101955	MC	6	50	1	50	2015	0.42	0.42	0.3502	0.3414
586379	MC	7	40	6	40	2015	0.42	0.41	0.3642	0.4083
362071	MC	7	45	5	45	2015	0.44	0.43	0.2439	0.2730
185945	MC	8	40	1	39	2015	0.68	0.64	-0.9438	-0.8234
589730	MC	8	47	4	47	2015	0.39	0.40	0.4641	0.4820
995454	MC	9	42	7	42	2015	0.42	0.37	0.3413	0.6169
819366	MC	9	48	3	48	2015	0.46	0.48	0.1279	0.0325
108674	OE	0	25	0	25	2015	0.26	0.25	1.4801	1.6255
411558	OE	0	76	0	76	2015	0.43	0.41	0.3894	0.5461

Grade 4 Science

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
948643	MC	0	3	0	3	2015	0.70	0.69	0.1520	0.1806
119107	MC	0	9	ID	9	2015	0.71	0.73	-0.0030	-0.1908
899945	MC	0	11	0	11	2015	0.61	0.63	0.5525	0.4185
889094	MC	0	14	0	14	2015	0.79	0.79	-0.5235	-0.5088
194997	MC	0	16	0	16	2015	0.67	0.64	0.2768	0.3945
383096	MC	0	18	0	18	2015	0.73	0.75	-0.1281	-0.2400
105474	MC	0	19	0	19	2015	0.62	0.62	0.5564	0.4538
107376	MC	0	24	0	24	2015	0.66	0.65	0.4130	0.4435
470228	MC	0	27	0	27	2015	0.84	0.84	-0.8680	-0.9252
167782	MC	0	41	0	41	2015	0.84	0.83	-0.8660	-0.8977
468413	MC	0	44	0	44	2015	0.60	0.56	0.6062	0.7833
425099	MC	0	46	0	46	2015	0.86	0.85	-1.0820	-1.1250
379901	MC	0	52	0	52	2015	0.89	0.90	-1.5222	-1.6108
219556	MC	0	57	0	57	2015	0.62	0.62	0.5585	0.4882
169340	MC	0	60	0	60	2015	0.83	0.80	-0.8458	-0.7008
399527	MC	0	61	0	61	2015	0.69	0.67	0.1160	0.1273
542856	MC	1	30	2	67	2015	0.70	0.68	0.0659	0.0845
913302	MC	1	70	8	70	2015	0.68	0.64	0.1681	0.2701
913878	MC	2	30	5	30	2015	0.64	0.65	0.4340	0.3047
286940	MC	2	71	4	71	2015	0.65	0.65	0.3615	0.2843
159541	MC	3	33	1	33	2015	0.49	0.50	1.1551	1.1189
525333	MC	3	71	6	71	2015	0.73	0.72	-0.1288	-0.1256
165146	MC	4	34	4	34	2015	0.57	0.57	0.7818	0.7070
967879	MC	4	69	12	69	2015	0.51	0.51	1.0740	1.0091
827286	MC	5	32	7	32	2015	0.66	0.64	0.3137	0.3420
777677	MC	5	67	5	67	2015	0.69	0.72	0.1124	-0.0919
315694	MC	6	33	1	70	2015	0.75	0.73	-0.3177	-0.2172
463363	MC	6	69	4	32	2015	0.65	0.65	0.3379	0.2824
648043	MC	7	32	6	32	2015	0.72	0.69	-0.0181	0.1249
427132	MC	7	70	11	70	2015	0.77	0.75	-0.3319	-0.2674
542818	MC	8	34	6	34	2015	0.80	0.78	-0.5582	-0.5291
319247	MC	8	71	10	34	2015	0.78	0.79	-0.4127	-0.5806
441936	MC	9	31	6	31	2015	0.53	0.53	0.9875	0.9837
416214	MC	9	68	2	68	2015	0.68	0.62	0.1908	0.4826
467450	MC	10	33	6	70	2015	0.80	0.79	-0.5567	-0.5655
569053	MC	10	68	10	68	2015	0.73	0.70	-0.0939	0.0711

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
626167	MC	11	30	7	30	2015	0.47	0.48	1.2844	1.2037
387068	MC	11	70	11	33	2015	0.78	0.76	-0.3877	-0.3903
985329	MC	12	34	5	34	2015	0.79	0.78	-0.5460	-0.5003
771492	MC	12	70	10	33	2015	0.60	0.60	0.6319	0.6177
225224	SCR	0	72	0	72	2015	0.75	0.75	-0.0169	-0.0898
339077	SCR	0	73	0	73	2015	0.61	0.58	0.5570	0.6572

Grade 8 Science

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
330477	MC	0	6	0	6	2015	0.70	0.67	-0.4252	-0.3376
931106	MC	0	9	ID	9	2015	0.72	0.73	-0.5127	-0.7123
814484	MC	0	15	0	15	2015	0.73	0.72	-0.6206	-0.6517
891218	MC	0	20	0	20	2015	0.77	0.75	-0.8183	-0.8111
546693	MC	0	22	0	22	2015	0.73	0.69	-0.5272	-0.4552
283496	MC	0	24	0	24	2015	0.69	0.68	-0.4143	-0.3902
626476	MC	0	39	0	39	2015	0.84	0.84	-1.5203	-1.6358
711854	MC	0	40	0	40	2015	0.71	0.70	-0.4932	-0.5945
751251	MC	0	46	0	46	2015	0.75	0.73	-0.7730	-0.7973
585850	MC	0	47	0	47	2015	0.87	0.85	-1.6578	-1.6540
756643	MC	0	48	0	48	2015	0.74	0.74	-0.6930	-0.8230
840785	MC	0	50	0	50	2015	0.74	0.75	-0.7170	-0.8605
709729	MC	0	52	0	52	2015	0.77	0.75	-0.9255	-0.9096
908670	MC	0	59	0	59	2015	0.70	0.68	-0.4224	-0.4944
483999	MC	0	61	0	61	2015	0.61	0.60	0.0913	0.0321
198642	MC	0	63	0	63	2015	0.70	0.67	-0.3178	-0.4474
321117	MC	1	33	12	71	2015	0.49	0.47	0.6653	0.6360
174716	MC	1	73	11	73	2015	0.72	0.70	-0.5180	-0.5957
299687	MC	2	34	9	34	2015	0.70	0.67	-0.4279	-0.3284
609202	MC	2	70	11	70	2015	0.54	0.55	0.4162	0.3346
430524	MC	3	33	7	71	2015	0.68	0.71	-0.3313	-0.5974
466363	MC	3	73	7	73	2015	0.80	0.82	-1.1286	-1.3104
601456	MC	4	33	12	33	2015	0.62	0.57	0.0010	0.2437
588308	MC	4	70	8	70	2015	0.79	0.79	-1.0004	-1.0845
156482	MC	5	32	8	32	2015	0.65	0.63	-0.1266	-0.0665
664033	MC	5	70	4	32	2015	0.66	0.61	-0.2174	0.0041
837702	MC	6	32	1	32	2015	0.74	0.74	-0.7495	-0.7862
110384	MC	6	72	11	72	2015	0.51	0.50	0.5788	0.6051
978152	MC	7	34	8	34	2015	0.53	0.51	0.4627	0.5567
295993	MC	7	71	9	71	2015	0.54	0.55	0.4766	0.3068
260765	MC	8	33	11	33	2015	0.49	0.52	0.6432	0.5019
203110	MC	8	73	11	35	2015	0.69	0.67	-0.3447	-0.3134
634157	MC	9	32	12	32	2015	0.72	0.70	-0.5564	-0.5336
181243	MC	9	73	3	35	2015	0.49	0.46	0.6636	0.8079
454852	MC	10	33	6	71	2015	0.48	0.44	0.7335	0.9126
434386	MC	10	71	2	33	2015	0.68	0.67	-0.2841	-0.3052

ID	Type	Form	Item Sequence	Previous Form	Previous Item Sequence	Previous Year	Previous P-Value	P-Value	Previous IRT Difficulty Estimate	IRT Difficulty Estimate
741273	MC	11	34	11	34	2015	0.84	0.84	-1.4490	-1.5097
970594	MC	11	73	12	35	2015	0.53	0.52	0.4817	0.4783
113244	MC	12	33	1	71	2015	0.73	0.72	-0.6564	-0.6669
505467	MC	12	71	4	33	2015	0.49	0.50	0.6756	0.5997
893140	SCR	0	74	0	74	2015	0.44	0.44	0.9726	0.9268
283103	SCR	0	75	0	75	2015	0.59	0.52	0.1545	0.4543

APPENDIX P: RELIABILITIES

Grade 3 English Language Arts

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	62	45	125284	36.12	11.49	0.91	3.42	MC*OE
A	All	19	13	125284	11.50	4.25	0.80	1.88	MC*OE
B	All	17	13	125284	9.71	3.57	0.74	1.81	MC*OE
C	All	8	1	125284	3.70	1.69			OE
D	All	18	18	125284	11.21	3.69	0.77	1.76	MC

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	62	45	63902	34.60	11.46	0.91	3.41	MC*OE
Total	Female	62	45	61382	37.72	11.29	0.91	3.41	MC*OE
A	Male	19	13	63902	11.10	4.29	0.81	1.89	MC*OE
A	Female	19	13	61382	11.92	4.17	0.80	1.88	MC*OE
B	Male	17	13	63902	9.25	3.56	0.74	1.82	MC*OE
B	Female	17	13	61382	10.19	3.51	0.74	1.79	MC*OE
C	Male	8	1	63902	3.37	1.61			OE
C	Female	8	1	61382	4.04	1.70			OE
D	Male	18	18	63902	10.88	3.70	0.77	1.78	MC
D	Female	18	18	61382	11.56	3.64	0.77	1.74	MC

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	62	45	82060	38.62	10.57	0.90	3.36	MC*OE
Total	African American	62	45	18620	28.70	10.66	0.89	3.52	MC*OE
Total	Hispanic	62	45	13977	30.24	11.02	0.90	3.49	MC*OE
Total	Asian	62	45	4723	41.49	11.03	0.91	3.30	MC*OE
Total	American Indian	62	45	183	35.98	11.25	0.91	3.44	MC*OE
Total	Pacific Islander	62	45	114	38.41	10.32	0.90	3.27	MC*OE
Total	Multiple Ethnicities	62	45	5607	34.30	11.70	0.91	3.45	MC*OE
A	White	19	13	82060	12.41	3.88	0.77	1.84	MC*OE
A	African American	19	13	18620	8.88	4.16	0.78	1.95	MC*OE
A	Hispanic	19	13	13977	9.45	4.29	0.79	1.95	MC*OE
A	Asian	19	13	4723	12.92	3.92	0.79	1.79	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	American Indian	19	13	183	11.72	4.24	0.80	1.88	MC*OE
A	Pacific Islander	19	13	114	12.10	3.97	0.79	1.81	MC*OE
A	Multiple Ethnicities	19	13	5607	10.87	4.37	0.81	1.91	MC*OE
B	White	17	13	82060	10.37	3.37	0.72	1.79	MC*OE
B	African American	17	13	18620	7.70	3.37	0.69	1.87	MC*OE
B	Hispanic	17	13	13977	8.20	3.43	0.71	1.86	MC*OE
B	Asian	17	13	4723	11.16	3.30	0.72	1.75	MC*OE
B	American Indian	17	13	183	9.62	3.57	0.73	1.85	MC*OE
B	Pacific Islander	17	13	114	10.63	3.22	0.70	1.76	MC*OE
B	Multiple Ethnicities	17	13	5607	9.22	3.62	0.75	1.83	MC*OE
C	White	8	1	82060	3.90	1.66			OE
C	African American	8	1	18620	3.07	1.59			OE
C	Hispanic	8	1	13977	3.18	1.58			OE
C	Asian	8	1	4723	4.40	1.77			OE
C	American Indian	8	1	183	3.57	1.76			OE
C	Pacific Islander	8	1	114	3.88	1.51			OE
C	Multiple Ethnicities	8	1	5607	3.52	1.69			OE
D	White	18	18	82060	11.94	3.46	0.75	1.73	MC
D	African American	18	18	18620	9.06	3.37	0.70	1.86	MC
D	Hispanic	18	18	13977	9.42	3.48	0.72	1.85	MC
D	Asian	18	18	4723	13.01	3.68	0.80	1.63	MC
D	American Indian	18	18	183	11.07	3.59	0.75	1.78	MC
D	Pacific Islander	18	18	114	11.81	3.39	0.74	1.74	MC
D	Multiple Ethnicities	18	18	5607	10.69	3.73	0.77	1.79	MC

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	62	45	19560	26.44	11.21	0.91	3.45	MC*OE
A	Y	19	13	19560	8.12	4.30	0.80	1.92	MC*OE
B	Y	17	13	19560	7.03	3.48	0.72	1.84	MC*OE
C	Y	8	1	19560	2.75	1.50			OE
D	Y	18	18	19560	8.54	3.61	0.73	1.88	MC

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	62	45	4530	25.04	9.42	0.86	3.51	MC*OE
A	Y	19	13	4530	7.38	3.70	0.72	1.96	MC*OE
B	Y	17	13	4530	6.83	2.97	0.59	1.89	MC*OE
C	Y	8	1	4530	2.81	1.48			OE
D	Y	18	18	4530	8.01	3.20	0.65	1.90	MC

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	62	45	62419	31.42	11.01	0.90	3.49	MC*OE
A	Y	19	13	62419	9.93	4.27	0.79	1.94	MC*OE
B	Y	17	13	62419	8.41	3.44	0.71	1.86	MC*OE
C	Y	8	1	62419	3.24	1.58			OE
D	Y	18	18	62419	9.84	3.51	0.73	1.84	MC

Grade 4 English Language Arts

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	84	49	123597	48.11	14.61	0.91	4.26	MC*OE
A	All	19	15	123597	13.52	4.42	0.82	1.87	MC*OE
B	All	19	14	123597	11.97	4.19	0.78	1.97	MC*OE
C	All	12	1	123597	6.05	2.28			OE
D	All	18	18	123597	11.11	3.83	0.77	1.82	MC
E	All	16	1	123597	5.47	3.02			OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	84	49	63025	46.00	14.66	0.92	4.24	MC*OE
Total	Female	84	49	60572	50.31	14.22	0.91	4.28	MC*OE
A	Male	19	15	63025	12.96	4.58	0.82	1.92	MC*OE
A	Female	19	15	60572	14.09	4.17	0.81	1.80	MC*OE
B	Male	19	14	63025	11.63	4.23	0.78	1.98	MC*OE
B	Female	19	14	60572	12.32	4.11	0.77	1.96	MC*OE
C	Male	12	1	63025	5.64	2.21			OE
C	Female	12	1	60572	6.48	2.27			OE
D	Male	18	18	63025	10.74	3.82	0.77	1.85	MC
D	Female	18	18	60572	11.49	3.80	0.78	1.79	MC
E	Male	16	1	63025	5.03	2.92			OE
E	Female	16	1	60572	5.91	3.06			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	84	49	82381	51.15	13.38	0.90	4.22	MC*OE
Total	African American	84	49	17958	38.60	14.01	0.90	4.37	MC*OE
Total	Hispanic	84	49	13411	40.63	14.32	0.91	4.32	MC*OE
Total	Asian	84	49	4638	54.34	13.98	0.91	4.16	MC*OE
Total	American Indian	80	49	174	45.39	14.79	0.92	4.15	MC*OE
Total	Pacific Islander	84	49	110	50.15	14.19	0.91	4.36	MC*OE
Total	Multiple Ethnicities	84	49	4925	46.48	14.66	0.91	4.31	MC*OE
A	White	19	15	82381	14.35	3.97	0.80	1.79	MC*OE
A	African American	19	15	17958	10.88	4.75	0.81	2.05	MC*OE
A	Hispanic	19	15	13411	11.59	4.69	0.82	2.01	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Asian	19	15	4638	14.96	3.85	0.81	1.68	MC*OE
A	American Indian	19	15	174	12.75	4.46	0.81	1.95	MC*OE
A	Pacific Islander	19	15	110	13.79	4.19	0.81	1.81	MC*OE
A	Multiple Ethnicities	19	15	4925	13.10	4.51	0.82	1.91	MC*OE
B	White	19	14	82381	12.75	3.95	0.76	1.94	MC*OE
B	African American	19	14	17958	9.48	3.96	0.73	2.04	MC*OE
B	Hispanic	19	14	13411	10.12	4.07	0.75	2.04	MC*OE
B	Asian	19	14	4638	13.55	3.87	0.77	1.84	MC*OE
B	American Indian	19	14	174	11.27	4.27	0.79	1.95	MC*OE
B	Pacific Islander	19	14	110	12.42	4.04	0.76	1.98	MC*OE
B	Multiple Ethnicities	19	14	4925	11.50	4.15	0.77	2.01	MC*OE
C	White	12	1	82381	6.32	2.23			OE
C	African American	12	1	17958	5.19	2.19			OE
C	Hispanic	12	1	13411	5.35	2.18			OE
C	Asian	12	1	4638	6.90	2.33			OE
C	American Indian	12	1	174	5.84	2.31			OE
C	Pacific Islander	12	1	110	6.41	2.17			OE
C	Multiple Ethnicities	12	1	4925	5.88	2.28			OE
D	White	18	18	82381	11.93	3.56	0.75	1.79	MC
D	African American	18	18	17958	8.69	3.47	0.69	1.92	MC
D	Hispanic	18	18	13411	9.02	3.67	0.73	1.91	MC
D	Asian	18	18	4638	12.51	3.81	0.80	1.70	MC
D	American Indian	18	18	174	10.44	3.77	0.76	1.86	MC
D	Pacific Islander	18	18	110	11.56	3.70	0.76	1.80	MC
D	Multiple Ethnicities	18	18	4925	10.68	3.80	0.76	1.85	MC
E	White	16	1	82381	5.81	2.97			OE
E	African American	16	1	17958	4.36	2.90			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
E	Hispanic	16	1	13411	4.55	2.89			OE
E	Asian	16	1	4638	6.42	3.15			OE
E	American Indian	12	1	174	5.08	2.89			OE
E	Pacific Islander	16	1	110	5.96	3.19			OE
E	Multiple Ethnicities	16	1	4925	5.31	3.05			OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	20345	35.05	14.33	0.91	4.29	MC*OE
A	Y	19	15	20345	9.74	4.78	0.81	2.06	MC*OE
B	Y	19	14	20345	8.76	4.03	0.74	2.04	MC*OE
C	Y	12	1	20345	4.67	2.13			OE
D	Y	18	18	20345	8.25	3.60	0.71	1.93	MC
E	Y	16	1	20345	3.63	2.84			OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	3696	30.79	11.40	0.86	4.31	MC*OE
A	Y	19	15	3696	8.46	3.99	0.73	2.09	MC*OE
B	Y	19	14	3696	7.69	3.20	0.60	2.03	MC*OE
C	Y	12	1	3696	4.60	2.04			OE
D	Y	18	18	3696	6.70	2.87	0.55	1.92	MC
E	Y	16	1	3696	3.33	2.65			OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	60144	41.99	14.16	0.91	4.33	MC*OE
A	Y	19	15	60144	11.93	4.64	0.81	2.00	MC*OE
B	Y	19	14	60144	10.38	4.07	0.75	2.04	MC*OE
C	Y	12	1	60144	5.45	2.18			OE
D	Y	18	18	60144	9.56	3.65	0.73	1.90	MC
E	Y	16	1	60144	4.67	2.87			OE

Grade 5 English Language Arts

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	84	49	122868	48.09	14.94	0.92	4.26	MC*OE
A	All	21	16	122868	13.00	4.81	0.82	2.03	MC*OE
B	All	17	13	122868	10.52	3.59	0.72	1.90	MC*OE
C	All	12	1	122868	7.32	2.41			OE
D	All	18	18	122868	11.11	4.12	0.81	1.80	MC
E	All	16	1	122868	6.14	2.96			OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	84	49	62743	46.11	15.05	0.92	4.24	MC*OE
Total	Female	84	49	60125	50.15	14.54	0.91	4.28	MC*OE
A	Male	21	16	62743	12.59	4.92	0.83	2.04	MC*OE
A	Female	21	16	60125	13.43	4.65	0.81	2.00	MC*OE
B	Male	17	13	62743	10.28	3.67	0.73	1.91	MC*OE
B	Female	17	13	60125	10.77	3.47	0.71	1.89	MC*OE
C	Male	12	1	62743	6.82	2.37			OE
C	Female	12	1	60125	7.84	2.34			OE
D	Male	18	18	62743	10.65	4.15	0.80	1.83	MC
D	Female	18	18	60125	11.58	4.03	0.81	1.77	MC
E	Male	16	1	62743	5.76	2.86			OE
E	Female	16	1	60125	6.53	3.00			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	84	49	82892	51.24	13.73	0.90	4.23	MC*OE
Total	African American	84	49	17765	37.84	13.69	0.90	4.32	MC*OE
Total	Hispanic	84	49	12922	40.10	14.30	0.91	4.31	MC*OE
Total	Asian	84	49	4630	55.52	14.41	0.91	4.28	MC*OE
Total	American Indian	80	49	208	44.30	14.97	0.92	4.29	MC*OE
Total	Pacific Islander	80	49	75	50.21	14.86	0.91	4.42	MC*OE
Total	Multiple Ethnicities	84	49	4376	45.73	15.10	0.92	4.27	MC*OE
A	White	21	16	82892	14.03	4.45	0.80	1.99	MC*OE
A	African American	21	16	17765	9.76	4.46	0.78	2.11	MC*OE
A	Hispanic	21	16	12922	10.51	4.62	0.79	2.11	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Asian	21	16	4630	14.79	4.36	0.81	1.91	MC*OE
A	American Indian	21	16	208	12.24	4.96	0.83	2.05	MC*OE
A	Pacific Islander	21	16	75	13.05	4.98	0.84	2.01	MC*OE
A	Multiple Ethnicities	21	16	4376	12.22	4.88	0.82	2.06	MC*OE
B	White	17	13	82892	11.12	3.36	0.69	1.87	MC*OE
B	African American	17	13	17765	8.54	3.55	0.70	1.95	MC*OE
B	Hispanic	17	13	12922	9.01	3.59	0.71	1.94	MC*OE
B	Asian	17	13	4630	12.06	3.30	0.70	1.80	MC*OE
B	American Indian	17	13	208	9.68	3.65	0.71	1.95	MC*OE
B	Pacific Islander	17	13	75	11.35	3.50	0.72	1.86	MC*OE
B	Multiple Ethnicities	17	13	4376	10.12	3.66	0.73	1.92	MC*OE
C	White	12	1	82892	7.63	2.32			OE
C	African American	12	1	17765	6.28	2.36			OE
C	Hispanic	12	1	12922	6.51	2.38			OE
C	Asian	12	1	4630	8.33	2.43			OE
C	American Indian	12	1	208	6.71	2.46			OE
C	Pacific Islander	12	1	75	7.20	2.56			OE
C	Multiple Ethnicities	12	1	4376	7.05	2.39			OE
D	White	18	18	82892	11.95	3.83	0.79	1.76	MC
D	African American	18	18	17765	8.45	3.76	0.74	1.92	MC
D	Hispanic	18	18	12922	8.95	3.97	0.77	1.91	MC
D	Asian	18	18	4630	12.76	3.99	0.83	1.66	MC
D	American Indian	18	18	208	10.14	4.10	0.79	1.87	MC
D	Pacific Islander	18	18	75	11.68	4.12	0.82	1.75	MC
D	Multiple Ethnicities	18	18	4376	10.53	4.12	0.80	1.84	MC
E	White	16	1	82892	6.52	2.88			OE
E	African American	16	1	17765	4.81	2.70			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
E	Hispanic	16	1	12922	5.13	2.77			OE
E	Asian	16	1	4630	7.58	3.23			OE
E	American Indian	12	1	208	5.54	2.71			OE
E	Pacific Islander	12	1	75	6.93	3.18			OE
E	Multiple Ethnicities	16	1	4376	5.83	2.98			OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	20335	34.02	13.53	0.90	4.22	MC*OE
A	Y	21	16	20335	9.00	4.52	0.79	2.09	MC*OE
B	Y	17	13	20335	7.52	3.45	0.69	1.93	MC*OE
C	Y	12	1	20335	5.61	2.32			OE
D	Y	18	18	20335	7.64	3.76	0.74	1.92	MC
E	Y	16	1	20335	4.25	2.57			OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	3055	28.43	10.02	0.82	4.24	MC*OE
A	Y	21	16	3055	7.09	3.13	0.57	2.06	MC*OE
B	Y	17	13	3055	6.39	2.82	0.54	1.91	MC*OE
C	Y	12	1	3055	5.23	2.38			OE
D	Y	18	18	3055	6.00	2.82	0.54	1.91	MC
E	Y	16	1	3055	3.72	2.50			OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	58232	41.49	14.18	0.91	4.31	MC*OE
A	Y	21	16	58232	11.05	4.71	0.80	2.10	MC*OE
B	Y	17	13	58232	9.22	3.57	0.71	1.94	MC*OE
C	Y	12	1	58232	6.59	2.33			OE
D	Y	18	18	58232	9.39	3.96	0.77	1.90	MC
E	Y	16	1	58232	5.23	2.72			OE

Grade 6 English Language Arts

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	84	49	125263	50.42	14.58	0.92	4.21	MC*OE
A	All	18	14	125263	10.84	4.03	0.76	1.99	MC*OE
B	All	20	15	125263	13.43	4.06	0.77	1.94	MC*OE
C	All	12	1	125263	6.76	2.36			OE
D	All	18	18	125263	11.93	3.89	0.79	1.77	MC
E	All	16	1	125263	7.45	3.21			OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	84	49	64070	48.05	14.84	0.92	4.18	MC*OE
Total	Female	84	49	61193	52.89	13.87	0.91	4.23	MC*OE
A	Male	18	14	64070	10.52	4.15	0.77	2.00	MC*OE
A	Female	18	14	61193	11.18	3.87	0.74	1.98	MC*OE
B	Male	20	15	64070	13.02	4.21	0.78	1.97	MC*OE
B	Female	20	15	61193	13.86	3.86	0.76	1.91	MC*OE
C	Male	12	1	64070	6.27	2.36			OE
C	Female	12	1	61193	7.27	2.25			OE
D	Male	18	18	64070	11.48	3.99	0.80	1.80	MC
D	Female	18	18	61193	12.41	3.71	0.78	1.73	MC
E	Male	16	1	64070	6.76	3.08			OE
E	Female	16	1	61193	8.18	3.19			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	84	49	85882	53.22	13.35	0.90	4.16	MC*OE
Total	African American	84	49	17693	40.76	14.00	0.90	4.34	MC*OE
Total	Hispanic	84	49	12720	42.63	14.40	0.91	4.32	MC*OE
Total	Asian	84	49	4823	58.20	13.47	0.91	4.09	MC*OE
Total	American Indian	84	49	172	47.39	14.88	0.92	4.20	MC*OE
Total	Pacific Islander	84	49	94	53.15	13.47	0.91	4.01	MC*OE
Total	Multiple Ethnicities	84	49	3879	48.26	14.97	0.92	4.26	MC*OE
A	White	18	14	85882	11.52	3.84	0.74	1.97	MC*OE
A	African American	18	14	17693	8.53	3.74	0.71	2.02	MC*OE
A	Hispanic	18	14	12720	8.94	3.85	0.72	2.04	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Asian	18	14	4823	12.61	3.79	0.75	1.89	MC*OE
A	American Indian	18	14	172	10.37	4.09	0.76	2.00	MC*OE
A	Pacific Islander	18	14	94	11.73	3.98	0.75	1.98	MC*OE
A	Multiple Ethnicities	18	14	3879	10.36	4.10	0.76	2.01	MC*OE
B	White	20	15	85882	14.12	3.75	0.75	1.89	MC*OE
B	African American	20	15	17693	11.16	4.19	0.76	2.06	MC*OE
B	Hispanic	20	15	12720	11.51	4.20	0.76	2.04	MC*OE
B	Asian	20	15	4823	15.02	3.56	0.75	1.79	MC*OE
B	American Indian	20	15	172	12.76	4.27	0.78	2.01	MC*OE
B	Pacific Islander	20	15	94	14.02	3.56	0.72	1.88	MC*OE
B	Multiple Ethnicities	20	15	3879	12.90	4.17	0.78	1.97	MC*OE
C	White	12	1	85882	7.07	2.24			OE
C	African American	12	1	17693	5.66	2.38			OE
C	Hispanic	12	1	12720	5.89	2.38			OE
C	Asian	12	1	4823	7.85	2.30			OE
C	American Indian	12	1	172	6.42	2.50			OE
C	Pacific Islander	12	1	94	6.96	2.21			OE
C	Multiple Ethnicities	12	1	3879	6.50	2.44			OE
D	White	18	18	85882	12.66	3.59	0.77	1.72	MC
D	African American	18	18	17693	9.44	3.77	0.74	1.91	MC
D	Hispanic	18	18	12720	10.01	3.89	0.76	1.89	MC
D	Asian	18	18	4823	13.71	3.46	0.79	1.60	MC
D	American Indian	18	18	172	10.93	4.09	0.80	1.83	MC
D	Pacific Islander	18	18	94	12.69	3.84	0.81	1.70	MC
D	Multiple Ethnicities	18	18	3879	11.35	3.96	0.79	1.81	MC
E	White	16	1	85882	7.85	3.10			OE
E	African American	16	1	17693	5.98	3.08			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
E	Hispanic	16	1	12720	6.28	3.13			OE
E	Asian	16	1	4823	9.02	3.27			OE
E	American Indian	16	1	172	6.91	2.87			OE
E	Pacific Islander	16	1	94	7.74	3.04			OE
E	Multiple Ethnicities	16	1	3879	7.16	3.30			OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	20143	35.57	13.47	0.90	4.27	MC*OE
A	Y	18	14	20143	7.57	3.66	0.70	2.01	MC*OE
B	Y	20	15	20143	9.60	4.12	0.74	2.09	MC*OE
C	Y	12	1	20143	4.94	2.32			OE
D	Y	18	18	20143	8.41	3.75	0.73	1.94	MC
E	Y	16	1	20143	5.04	2.84			OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	2814	29.95	10.97	0.84	4.33	MC*OE
A	Y	18	14	2814	6.03	2.68	0.46	1.96	MC*OE
B	Y	20	15	2814	7.98	3.37	0.61	2.09	MC*OE
C	Y	12	1	2814	4.57	2.35			OE
D	Y	18	18	2814	6.93	3.20	0.63	1.94	MC
E	Y	16	1	2814	4.43	2.89			OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	57972	44.09	14.19	0.91	4.30	MC*OE
A	Y	18	14	57972	9.36	3.91	0.73	2.04	MC*OE
B	Y	20	15	57972	11.87	4.14	0.76	2.04	MC*OE
C	Y	12	1	57972	6.03	2.35			OE
D	Y	18	18	57972	10.39	3.88	0.77	1.87	MC
E	Y	16	1	57972	6.45	3.07			OE

Grade 7 English Language Arts

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	84	49	124961	48.99	13.92	0.91	4.23	MC*OE
A	All	20	15	124961	11.10	4.07	0.74	2.05	MC*OE
B	All	18	14	124961	11.98	3.53	0.74	1.81	MC*OE
C	All	12	1	124961	7.16	2.19			OE
D	All	18	18	124961	11.92	3.66	0.77	1.74	MC
E	All	16	1	124961	6.84	3.33			OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	84	49	63614	46.45	14.03	0.91	4.20	MC*OE
Total	Female	84	49	61347	51.62	13.30	0.90	4.25	MC*OE
A	Male	20	15	63614	10.67	4.11	0.75	2.07	MC*OE
A	Female	20	15	61347	11.54	3.98	0.74	2.04	MC*OE
B	Male	18	14	63614	11.58	3.68	0.75	1.84	MC*OE
B	Female	18	14	61347	12.39	3.33	0.71	1.78	MC*OE
C	Male	12	1	63614	6.66	2.20			OE
C	Female	12	1	61347	7.68	2.06			OE
D	Male	18	18	63614	11.39	3.74	0.77	1.77	MC
D	Female	18	18	61347	12.46	3.49	0.76	1.70	MC
E	Male	16	1	63614	6.15	3.18			OE
E	Female	16	1	61347	7.55	3.33			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	84	49	86809	51.61	12.92	0.90	4.18	MC*OE
Total	African American	84	49	17639	39.80	12.83	0.89	4.29	MC*OE
Total	Hispanic	84	49	12202	41.36	13.41	0.90	4.26	MC*OE
Total	Asian	84	49	4638	56.55	13.49	0.91	4.14	MC*OE
Total	American Indian	84	49	176	48.07	13.71	0.91	4.21	MC*OE
Total	Pacific Islander	84	49	86	53.01	12.88	0.89	4.29	MC*OE
Total	Multiple Ethnicities	84	49	3411	46.79	13.76	0.90	4.29	MC*OE
A	White	20	15	86809	11.76	3.91	0.73	2.05	MC*OE
A	African American	20	15	17639	8.71	3.65	0.68	2.05	MC*OE
A	Hispanic	20	15	12202	9.21	3.75	0.70	2.06	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Asian	20	15	4638	13.15	3.94	0.75	1.98	MC*OE
A	American Indian	20	15	176	10.77	4.00	0.73	2.06	MC*OE
A	Pacific Islander	20	15	86	12.19	3.74	0.68	2.11	MC*OE
A	Multiple Ethnicities	20	15	3411	10.53	3.98	0.73	2.07	MC*OE
B	White	18	14	86809	12.55	3.31	0.71	1.78	MC*OE
B	African American	18	14	17639	10.04	3.50	0.70	1.92	MC*OE
B	Hispanic	18	14	12202	10.32	3.61	0.72	1.90	MC*OE
B	Asian	18	14	4638	13.31	3.32	0.74	1.68	MC*OE
B	American Indian	18	14	176	12.03	3.38	0.71	1.81	MC*OE
B	Pacific Islander	18	14	86	12.86	3.14	0.69	1.74	MC*OE
B	Multiple Ethnicities	18	14	3411	11.53	3.54	0.73	1.86	MC*OE
C	White	12	1	86809	7.41	2.11			OE
C	African American	12	1	17639	6.27	2.18			OE
C	Hispanic	12	1	12202	6.35	2.20			OE
C	Asian	12	1	4638	8.20	2.12			OE
C	American Indian	12	1	176	7.14	2.19			OE
C	Pacific Islander	12	1	86	7.60	2.19			OE
C	Multiple Ethnicities	12	1	3411	6.94	2.24			OE
D	White	18	18	86809	12.59	3.39	0.75	1.70	MC
D	African American	18	18	17639	9.61	3.54	0.72	1.86	MC
D	Hispanic	18	18	12202	10.01	3.62	0.74	1.84	MC
D	Asian	18	18	4638	13.38	3.40	0.78	1.61	MC
D	American Indian	18	18	176	11.50	3.41	0.72	1.79	MC
D	Pacific Islander	18	18	86	12.73	3.48	0.77	1.67	MC
D	Multiple Ethnicities	18	18	3411	11.39	3.63	0.76	1.77	MC
E	White	16	1	86809	7.30	3.22			OE
E	African American	16	1	17639	5.17	3.07			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
E	Hispanic	16	1	12202	5.46	3.17			OE
E	Asian	16	1	4638	8.51	3.41			OE
E	American Indian	16	1	176	6.64	3.25			OE
E	Pacific Islander	16	1	86	7.63	3.40			OE
E	Multiple Ethnicities	16	1	3411	6.40	3.34			OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	19424	34.88	12.06	0.88	4.23	MC*OE
A	Y	20	15	19424	7.90	3.51	0.66	2.05	MC*OE
B	Y	18	14	19424	8.78	3.47	0.68	1.95	MC*OE
C	Y	12	1	19424	5.48	2.14			OE
D	Y	18	18	19424	8.46	3.49	0.70	1.90	MC
E	Y	16	1	19424	4.26	2.73			OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	80	49	2829	29.21	9.41	0.80	4.24	MC*OE
A	Y	20	15	2829	6.57	2.51	0.35	2.02	MC*OE
B	Y	18	14	2829	7.30	2.84	0.53	1.94	MC*OE
C	Y	12	1	2829	5.09	2.16			OE
D	Y	18	18	2829	6.91	2.75	0.51	1.93	MC
E	Y	12	1	2829	3.34	2.73			OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	56119	42.78	13.21	0.90	4.27	MC*OE
A	Y	20	15	56119	9.56	3.82	0.71	2.06	MC*OE
B	Y	18	14	56119	10.64	3.55	0.71	1.90	MC*OE
C	Y	12	1	56119	6.50	2.17			OE
D	Y	18	18	56119	10.42	3.62	0.74	1.83	MC
E	Y	16	1	56119	5.67	3.11			OE

Grade 8 English Language Arts

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	84	49	123275	52.23	14.49	0.91	4.43	MC*OE
A	All	20	15	123275	13.92	3.91	0.76	1.90	MC*OE
B	All	18	14	123275	10.55	3.74	0.71	2.00	MC*OE
C	All	12	1	123275	7.50	2.29			OE
D	All	18	18	123275	12.73	3.88	0.81	1.67	MC
E	All	16	1	123275	7.52	3.62			OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	84	49	63461	49.39	14.74	0.91	4.42	MC*OE
Total	Female	84	49	59814	55.23	13.60	0.89	4.43	MC*OE
A	Male	20	15	63461	13.35	4.10	0.77	1.95	MC*OE
A	Female	20	15	59814	14.53	3.61	0.74	1.85	MC*OE
B	Male	18	14	63461	10.15	3.82	0.72	2.01	MC*OE
B	Female	18	14	59814	10.97	3.61	0.70	1.99	MC*OE
C	Male	12	1	63461	6.92	2.30			OE
C	Female	12	1	59814	8.10	2.12			OE
D	Male	18	18	63461	12.12	3.99	0.81	1.72	MC
D	Female	18	18	59814	13.39	3.65	0.81	1.61	MC
E	Male	16	1	63461	6.85	3.53			OE
E	Female	16	1	59814	8.23	3.57			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	84	49	85934	54.70	13.45	0.89	4.37	MC*OE
Total	African American	84	49	17718	43.48	13.86	0.89	4.50	MC*OE
Total	Hispanic	84	49	11936	44.71	14.64	0.91	4.49	MC*OE
Total	Asian	84	49	4533	60.31	13.86	0.91	4.24	MC*OE
Total	American Indian	84	49	188	51.83	14.31	0.91	4.25	MC*OE
Total	Pacific Islander	84	49	94	54.96	13.35	0.89	4.47	MC*OE
Total	Multiple Ethnicities	84	49	2872	50.57	14.36	0.90	4.50	MC*OE
A	White	20	15	85934	14.48	3.64	0.74	1.86	MC*OE
A	African American	20	15	17718	11.92	4.08	0.75	2.02	MC*OE
A	Hispanic	20	15	11936	12.31	4.20	0.77	2.01	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Asian	20	15	4533	15.64	3.53	0.77	1.68	MC*OE
A	American Indian	20	15	188	13.89	3.79	0.74	1.93	MC*OE
A	Pacific Islander	20	15	94	14.82	3.27	0.70	1.80	MC*OE
A	Multiple Ethnicities	20	15	2872	13.64	3.97	0.77	1.92	MC*OE
B	White	18	14	85934	11.12	3.60	0.70	1.98	MC*OE
B	African American	18	14	17718	8.56	3.47	0.65	2.05	MC*OE
B	Hispanic	18	14	11936	8.87	3.58	0.67	2.06	MC*OE
B	Asian	18	14	4533	12.17	3.60	0.72	1.90	MC*OE
B	American Indian	18	14	188	10.49	3.57	0.69	2.00	MC*OE
B	Pacific Islander	18	14	94	10.85	3.67	0.70	2.00	MC*OE
B	Multiple Ethnicities	18	14	2872	10.12	3.70	0.70	2.03	MC*OE
C	White	12	1	85934	7.73	2.19			OE
C	African American	12	1	17718	6.66	2.38			OE
C	Hispanic	12	1	11936	6.70	2.41			OE
C	Asian	12	1	4533	8.45	2.23			OE
C	American Indian	12	1	188	7.42	2.66			OE
C	Pacific Islander	12	1	94	7.79	2.08			OE
C	Multiple Ethnicities	12	1	2872	7.36	2.29			OE
D	White	18	18	85934	13.40	3.62	0.80	1.62	MC
D	African American	18	18	17718	10.47	3.76	0.76	1.83	MC
D	Hispanic	18	18	11936	10.74	3.94	0.79	1.81	MC
D	Asian	18	18	4533	14.44	3.53	0.83	1.46	MC
D	American Indian	18	18	188	12.60	3.90	0.81	1.70	MC
D	Pacific Islander	18	18	94	13.50	3.55	0.80	1.60	MC
D	Multiple Ethnicities	18	18	2872	12.31	3.84	0.80	1.71	MC
E	White	16	1	85934	7.96	3.49			OE
E	African American	16	1	17718	5.86	3.37			OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
E	Hispanic	16	1	11936	6.09	3.53			OE
E	Asian	16	1	4533	9.61	3.67			OE
E	American Indian	16	1	188	7.43	3.57			OE
E	Pacific Islander	16	1	94	8.00	3.76			OE
E	Multiple Ethnicities	16	1	2872	7.14	3.63			OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	18897	37.07	12.85	0.88	4.45	MC*OE
A	Y	20	15	18897	10.23	4.03	0.73	2.11	MC*OE
B	Y	18	14	18897	7.52	3.26	0.60	2.06	MC*OE
C	Y	12	1	18897	5.70	2.27			OE
D	Y	18	18	18897	8.95	3.71	0.74	1.90	MC
E	Y	16	1	18897	4.67	3.03			OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	2851	31.88	11.14	0.83	4.53	MC*OE
A	Y	20	15	2851	8.74	3.67	0.67	2.10	MC*OE
B	Y	18	14	2851	6.46	2.55	0.36	2.04	MC*OE
C	Y	12	1	2851	5.22	2.29			OE
D	Y	18	18	2851	7.55	3.08	0.61	1.92	MC
E	Y	16	1	2851	3.91	3.13			OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	84	49	54608	46.19	14.18	0.90	4.49	MC*OE
A	Y	20	15	54608	12.60	4.07	0.76	2.01	MC*OE
B	Y	18	14	54608	9.22	3.60	0.68	2.05	MC*OE
C	Y	12	1	54608	6.84	2.34			OE
D	Y	18	18	54608	11.21	3.90	0.79	1.79	MC
E	Y	16	1	54608	6.32	3.44			OE

Grade 3 Mathematics

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	72	63	125420	45.76	14.65	0.94	3.52	MC*OE
A	All	21	18	125420	13.77	4.58	0.83	1.87	MC*OE
B	All	21	21	125420	14.65	4.69	0.86	1.78	MC
C	All	11	8	125420	6.49	2.55	0.68	1.44	MC*OE
D	All	19	16	125420	10.85	4.29	0.81	1.88	MC*OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	72	63	63990	46.05	14.95	0.95	3.50	MC*OE
Total	Female	72	63	61430	45.45	14.33	0.94	3.54	MC*OE
A	Male	21	18	63990	13.83	4.63	0.84	1.86	MC*OE
A	Female	21	18	61430	13.71	4.53	0.83	1.88	MC*OE
B	Male	21	21	63990	14.74	4.75	0.86	1.77	MC
B	Female	21	21	61430	14.56	4.61	0.85	1.79	MC
C	Male	11	8	63990	6.47	2.59	0.69	1.45	MC*OE
C	Female	11	8	61430	6.50	2.50	0.67	1.44	MC*OE
D	Male	19	16	63990	11.01	4.37	0.82	1.86	MC*OE
D	Female	19	16	61430	10.69	4.19	0.80	1.89	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	72	63	82080	49.28	13.17	0.93	3.43	MC*OE
Total	African American	72	63	18688	34.67	13.41	0.93	3.66	MC*OE
Total	Hispanic	72	63	14014	38.27	14.07	0.93	3.63	MC*OE
Total	Asian	72	63	4732	53.89	13.07	0.94	3.28	MC*OE
Total	American Indian	72	63	183	44.05	15.21	0.95	3.53	MC*OE
Total	Pacific Islander	72	63	114	49.73	13.50	0.94	3.43	MC*OE
Total	Multiple Ethnicities	72	63	5609	42.93	14.79	0.94	3.58	MC*OE
A	White	21	18	82080	14.85	4.11	0.80	1.82	MC*OE
A	African American	21	18	18688	10.42	4.34	0.80	1.95	MC*OE
A	Hispanic	21	18	14014	11.47	4.48	0.81	1.93	MC*OE
A	Asian	21	18	4732	16.01	4.12	0.82	1.76	MC*OE
A	American Indian	21	18	183	13.34	4.71	0.84	1.85	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Pacific Islander	21	18	114	14.95	4.09	0.79	1.85	MC*OE
A	Multiple Ethnicities	21	18	5609	12.93	4.64	0.83	1.91	MC*OE
B	White	21	21	82080	15.58	4.27	0.84	1.71	MC
B	African American	21	21	18688	11.70	4.68	0.82	1.97	MC
B	Hispanic	21	21	14014	12.59	4.74	0.84	1.93	MC
B	Asian	21	21	4732	17.23	3.81	0.85	1.50	MC
B	American Indian	21	21	183	14.29	4.81	0.86	1.81	MC
B	Pacific Islander	21	21	114	15.99	4.27	0.85	1.64	MC
B	Multiple Ethnicities	21	21	5609	13.88	4.79	0.85	1.84	MC
C	White	11	8	82080	6.98	2.39	0.65	1.41	MC*OE
C	African American	11	8	18688	4.88	2.39	0.63	1.45	MC*OE
C	Hispanic	11	8	14014	5.47	2.44	0.65	1.45	MC*OE
C	Asian	11	8	4732	7.63	2.43	0.68	1.38	MC*OE
C	American Indian	11	8	183	6.07	2.69	0.71	1.45	MC*OE
C	Pacific Islander	11	8	114	6.85	2.49	0.67	1.42	MC*OE
C	Multiple Ethnicities	11	8	5609	6.12	2.58	0.68	1.46	MC*OE
D	White	19	16	82080	11.87	3.93	0.78	1.85	MC*OE
D	African American	19	16	18688	7.67	3.71	0.75	1.87	MC*OE
D	Hispanic	19	16	14014	8.73	4.03	0.78	1.88	MC*OE
D	Asian	19	16	4732	13.03	4.06	0.80	1.83	MC*OE
D	American Indian	19	16	183	10.36	4.35	0.81	1.89	MC*OE
D	Pacific Islander	19	16	114	11.94	4.36	0.82	1.83	MC*OE
D	Multiple Ethnicities	19	16	5609	10.01	4.26	0.80	1.88	MC*OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	19610	35.46	14.96	0.94	3.66	MC*OE
A	Y	21	18	19610	10.82	4.78	0.84	1.94	MC*OE
B	Y	21	21	19610	11.36	5.00	0.85	1.96	MC
C	Y	11	8	19610	5.05	2.51	0.66	1.46	MC*OE
D	Y	19	16	19610	8.24	4.16	0.80	1.88	MC*OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	4550	33.62	13.12	0.92	3.66	MC*OE
A	Y	21	18	4550	10.09	4.30	0.79	1.95	MC*OE
B	Y	21	21	4550	11.32	4.60	0.81	1.98	MC
C	Y	11	8	4550	4.72	2.32	0.61	1.45	MC*OE
D	Y	19	16	4550	7.49	3.68	0.75	1.85	MC*OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Y	21	18	62514	11.99	4.53	0.82	1.92	MC*OE
B	Y	21	21	62514	12.92	4.74	0.84	1.91	MC
C	Y	11	8	62514	5.62	2.47	0.65	1.45	MC*OE
D	Y	19	16	62514	9.13	4.06	0.79	1.88	MC*OE

Grade 4 Mathematics

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	72	63	123940	42.86	15.60	0.94	3.79	MC*OE
A	All	31	28	123940	19.57	6.96	0.88	2.44	MC*OE
B	All	18	15	123940	11.08	4.56	0.82	1.95	MC*OE
C	All	10	10	123940	5.75	2.41	0.67	1.38	MC
D	All	13	10	123940	6.46	3.10	0.73	1.62	MC*OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	72	63	63236	43.18	16.04	0.94	3.79	MC*OE
Total	Female	72	63	60704	42.52	15.13	0.94	3.79	MC*OE
A	Male	31	28	63236	19.69	7.19	0.89	2.42	MC*OE
A	Female	31	28	60704	19.44	6.71	0.87	2.45	MC*OE
B	Male	18	15	63236	11.19	4.62	0.82	1.95	MC*OE
B	Female	18	15	60704	10.96	4.49	0.81	1.94	MC*OE
C	Male	10	10	63236	5.75	2.46	0.68	1.38	MC
C	Female	10	10	60704	5.75	2.37	0.66	1.39	MC
D	Male	13	10	63236	6.54	3.17	0.73	1.64	MC*OE
D	Female	13	10	60704	6.37	3.02	0.72	1.59	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	72	63	82514	46.42	14.45	0.93	3.73	MC*OE
Total	African American	72	63	18075	31.09	13.28	0.92	3.83	MC*OE
Total	Hispanic	72	63	13469	34.78	14.12	0.93	3.85	MC*OE
Total	Asian	72	63	4645	51.57	14.74	0.94	3.58	MC*OE
Total	American Indian	72	63	174	39.80	15.33	0.94	3.85	MC*OE
Total	Pacific Islander	72	63	110	44.17	15.10	0.94	3.80	MC*OE
Total	Multiple Ethnicities	72	63	4953	40.35	15.49	0.94	3.82	MC*OE
A	White	31	28	82514	21.08	6.46	0.86	2.38	MC*OE
A	African American	31	28	18075	14.54	6.17	0.84	2.49	MC*OE
A	Hispanic	31	28	13469	16.17	6.40	0.85	2.49	MC*OE
A	Asian	31	28	4645	23.44	6.36	0.88	2.23	MC*OE
A	American Indian	31	28	174	18.26	6.88	0.87	2.47	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Pacific Islander	31	28	110	20.31	6.54	0.86	2.41	MC*OE
A	Multiple Ethnicities	31	28	4953	18.49	6.96	0.88	2.46	MC*OE
B	White	18	15	82514	12.02	4.20	0.80	1.88	MC*OE
B	African American	18	15	18075	8.00	4.27	0.77	2.05	MC*OE
B	Hispanic	18	15	13469	8.90	4.43	0.79	2.04	MC*OE
B	Asian	18	15	4645	13.32	4.13	0.82	1.76	MC*OE
B	American Indian	18	15	174	10.35	4.71	0.82	2.00	MC*OE
B	Pacific Islander	18	15	110	11.17	4.69	0.83	1.94	MC*OE
B	Multiple Ethnicities	18	15	4953	10.53	4.58	0.81	1.98	MC*OE
C	White	10	10	82514	6.19	2.32	0.65	1.37	MC
C	African American	10	10	18075	4.27	2.12	0.54	1.44	MC
C	Hispanic	10	10	13469	4.78	2.24	0.59	1.43	MC
C	Asian	10	10	4645	6.81	2.40	0.71	1.28	MC
C	American Indian	10	10	174	5.18	2.33	0.62	1.43	MC
C	Pacific Islander	10	10	110	6.03	2.41	0.67	1.37	MC
C	Multiple Ethnicities	10	10	4953	5.44	2.42	0.67	1.40	MC
D	White	13	10	82514	7.13	2.97	0.69	1.65	MC*OE
D	African American	13	10	18075	4.29	2.44	0.65	1.45	MC*OE
D	Hispanic	13	10	13469	4.93	2.67	0.69	1.49	MC*OE
D	Asian	13	10	4645	8.00	3.16	0.70	1.74	MC*OE
D	American Indian	13	10	174	6.02	3.10	0.75	1.55	MC*OE
D	Pacific Islander	13	10	110	6.66	2.88	0.65	1.70	MC*OE
D	Multiple Ethnicities	13	10	4953	5.90	2.99	0.72	1.58	MC*OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	20436	31.40	14.75	0.93	3.86	MC*OE
A	Y	31	28	20436	14.64	6.78	0.86	2.51	MC*OE
B	Y	18	15	20436	7.82	4.51	0.80	2.04	MC*OE
C	Y	10	10	20436	4.39	2.20	0.57	1.44	MC
D	Y	13	10	20436	4.55	2.79	0.71	1.50	MC*OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	3719	27.54	11.41	0.89	3.81	MC*OE
A	Y	31	28	3719	13.20	5.55	0.80	2.48	MC*OE
B	Y	18	15	3719	6.69	3.66	0.69	2.02	MC*OE
C	Y	10	10	3719	3.83	1.88	0.40	1.45	MC
D	Y	13	10	3719	3.81	2.18	0.57	1.43	MC*OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	60354	36.13	14.49	0.93	3.85	MC*OE
A	Y	31	28	60354	16.70	6.59	0.86	2.49	MC*OE
B	Y	18	15	60354	9.31	4.46	0.79	2.03	MC*OE
C	Y	10	10	60354	4.91	2.27	0.60	1.43	MC
D	Y	13	10	60354	5.22	2.76	0.70	1.52	MC*OE

Grade 5 Mathematics

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	72	63	122983	38.17	16.11	0.94	3.78	MC*OE
A	All	39	36	122983	21.46	9.08	0.91	2.72	MC*OE
B	All	11	8	122983	5.18	2.60	0.67	1.48	MC*OE
C	All	10	10	122983	6.03	2.49	0.69	1.38	MC
D	All	12	9	122983	5.50	3.28	0.75	1.63	MC*OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	72	63	62832	37.96	16.50	0.95	3.77	MC*OE
Total	Female	72	63	60151	38.40	15.68	0.94	3.79	MC*OE
A	Male	39	36	62832	21.46	9.35	0.92	2.72	MC*OE
A	Female	39	36	60151	21.46	8.79	0.90	2.72	MC*OE
B	Male	11	8	62832	5.00	2.60	0.68	1.47	MC*OE
B	Female	11	8	60151	5.36	2.59	0.67	1.49	MC*OE
C	Male	10	10	62832	5.98	2.54	0.70	1.38	MC
C	Female	10	10	60151	6.08	2.44	0.68	1.39	MC
D	Male	12	9	62832	5.51	3.32	0.76	1.62	MC*OE
D	Female	12	9	60151	5.49	3.23	0.74	1.64	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	72	63	82901	41.58	15.37	0.94	3.75	MC*OE
Total	African American	72	63	17828	26.46	12.27	0.91	3.76	MC*OE
Total	Hispanic	72	63	12952	29.89	13.78	0.92	3.79	MC*OE
Total	Asian	72	63	4628	48.86	15.90	0.95	3.56	MC*OE
Total	American Indian	72	63	209	33.39	14.94	0.93	3.85	MC*OE
Total	Pacific Islander	72	63	75	40.04	17.11	0.95	3.76	MC*OE
Total	Multiple Ethnicities	72	63	4390	34.77	15.67	0.94	3.79	MC*OE
A	White	39	36	82901	23.27	8.75	0.91	2.69	MC*OE
A	African American	39	36	17828	15.17	7.00	0.84	2.80	MC*OE
A	Hispanic	39	36	12952	17.06	7.80	0.87	2.79	MC*OE
A	Asian	39	36	4628	27.47	8.81	0.92	2.46	MC*OE
A	American Indian	39	36	209	18.61	8.41	0.89	2.80	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Pacific Islander	39	36	75	22.12	9.77	0.93	2.66	MC*OE
A	Multiple Ethnicities	39	36	4390	19.65	8.88	0.90	2.75	MC*OE
B	White	11	8	82901	5.64	2.50	0.65	1.49	MC*OE
B	African American	11	8	17828	3.60	2.23	0.59	1.43	MC*OE
B	Hispanic	11	8	12952	4.00	2.36	0.62	1.45	MC*OE
B	Asian	11	8	4628	6.68	2.65	0.68	1.50	MC*OE
B	American Indian	11	8	209	4.58	2.49	0.64	1.50	MC*OE
B	Pacific Islander	11	8	75	5.53	2.67	0.67	1.53	MC*OE
B	Multiple Ethnicities	11	8	4390	4.71	2.55	0.67	1.47	MC*OE
C	White	10	10	82901	6.52	2.33	0.66	1.36	MC
C	African American	10	10	17828	4.39	2.29	0.60	1.45	MC
C	Hispanic	10	10	12952	4.92	2.40	0.64	1.45	MC
C	Asian	10	10	4628	7.22	2.31	0.70	1.26	MC
C	American Indian	10	10	209	5.54	2.49	0.68	1.42	MC
C	Pacific Islander	10	10	75	6.07	2.65	0.74	1.36	MC
C	Multiple Ethnicities	10	10	4390	5.60	2.47	0.67	1.42	MC
D	White	12	9	82901	6.15	3.20	0.74	1.65	MC*OE
D	African American	12	9	17828	3.30	2.39	0.63	1.45	MC*OE
D	Hispanic	12	9	12952	3.91	2.74	0.69	1.51	MC*OE
D	Asian	12	9	4628	7.48	3.35	0.76	1.64	MC*OE
D	American Indian	12	9	209	4.66	3.02	0.71	1.63	MC*OE
D	Pacific Islander	12	9	75	6.32	3.43	0.77	1.64	MC*OE
D	Multiple Ethnicities	12	9	4390	4.82	3.17	0.75	1.59	MC*OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	20354	25.74	13.16	0.92	3.74	MC*OE
A	Y	39	36	20354	14.69	7.49	0.86	2.78	MC*OE
B	Y	11	8	20354	3.38	2.23	0.60	1.41	MC*OE
C	Y	10	10	20354	4.31	2.35	0.63	1.44	MC
D	Y	12	9	20354	3.36	2.58	0.68	1.46	MC*OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	3077	21.70	9.52	0.85	3.66	MC*OE
A	Y	39	36	3077	12.79	5.63	0.76	2.77	MC*OE
B	Y	11	8	3077	2.74	1.84	0.48	1.33	MC*OE
C	Y	10	10	3077	3.57	1.97	0.46	1.45	MC
D	Y	12	9	3077	2.59	1.94	0.52	1.35	MC*OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	58341	31.09	14.11	0.93	3.80	MC*OE
A	Y	39	36	58341	17.60	8.00	0.88	2.79	MC*OE
B	Y	11	8	58341	4.21	2.38	0.63	1.46	MC*OE
C	Y	10	10	58341	5.12	2.42	0.65	1.44	MC
D	Y	12	9	58341	4.16	2.83	0.70	1.54	MC*OE

Grade 6 Mathematics

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	72	63	125305	41.95	15.88	0.94	3.75	MC*OE
A	All	28	25	125305	16.35	6.41	0.86	2.38	MC*OE
B	All	21	18	125305	12.44	5.23	0.84	2.09	MC*OE
C	All	10	10	125305	6.05	2.66	0.75	1.34	MC
D	All	13	10	125305	7.12	2.90	0.74	1.47	MC*OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	72	63	64104	41.09	16.22	0.95	3.74	MC*OE
	Female	72	63	61201	42.85	15.47	0.94	3.75	MC*OE
A	Male	28	25	64104	16.22	6.52	0.87	2.37	MC*OE
	Female	28	25	61201	16.48	6.27	0.86	2.39	MC*OE
B	Male	21	18	64104	12.09	5.32	0.85	2.08	MC*OE
	Female	21	18	61201	12.80	5.11	0.83	2.10	MC*OE
C	Male	10	10	64104	5.88	2.70	0.75	1.34	MC
	Female	10	10	61201	6.22	2.61	0.74	1.33	MC
D	Male	13	10	64104	6.90	2.96	0.75	1.48	MC*OE
	Female	13	10	61201	7.34	2.81	0.73	1.46	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	African American	72	63	17725	30.34	13.39	0.92	3.75	MC*OE
Total	Hispanic	72	63	12761	33.14	14.22	0.93	3.77	MC*OE
Total	Asian	72	63	4825	52.34	14.48	0.94	3.49	MC*OE
Total	American Indian	71	63	170	39.09	15.52	0.94	3.79	MC*OE
Total	Pacific Islander	72	63	94	44.93	14.32	0.93	3.76	MC*OE
Total	Multiple Ethnicities	72	63	3879	38.80	15.76	0.94	3.79	MC*OE
A	White	28	25	85851	17.59	6.03	0.85	2.36	MC*OE
A	African American	28	25	17725	11.92	5.52	0.81	2.38	MC*OE
A	Hispanic	28	25	12761	12.97	5.82	0.83	2.40	MC*OE
A	Asian	28	25	4825	20.53	5.89	0.86	2.23	MC*OE
A	American Indian	28	25	170	15.11	6.42	0.86	2.38	MC*OE
A	Pacific Islander	28	25	94	17.41	5.80	0.83	2.38	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Multiple Ethnicities	28	25	3879	15.16	6.41	0.86	2.40	MC*OE
B	White	21	18	85851	13.41	4.96	0.82	2.08	MC*OE
B	African American	21	18	17725	9.06	4.61	0.81	2.03	MC*OE
B	Hispanic	21	18	12761	9.72	4.78	0.82	2.06	MC*OE
B	Asian	21	18	4825	15.55	4.68	0.83	1.95	MC*OE
B	American Indian	21	18	170	11.54	5.14	0.82	2.16	MC*OE
B	Pacific Islander	21	18	94	13.16	4.94	0.82	2.09	MC*OE
B	Multiple Ethnicities	21	18	3879	11.50	5.21	0.84	2.10	MC*OE
C	White	10	10	85851	6.55	2.53	0.73	1.31	MC
C	African American	10	10	17725	4.21	2.27	0.61	1.42	MC
C	Hispanic	10	10	12761	4.79	2.43	0.66	1.41	MC
C	Asian	10	10	4825	7.52	2.46	0.78	1.16	MC
C	American Indian	10	10	170	5.74	2.54	0.71	1.37	MC
C	Pacific Islander	10	10	94	6.78	2.22	0.63	1.35	MC
C	Multiple Ethnicities	10	10	3879	5.55	2.66	0.74	1.37	MC
D	White	13	10	85851	7.67	2.72	0.72	1.45	MC*OE
D	African American	13	10	17725	5.14	2.60	0.68	1.47	MC*OE
D	Hispanic	13	10	12761	5.66	2.71	0.70	1.48	MC*OE
D	Asian	13	10	4825	8.74	2.66	0.71	1.42	MC*OE
D	American Indian	12	10	170	6.71	2.77	0.73	1.44	MC*OE
D	Pacific Islander	13	10	94	7.57	2.65	0.66	1.54	MC*OE
D	Multiple Ethnicities	13	10	3879	6.58	2.85	0.73	1.49	MC*OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Y	28	25	20166	10.79	5.40	0.81	2.35	MC*OE
B	Y	21	18	20166	7.87	4.37	0.79	2.01	MC*OE
C	Y	10	10	20166	4.16	2.27	0.61	1.42	MC
D	Y	13	10	20166	4.80	2.59	0.68	1.48	MC*OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Y	28	25	2831	9.40	4.36	0.72	2.33	MC*OE
B	Y	21	18	2831	6.74	3.41	0.68	1.94	MC*OE
C	Y	10	10	2831	3.66	1.90	0.43	1.43	MC
D	Y	13	10	2831	4.24	2.23	0.58	1.45	MC*OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	58007	34.81	14.56	0.93	3.79	MC*OE
A	Y	28	25	58007	13.60	5.91	0.84	2.39	MC*OE
B	Y	21	18	58007	10.24	4.90	0.82	2.09	MC*OE
C	Y	10	10	58007	5.01	2.49	0.68	1.41	MC
D	Y	13	10	58007	5.96	2.76	0.71	1.48	MC*OE

Grade 7 Mathematics

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	72	63	124959	36.91	15.75	0.94	3.78	MC*OE
A	All	29	26	124959	15.64	6.83	0.89	2.31	MC*OE
B	All	17	14	124959	7.78	4.00	0.78	1.86	MC*OE
C	All	14	14	124959	7.27	3.42	0.77	1.65	MC
D	All	12	9	124959	6.22	2.88	0.67	1.65	MC*OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	72	63	63665	36.37	15.97	0.94	3.76	MC*OE
Total	Female	72	63	61294	37.46	15.50	0.94	3.78	MC*OE
A	Male	29	26	63665	15.41	6.94	0.89	2.31	MC*OE
A	Female	29	26	61294	15.88	6.71	0.88	2.32	MC*OE
B	Male	17	14	63665	7.63	4.00	0.79	1.83	MC*OE
B	Female	17	14	61294	7.93	4.00	0.78	1.87	MC*OE
C	Male	14	14	63665	7.23	3.46	0.77	1.65	MC
C	Female	14	14	61294	7.30	3.37	0.76	1.65	MC
D	Male	12	9	63665	6.10	2.92	0.68	1.65	MC*OE
D	Female	12	9	61294	6.35	2.83	0.66	1.64	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	72	63	86773	39.75	15.23	0.94	3.75	MC*OE
Total	African American	72	63	17663	26.23	11.88	0.90	3.77	MC*OE
Total	Hispanic	72	63	12211	28.49	13.06	0.92	3.80	MC*OE
Total	Asian	72	63	4647	48.92	15.90	0.95	3.55	MC*OE
Total	American Indian	72	63	176	35.13	15.54	0.94	3.77	MC*OE
Total	Pacific Islander	72	63	86	40.80	15.46	0.94	3.78	MC*OE
Total	Multiple Ethnicities	72	63	3403	33.66	15.01	0.94	3.80	MC*OE
A	White	29	26	86773	16.80	6.59	0.88	2.29	MC*OE
A	African American	29	26	17663	11.31	5.64	0.83	2.33	MC*OE
A	Hispanic	29	26	12211	12.15	5.95	0.84	2.34	MC*OE
A	Asian	29	26	4647	20.67	6.49	0.89	2.14	MC*OE
A	American Indian	29	26	176	14.70	6.66	0.88	2.29	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Pacific Islander	29	26	86	17.81	6.18	0.86	2.28	MC*OE
A	Multiple Ethnicities	29	26	3403	14.29	6.60	0.88	2.33	MC*OE
B	White	17	14	86773	8.40	3.95	0.78	1.86	MC*OE
B	African American	17	14	17663	5.38	2.98	0.65	1.77	MC*OE
B	Hispanic	17	14	12211	5.91	3.29	0.70	1.81	MC*OE
B	Asian	17	14	4647	10.70	4.23	0.82	1.82	MC*OE
B	American Indian	17	14	176	7.50	4.04	0.79	1.86	MC*OE
B	Pacific Islander	17	14	86	8.36	4.15	0.80	1.85	MC*OE
B	Multiple Ethnicities	17	14	3403	7.04	3.79	0.76	1.85	MC*OE
C	White	14	14	86773	7.84	3.34	0.76	1.64	MC
C	African American	14	14	17663	5.09	2.63	0.59	1.68	MC
C	Hispanic	14	14	12211	5.64	2.90	0.66	1.69	MC
C	Asian	14	14	4647	9.62	3.47	0.81	1.49	MC
C	American Indian	14	14	176	6.94	3.38	0.75	1.67	MC
C	Pacific Islander	14	14	86	8.02	3.65	0.81	1.59	MC
C	Multiple Ethnicities	14	14	3403	6.61	3.31	0.75	1.66	MC
D	White	12	9	86773	6.72	2.78	0.66	1.62	MC*OE
D	African American	12	9	17663	4.45	2.40	0.52	1.66	MC*OE
D	Hispanic	12	9	12211	4.79	2.56	0.57	1.67	MC*OE
D	Asian	12	9	4647	7.93	2.89	0.70	1.57	MC*OE
D	American Indian	12	9	176	5.98	2.83	0.66	1.65	MC*OE
D	Pacific Islander	12	9	86	6.60	2.83	0.61	1.77	MC*OE
D	Multiple Ethnicities	12	9	3403	5.72	2.78	0.64	1.66	MC*OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	19435	23.53	11.01	0.89	3.71	MC*OE
A	Y	29	26	19435	9.80	5.19	0.80	2.32	MC*OE
B	Y	17	14	19435	4.86	2.79	0.61	1.74	MC*OE
C	Y	14	14	19435	4.86	2.58	0.58	1.67	MC
D	Y	12	9	19435	4.01	2.25	0.50	1.59	MC*OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	2843	20.62	8.36	0.81	3.63	MC*OE
A	Y	29	26	2843	8.79	4.25	0.71	2.30	MC*OE
B	Y	17	14	2843	4.29	2.31	0.46	1.69	MC*OE
C	Y	14	14	2843	4.31	2.16	0.41	1.66	MC
D	Y	12	9	2843	3.24	1.82	0.31	1.52	MC*OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	56097	29.89	13.45	0.92	3.80	MC*OE
A	Y	29	26	56097	12.77	6.13	0.85	2.34	MC*OE
B	Y	17	14	56097	6.17	3.36	0.71	1.82	MC*OE
C	Y	14	14	56097	5.90	2.99	0.68	1.69	MC
D	Y	12	9	56097	5.06	2.59	0.59	1.66	MC*OE

Grade 8 Mathematics

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	72	63	123175	37.83	14.93	0.94	3.61	MC*OE
A	All	11	8	123175	5.57	2.41	0.72	1.28	MC*OE
B	All	38	35	123175	20.98	8.23	0.89	2.67	MC*OE
C	All	12	12	123175	5.80	3.15	0.78	1.49	MC
D	All	11	8	123175	5.47	2.43	0.67	1.39	MC*OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	72	63	63461	37.13	15.26	0.94	3.60	MC*OE
Total	Female	72	63	59714	38.56	14.54	0.94	3.61	MC*OE
A	Male	11	8	63461	5.35	2.47	0.73	1.28	MC*OE
A	Female	11	8	59714	5.81	2.32	0.70	1.28	MC*OE
B	Male	38	35	63461	20.68	8.39	0.90	2.67	MC*OE
B	Female	38	35	59714	21.30	8.04	0.89	2.68	MC*OE
C	Male	12	12	63461	5.72	3.19	0.78	1.49	MC
C	Female	12	12	59714	5.88	3.11	0.77	1.50	MC
D	Male	11	8	63461	5.39	2.46	0.68	1.38	MC*OE
D	Female	11	8	59714	5.57	2.38	0.66	1.39	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	72	63	85794	40.51	14.25	0.94	3.58	MC*OE
Total	African American	72	63	17725	27.78	12.09	0.91	3.65	MC*OE
Total	Hispanic	72	63	11962	29.85	13.04	0.92	3.65	MC*OE
Total	Asian	72	63	4533	49.05	14.79	0.95	3.34	MC*OE
Total	American Indian	71	63	186	36.51	14.24	0.93	3.66	MC*OE
Total	Pacific Islander	71	63	93	40.73	14.02	0.93	3.62	MC*OE
Total	Multiple Ethnicities	72	63	2882	35.13	14.49	0.94	3.64	MC*OE
A	White	11	8	85794	5.95	2.27	0.69	1.27	MC*OE
A	African American	11	8	17725	4.15	2.26	0.69	1.27	MC*OE
A	Hispanic	11	8	11962	4.45	2.31	0.70	1.27	MC*OE
A	Asian	11	8	4533	7.20	2.24	0.64	1.35	MC*OE
A	American Indian	11	8	186	5.30	2.50	0.74	1.28	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Pacific Islander	11	8	93	5.94	2.16	0.65	1.29	MC*OE
A	Multiple Ethnicities	11	8	2882	5.20	2.42	0.72	1.28	MC*OE
B	White	38	35	85794	22.38	7.89	0.89	2.65	MC*OE
B	African American	38	35	17725	15.71	6.82	0.84	2.74	MC*OE
B	Hispanic	38	35	11962	16.78	7.27	0.86	2.73	MC*OE
B	Asian	38	35	4533	27.16	8.04	0.91	2.40	MC*OE
B	American Indian	38	35	186	20.28	7.75	0.88	2.72	MC*OE
B	Pacific Islander	38	35	93	22.31	7.51	0.87	2.68	MC*OE
B	Multiple Ethnicities	38	35	2882	19.54	8.04	0.89	2.70	MC*OE
C	White	12	12	85794	6.27	3.11	0.77	1.49	MC
C	African American	12	12	17725	4.02	2.48	0.63	1.50	MC
C	Hispanic	12	12	11962	4.37	2.72	0.69	1.50	MC
C	Asian	12	12	4533	7.90	3.30	0.83	1.36	MC
C	American Indian	12	12	186	5.52	3.04	0.75	1.51	MC
C	Pacific Islander	12	12	93	6.51	3.19	0.78	1.49	MC
C	Multiple Ethnicities	12	12	2882	5.33	3.04	0.75	1.50	MC
D	White	11	8	85794	5.91	2.32	0.65	1.37	MC*OE
D	African American	11	8	17725	3.90	2.09	0.57	1.37	MC*OE
D	Hispanic	11	8	11962	4.26	2.22	0.61	1.38	MC*OE
D	Asian	11	8	4533	6.79	2.32	0.68	1.31	MC*OE
D	American Indian	10	8	186	5.40	2.26	0.60	1.42	MC*OE
D	Pacific Islander	10	8	93	5.98	2.33	0.61	1.45	MC*OE
D	Multiple Ethnicities	11	8	2882	5.06	2.36	0.65	1.39	MC*OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	18890	24.29	10.80	0.89	3.63	MC*OE
A	Y	11	8	18890	3.51	2.14	0.65	1.27	MC*OE
B	Y	38	35	18890	13.68	6.04	0.80	2.71	MC*OE
C	Y	12	12	18890	3.59	2.29	0.58	1.48	MC
D	Y	11	8	18890	3.50	1.99	0.52	1.38	MC*OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	71	63	2859	22.47	9.08	0.84	3.59	MC*OE
A	Y	11	8	2859	3.37	2.03	0.62	1.26	MC*OE
B	Y	38	35	2859	12.83	5.21	0.73	2.70	MC*OE
C	Y	12	12	2859	3.18	2.02	0.48	1.46	MC
D	Y	10	8	2859	3.08	1.70	0.37	1.35	MC*OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	72	63	54596	31.32	13.27	0.92	3.66	MC*OE
A	Y	11	8	54596	4.67	2.32	0.70	1.27	MC*OE
B	Y	38	35	54596	17.50	7.37	0.86	2.73	MC*OE
C	Y	12	12	54596	4.65	2.78	0.70	1.51	MC
D	Y	11	8	54596	4.51	2.26	0.62	1.39	MC*OE

Grade 4 Science

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	68	63	123818	47.81	13.41	0.94	3.37	MC*OE
A	All	33	31	123818	22.64	6.88	0.88	2.36	MC*OE
B	All	13	11	123818	9.67	2.78	0.73	1.46	MC*OE
C	All	12	11	123818	8.74	2.55	0.70	1.40	MC*OE
D	All	10	10	123818	6.77	2.46	0.72	1.31	MC

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	68	63	63165	47.63	13.88	0.94	3.37	MC*OE
Total	Female	68	63	60653	48.00	12.90	0.93	3.37	MC*OE
A	Male	33	31	63165	22.46	7.09	0.89	2.36	MC*OE
A	Female	33	31	60653	22.83	6.64	0.87	2.35	MC*OE
B	Male	13	11	63165	9.52	2.85	0.73	1.47	MC*OE
B	Female	13	11	60653	9.82	2.69	0.71	1.44	MC*OE
C	Male	12	11	63165	8.79	2.63	0.72	1.39	MC*OE
C	Female	12	11	60653	8.68	2.46	0.67	1.40	MC*OE
D	Male	10	10	63165	6.86	2.50	0.74	1.29	MC
D	Female	10	10	60653	6.67	2.40	0.70	1.32	MC

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	68	63	82468	51.18	11.45	0.92	3.24	MC*OE
Total	African American	68	63	18027	37.16	13.78	0.93	3.72	MC*OE
Total	Hispanic	68	63	13466	40.59	13.87	0.93	3.63	MC*OE
Total	Asian	68	63	4644	52.56	12.05	0.93	3.12	MC*OE
Total	American Indian	68	63	173	46.03	13.21	0.93	3.47	MC*OE
Total	Pacific Islander	68	63	110	49.58	13.19	0.94	3.29	MC*OE
Total	Multiple Ethnicities	68	63	4930	45.69	13.58	0.93	3.47	MC*OE
A	White	33	31	82468	24.31	6.00	0.86	2.27	MC*OE
A	African American	33	31	18027	17.36	6.90	0.86	2.58	MC*OE
A	Hispanic	33	31	13466	19.02	6.98	0.87	2.53	MC*OE
A	Asian	33	31	4644	25.22	6.22	0.88	2.17	MC*OE
A	American Indian	33	31	173	21.64	6.78	0.87	2.42	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Pacific Islander	33	31	110	23.46	6.79	0.89	2.28	MC*OE
A	Multiple Ethnicities	33	31	4930	21.55	6.97	0.88	2.42	MC*OE
B	White	13	11	82468	10.26	2.38	0.66	1.38	MC*OE
B	African American	13	11	18027	7.78	3.13	0.72	1.66	MC*OE
B	Hispanic	13	11	13466	8.44	3.05	0.73	1.59	MC*OE
B	Asian	13	11	4644	10.32	2.48	0.71	1.34	MC*OE
B	American Indian	13	11	173	9.46	3.03	0.76	1.47	MC*OE
B	Pacific Islander	13	11	110	9.90	2.75	0.72	1.45	MC*OE
B	Multiple Ethnicities	13	11	4930	9.35	2.83	0.72	1.50	MC*OE
C	White	12	11	82468	9.30	2.21	0.63	1.35	MC*OE
C	African American	12	11	18027	6.95	2.74	0.69	1.53	MC*OE
C	Hispanic	12	11	13466	7.52	2.72	0.69	1.51	MC*OE
C	Asian	12	11	4644	9.51	2.33	0.69	1.30	MC*OE
C	American Indian	12	11	173	8.43	2.54	0.68	1.44	MC*OE
C	Pacific Islander	12	11	110	9.03	2.59	0.72	1.37	MC*OE
C	Multiple Ethnicities	12	11	4930	8.40	2.60	0.69	1.44	MC*OE
D	White	10	10	82468	7.31	2.20	0.67	1.26	MC
D	African American	10	10	18027	5.07	2.45	0.66	1.43	MC
D	Hispanic	10	10	13466	5.62	2.53	0.69	1.40	MC
D	Asian	10	10	4644	7.51	2.23	0.70	1.22	MC
D	American Indian	10	10	173	6.50	2.24	0.61	1.39	MC
D	Pacific Islander	10	10	110	7.19	2.30	0.69	1.27	MC
D	Multiple Ethnicities	10	10	4930	6.39	2.46	0.70	1.35	MC

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	68	63	20384	38.20	14.58	0.94	3.68	MC*OE
A	Y	33	31	20384	17.79	7.26	0.88	2.55	MC*OE
B	Y	13	11	20384	7.89	3.20	0.74	1.64	MC*OE
C	Y	12	11	20384	7.14	2.87	0.72	1.52	MC*OE
D	Y	10	10	20384	5.38	2.61	0.71	1.40	MC

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	68	63	3714	31.74	12.10	0.90	3.79	MC*OE
A	Y	33	31	3714	14.78	5.95	0.81	2.60	MC*OE
B	Y	13	11	3714	6.68	2.99	0.67	1.72	MC*OE
C	Y	12	11	3714	5.92	2.56	0.62	1.58	MC*OE
D	Y	10	10	3714	4.35	2.25	0.58	1.46	MC

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	68	63	60266	42.28	13.83	0.93	3.59	MC*OE
A	Y	33	31	60266	19.84	7.00	0.87	2.50	MC*OE
B	Y	13	11	60266	8.73	2.99	0.72	1.58	MC*OE
C	Y	12	11	60266	7.83	2.68	0.69	1.49	MC*OE
D	Y	10	10	60266	5.89	2.52	0.70	1.39	MC

Grade 8 Science

	Overall	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	All	68	63	122955	44.47	14.13	0.94	3.42	MC*OE
A	All	34	32	122955	22.58	7.44	0.90	2.41	MC*OE
B	All	14	12	122955	9.05	3.19	0.76	1.56	MC*OE
C	All	9	9	122955	6.12	2.11	0.63	1.28	MC
D	All	11	10	122955	6.71	2.63	0.74	1.33	MC*OE

	Gender	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Male	68	63	63373	44.07	14.72	0.95	3.39	MC*OE
Total	Female	68	63	59582	44.89	13.46	0.93	3.44	MC*OE
A	Male	34	32	63373	22.27	7.74	0.91	2.38	MC*OE
A	Female	34	32	59582	22.92	7.10	0.88	2.42	MC*OE
B	Male	14	12	63373	8.92	3.29	0.77	1.56	MC*OE
B	Female	14	12	59582	9.20	3.08	0.74	1.56	MC*OE
C	Male	9	9	63373	6.14	2.19	0.67	1.25	MC
C	Female	9	9	59582	6.09	2.02	0.59	1.30	MC
D	Male	11	10	63373	6.74	2.67	0.75	1.33	MC*OE
D	Female	11	10	59582	6.69	2.58	0.73	1.34	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	White	68	63	85619	47.62	12.54	0.93	3.33	MC*OE
Total	African American	68	63	17717	33.58	13.70	0.93	3.70	MC*OE
Total	Hispanic	68	63	11938	36.10	14.33	0.94	3.64	MC*OE
Total	Asian	68	63	4531	51.01	12.27	0.94	3.13	MC*OE
Total	American Indian	68	63	186	44.55	13.62	0.94	3.46	MC*OE
Total	Pacific Islander	68	63	92	46.97	12.28	0.93	3.36	MC*OE
Total	Multiple Ethnicities	68	63	2872	42.13	14.32	0.94	3.50	MC*OE
A	White	34	32	85619	24.12	6.67	0.88	2.34	MC*OE
A	African American	34	32	17717	17.26	7.37	0.87	2.61	MC*OE
A	Hispanic	34	32	11938	18.37	7.65	0.89	2.57	MC*OE
A	Asian	34	32	4531	26.19	6.40	0.89	2.16	MC*OE
A	American Indian	34	32	186	22.47	7.24	0.89	2.44	MC*OE

	Ethnicity	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
A	Pacific Islander	34	32	92	23.68	6.60	0.87	2.35	MC*OE
A	Multiple Ethnicities	34	32	2872	21.36	7.57	0.89	2.47	MC*OE
B	White	14	12	85619	9.72	2.86	0.72	1.52	MC*OE
B	African American	14	12	17717	6.76	3.21	0.73	1.68	MC*OE
B	Hispanic	14	12	11938	7.34	3.29	0.75	1.65	MC*OE
B	Asian	14	12	4531	10.29	2.86	0.74	1.46	MC*OE
B	American Indian	14	12	186	9.27	3.19	0.76	1.55	MC*OE
B	Pacific Islander	14	12	92	9.71	2.76	0.69	1.55	MC*OE
B	Multiple Ethnicities	14	12	2872	8.67	3.23	0.76	1.59	MC*OE
C	White	9	9	85619	6.48	1.96	0.59	1.25	MC
C	African American	9	9	17717	4.87	2.13	0.58	1.39	MC
C	Hispanic	9	9	11938	5.14	2.18	0.61	1.36	MC
C	Asian	9	9	4531	6.93	1.81	0.58	1.17	MC
C	American Indian	9	9	186	6.15	2.10	0.63	1.28	MC
C	Pacific Islander	9	9	92	6.51	1.88	0.55	1.26	MC
C	Multiple Ethnicities	9	9	2872	5.87	2.17	0.64	1.30	MC
D	White	11	10	85619	7.30	2.37	0.70	1.29	MC*OE
D	African American	11	10	17717	4.69	2.48	0.66	1.44	MC*OE
D	Hispanic	11	10	11938	5.26	2.58	0.69	1.42	MC*OE
D	Asian	11	10	4531	7.60	2.40	0.73	1.26	MC*OE
D	American Indian	11	10	186	6.67	2.38	0.66	1.40	MC*OE
D	Pacific Islander	11	10	92	7.07	2.44	0.71	1.32	MC*OE
D	Multiple Ethnicities	11	10	2872	6.23	2.66	0.73	1.37	MC*OE

	IEP	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	68	63	18820	31.28	13.49	0.93	3.69	MC*OE
A	Y	34	32	18820	15.56	7.12	0.87	2.61	MC*OE
B	Y	14	12	18820	6.41	3.13	0.71	1.67	MC*OE
C	Y	9	9	18820	4.60	2.17	0.59	1.38	MC
D	Y	11	10	18820	4.71	2.54	0.68	1.44	MC*OE

	ELL	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	68	63	2852	25.15	10.01	0.86	3.73	MC*OE
A	Y	34	32	2852	12.66	5.56	0.77	2.64	MC*OE
B	Y	14	12	2852	4.97	2.52	0.56	1.67	MC*OE
C	Y	9	9	2852	3.92	1.88	0.43	1.42	MC
D	Y	11	10	2852	3.59	1.95	0.45	1.45	MC*OE

	Low Income	Total Points	N Items	N	Mean	STD	r	SEM	Item Type(s)
Total	Y	68	63	54460	38.28	14.30	0.94	3.61	MC*OE
A	Y	34	32	54460	19.45	7.60	0.89	2.55	MC*OE
B	Y	14	12	54460	7.79	3.26	0.75	1.64	MC*OE
C	Y	9	9	54460	5.39	2.17	0.61	1.35	MC
D	Y	11	10	54460	5.65	2.63	0.71	1.41	MC*OE

APPENDIX Q: HISTORICAL STATISTICS

Grade 3 English Language Arts

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	36.12	36.16	36.30	30.94	36.12	36.16	30.94
Raw Score	SD	11.49	11.47	11.44	11.84	11.49	11.47	11.84
Raw Score	Max	62						
Scaled Score	Mean	1031.49	1031.86	1033.12	982.22	1031.49	1031.86	982.22
Scaled Score	SD	111.52	111.44	111.21	111.00	111.52	111.44	111.00
Scaled Score	Max	1628						
Raw Cuts	Bel. Basic/Basic	22	22	22	22	22	22	22
Raw Cuts	Basic/Prof.	34	34	34	34	34	34	34
Raw Cuts	Prof./Adv.	49	49	49	49	49	49	49
Theta Cuts	Bel. Basic/Basic	-0.5750	-0.5750	-0.5750	-0.5750	-0.5750	-0.5750	-0.5750
Theta Cuts	Basic/Prof.	0.4236	0.4236	0.4236	0.4236	0.4236	0.4236	0.4236
Theta Cuts	Prof./Adv.	1.9155	1.9155	1.9155	1.9155	1.9155	1.9155	1.9155
Impact Pct	Below Basic	13.57	13.48	13.23	25.51	13.57	13.48	25.51
Impact Pct	Basic	25.50	25.45	25.04	32.15	25.50	25.45	32.15
Impact Pct	Proficient	45.73	45.82	46.26	34.30	45.73	45.82	34.30
Impact Pct	Advanced	15.19	15.24	15.47	8.04	15.19	15.24	8.04
Impact Pct	Prof. + Adv.	60.92	61.06	61.73	42.34	60.92	61.06	42.34
Demographics	N	125284	124351	27634	933	125284	124351	933
Demographics	Pct City	10.03	10.11	10.10		10.03	10.11	
Demographics	Pct White	65.50	65.57	65.14	55.52	65.50	65.57	55.52
Demographics	Pct Black	14.86	14.72	14.79	33.23	14.86	14.72	33.23
Demographics	Pct Hispanic	11.16	11.19	11.20	6.11	11.16	11.19	6.11
Demographics	Pct Male	51.01	50.97	50.75	55.41	51.01	50.97	55.41
Demographics	Pct Female	48.99	49.03	49.25	44.59	48.99	49.03	44.59
Raw Score	Reliability	0.91						

Grade 4 English Language Arts

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	48.11	48.18	48.03	40.58	48.11	48.18	40.58
Raw Score	SD	14.61	14.58	14.67	15.49	14.61	14.58	15.49
Raw Score	Max	84						
Scaled Score	Mean	1025.31	1025.81	1024.87	968.31	1025.31	1025.81	968.31
Scaled Score	SD	116.76	116.63	117.34	117.47	116.76	116.63	117.47
Scaled Score	Max	1798						
Raw Cuts	Bel. Basic/Basic	29	29	29	29	29	29	29
Raw Cuts	Basic/Prof.	47	47	47	47	47	47	47
Raw Cuts	Prof./Adv.	60	60	60	60	60	60	60
Theta Cuts	Bel. Basic/Basic	-0.6924	-0.6924	-0.6924	-0.6924	-0.6924	-0.6924	-0.6924
Theta Cuts	Basic/Prof.	0.4738	0.4738	0.4738	0.4738	0.4738	0.4738	0.4738
Theta Cuts	Prof./Adv.	1.4986	1.4986	1.4986	1.4986	1.4986	1.4986	1.4986
Impact Pct	Below Basic	12.23	12.11	12.49	26.46	12.23	12.11	26.46
Impact Pct	Basic	29.11	29.04	29.13	36.54	29.11	29.04	36.54
Impact Pct	Proficient	34.03	34.12	33.74	24.05	34.03	34.12	24.05
Impact Pct	Advanced	24.63	24.73	24.64	12.95	24.63	24.73	12.95
Impact Pct	Prof. + Adv.	58.66	58.85	58.38	37.00	58.66	58.85	37.00
Demographics	N	123597	122516	27256	1081	123597	122516	1081
Demographics	Pct City	9.56	9.64	9.72		9.56	9.64	
Demographics	Pct White	66.65	66.67	66.48	64.75	66.65	66.67	64.75
Demographics	Pct Black	14.53	14.43	14.39	26.36	14.53	14.43	26.36
Demographics	Pct Hispanic	10.85	10.90	10.99	4.90	10.85	10.90	4.90
Demographics	Pct Male	50.99	50.94	50.90	56.61	50.99	50.94	56.61
Demographics	Pct Female	49.01	49.06	49.10	43.39	49.01	49.06	43.39
Raw Score	Reliability	0.92						

Grade 5 English Language Arts

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	48.09	48.17	48.14	41.70	48.09	48.17	41.70
Raw Score	SD	14.94	14.91	14.89	15.58	14.94	14.91	15.58
Raw Score	Max	84						
Scaled Score	Mean	1028.93	1029.56	1029.41	980.19	1028.93	1029.56	980.19
Scaled Score	SD	116.55	116.40	116.33	117.98	116.55	116.40	117.98
Scaled Score	Max	1728						
Raw Cuts	Bel. Basic/Basic	30	30	30	30	30	30	30
Raw Cuts	Basic/Prof.	45	45	45	45	45	45	45
Raw Cuts	Prof./Adv.	64	64	64	64	64	64	64
Theta Cuts	Bel. Basic/Basic	-0.5908	-0.5908	-0.5908	-0.5908	-0.5908	-0.5908	-0.5908
Theta Cuts	Basic/Prof.	0.4145	0.4145	0.4145	0.4145	0.4145	0.4145	0.4145
Theta Cuts	Prof./Adv.	1.8840	1.8840	1.8840	1.8840	1.8840	1.8840	1.8840
Impact Pct	Below Basic	14.09	13.91	13.89	27.42	14.09	13.91	27.42
Impact Pct	Basic	24.45	24.41	24.55	27.81	24.45	24.41	27.81
Impact Pct	Proficient	45.26	45.39	45.36	35.71	45.26	45.39	35.71
Impact Pct	Advanced	16.20	16.29	16.19	9.06	16.20	16.29	9.06
Impact Pct	Prof. + Adv.	61.46	61.68	61.56	44.77	61.46	61.68	44.77
Demographics	N	122868	121311	26979	1557	122868	121311	1557
Demographics	Pct City	8.92	9.04	9.11		8.92	9.04	
Demographics	Pct White	67.46	67.40	67.64	72.58	67.46	67.40	72.58
Demographics	Pct Black	14.46	14.46	14.53	14.64	14.46	14.46	14.64
Demographics	Pct Hispanic	10.52	10.54	10.31	8.67	10.52	10.54	8.67
Demographics	Pct Male	51.07	51.03	50.95	53.56	51.07	51.03	53.56
Demographics	Pct Female	48.93	48.97	49.05	46.44	48.93	48.97	46.44
Raw Score	Reliability	0.92						

Grade 6 English Language Arts

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	50.42	50.51	50.49	46.24	50.42	50.51	46.24
Raw Score	SD	14.58	14.56	14.51	14.63	14.58	14.56	14.63
Raw Score	Max	84						
Scaled Score	Mean	1031.13	1031.87	1031.66	998.52	1031.13	1031.87	998.52
Scaled Score	SD	113.61	113.62	113.28	108.00	113.61	113.62	108.00
Scaled Score	Max	1721						
Raw Cuts	Bel. Basic/Basic	28	28	28	28	28	28	28
Raw Cuts	Basic/Prof.	48	48	48	48	48	48	48
Raw Cuts	Prof./Adv.	63	63	63	63	63	63	63
Theta Cuts	Bel. Basic/Basic	-0.6558	-0.6558	-0.6558	-0.6558	-0.6558	-0.6558	-0.6558
Theta Cuts	Basic/Prof.	0.6241	0.6241	0.6241	0.6241	0.6241	0.6241	0.6241
Theta Cuts	Prof./Adv.	1.7652	1.7652	1.7652	1.7652	1.7652	1.7652	1.7652
Impact Pct	Below Basic	8.59	8.49	8.43	12.99	8.59	8.49	12.99
Impact Pct	Basic	29.79	29.63	29.75	36.45	29.79	29.63	36.45
Impact Pct	Proficient	38.92	38.98	39.13	36.17	38.92	38.98	36.17
Impact Pct	Advanced	22.70	22.90	22.69	14.38	22.70	22.90	14.38
Impact Pct	Prof. + Adv.	61.62	61.88	61.82	50.55	61.62	61.88	50.55
Demographics	N	125263	122454	27186	2809	125263	122454	2809
Demographics	Pct City	7.81	7.98	7.99	0.46	7.81	7.98	0.46
Demographics	Pct White	68.56	68.43	68.50	74.40	68.56	68.43	74.40
Demographics	Pct Black	14.12	14.15	14.29	12.99	14.12	14.15	12.99
Demographics	Pct Hispanic	10.15	10.19	10.20	8.44	10.15	10.19	8.44
Demographics	Pct Male	51.15	51.08	51.18	53.93	51.15	51.08	53.93
Demographics	Pct Female	48.85	48.92	48.82	46.07	48.85	48.92	46.07
Raw Score	Reliability	0.91						

Grade 7 English Language Arts

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	48.99	49.09	49.26	45.18	48.99	49.09	45.18
Raw Score	SD	13.92	13.91	13.88	13.84	13.92	13.91	13.84
Raw Score	Max	84						
Scaled Score	Mean	1028.73	1029.51	1030.93	998.98	1028.73	1029.51	998.98
Scaled Score	SD	110.42	110.40	110.48	106.86	110.42	110.40	106.86
Scaled Score	Max	1720						
Raw Cuts	Bel. Basic/Basic	25	25	25	25	25	25	25
Raw Cuts	Basic/Prof.	46	46	46	46	46	46	46
Raw Cuts	Prof./Adv.	63	63	63	63	63	63	63
Theta Cuts	Bel. Basic/Basic	-0.9695	-0.9695	-0.9695	-0.9695	-0.9695	-0.9695	-0.9695
Theta Cuts	Basic/Prof.	0.5300	0.5300	0.5300	0.5300	0.5300	0.5300	0.5300
Theta Cuts	Prof./Adv.	1.8451	1.8451	1.8451	1.8451	1.8451	1.8451	1.8451
Impact Pct	Below Basic	5.02	4.96	4.86	7.58	5.02	4.96	7.58
Impact Pct	Basic	33.49	33.26	32.90	42.20	33.49	33.26	42.20
Impact Pct	Proficient	43.34	43.45	43.66	39.32	43.34	43.45	39.32
Impact Pct	Advanced	18.15	18.34	18.58	10.90	18.15	18.34	10.90
Impact Pct	Prof. + Adv.	61.49	61.78	62.24	50.22	61.49	61.78	50.22
Demographics	N	124961	121795	27004	3166	124961	121795	3166
Demographics	Pct City	7.44	7.61	7.58	0.88	7.44	7.61	0.88
Demographics	Pct White	69.47	69.28	69.34	76.66	69.47	69.28	76.66
Demographics	Pct Black	14.12	14.18	14.29	11.59	14.12	14.18	11.59
Demographics	Pct Hispanic	9.76	9.81	9.84	7.83	9.76	9.81	7.83
Demographics	Pct Male	50.91	50.85	51.15	53.03	50.91	50.85	53.03
Demographics	Pct Female	49.09	49.15	48.85	46.97	49.09	49.15	46.97
Raw Score	Reliability	0.91						

Grade 8 English Language Arts

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	52.23	52.33	52.27	48.72	52.23	52.33	48.72
Raw Score	SD	14.49	14.47	14.40	14.89	14.49	14.47	14.89
Raw Score	Max	84						
Scaled Score	Mean	1026.00	1026.84	1026.20	998.47	1026.00	1026.84	998.47
Scaled Score	SD	116.22	116.20	115.47	113.33	116.22	116.20	113.33
Scaled Score	Max	1677						
Raw Cuts	Bel. Basic/Basic	33	33	33	33	33	33	33
Raw Cuts	Basic/Prof.	51	51	51	51	51	51	51
Raw Cuts	Prof./Adv.	67	67	67	67	67	67	67
Theta Cuts	Bel. Basic/Basic	-0.7246	-0.7246	-0.7246	-0.7246	-0.7246	-0.7246	-0.7246
Theta Cuts	Basic/Prof.	0.4244	0.4244	0.4244	0.4244	0.4244	0.4244	0.4244
Theta Cuts	Prof./Adv.	1.7530	1.7530	1.7530	1.7530	1.7530	1.7530	1.7530
Impact Pct	Below Basic	11.26	11.09	10.90	17.03	11.26	11.09	17.03
Impact Pct	Basic	30.39	30.27	30.62	34.34	30.39	30.27	34.34
Impact Pct	Proficient	40.90	41.04	41.23	36.37	40.90	41.04	36.37
Impact Pct	Advanced	17.45	17.61	17.25	12.26	17.45	17.61	12.26
Impact Pct	Prof. + Adv.	58.35	58.65	58.48	48.63	58.35	58.65	48.63
Demographics	N	123275	119629	26607	3646	123275	119629	3646
Demographics	Pct City	7.32	7.51	7.45	1.04	7.32	7.51	1.04
Demographics	Pct White	69.71	69.44	69.40	78.55	69.71	69.44	78.55
Demographics	Pct Black	14.37	14.47	14.56	11.08	14.37	14.47	11.08
Demographics	Pct Hispanic	9.68	9.78	9.68	6.64	9.68	9.78	6.64
Demographics	Pct Male	51.48	51.38	51.64	54.61	51.48	51.38	54.61
Demographics	Pct Female	48.52	48.62	48.36	45.39	48.52	48.62	45.39
Raw Score	Reliability	0.91						

Grade 3 Mathematics

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	45.76	45.81	45.98	38.69	45.76	45.81	38.69
Raw Score	SD	14.65	14.64	14.57	14.91	14.65	14.64	14.91
Raw Score	Max	72						
Scaled Score	Mean	1018.06	1018.53	1019.90	957.80	1018.06	1018.53	957.80
Scaled Score	SD	131.53	131.46	131.00	126.58	131.53	131.46	126.58
Scaled Score	Max	1564						
Raw Cuts	Bel. Basic/Basic	35	35	35	35	35	35	35
Raw Cuts	Basic/Prof.	46	46	46	46	46	46	46
Raw Cuts	Prof./Adv.	58	58	58	58	58	58	58
Theta Cuts	Bel. Basic/Basic	-0.3274	-0.3274	-0.3274	-0.3274	-0.3274	-0.3274	-0.3274
Theta Cuts	Basic/Prof.	0.4729	0.4729	0.4729	0.4729	0.4729	0.4729	0.4729
Theta Cuts	Prof./Adv.	1.5355	1.5355	1.5355	1.5355	1.5355	1.5355	1.5355
Impact Pct	Below Basic	24.63	24.49	24.09	42.99	24.63	24.49	42.99
Impact Pct	Basic	20.97	20.95	20.71	23.71	20.97	20.95	23.71
Impact Pct	Proficient	28.14	28.21	28.69	19.90	28.14	28.21	19.90
Impact Pct	Advanced	26.25	26.35	26.51	13.40	26.25	26.35	13.40
Impact Pct	Prof. + Adv.	54.39	54.56	55.20	33.30	54.39	54.56	33.30
Demographics	N	125420	124450	27564	970	125420	124450	970
Demographics	Pct City	10.07	10.15	10.15		10.07	10.15	
Demographics	Pct White	65.44	65.53	65.46	54.54	65.44	65.53	54.54
Demographics	Pct Black	14.90	14.75	14.65	34.23	14.90	14.75	34.23
Demographics	Pct Hispanic	11.17	11.21	11.11	6.49	11.17	11.21	6.49
Demographics	Pct Male	51.02	50.98	50.53	56.39	51.02	50.98	56.39
Demographics	Pct Female	48.98	49.02	49.47	43.61	48.98	49.02	43.61
Raw Score	Reliability	0.94						

Grade 4 Mathematics

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	42.86	42.92	42.84	35.53	42.86	42.92	35.53
Raw Score	SD	15.60	15.59	15.57	15.46	15.60	15.59	15.46
Raw Score	Max	72						
Scaled Score	Mean	994.08	994.60	994.21	936.48	994.08	994.60	936.48
Scaled Score	SD	127.67	127.61	128.13	120.76	127.67	127.61	120.76
Scaled Score	Max	1518						
Raw Cuts	Bel. Basic/Basic	32	32	32	32	32	32	32
Raw Cuts	Basic/Prof.	46	46	46	46	46	46	46
Raw Cuts	Prof./Adv.	59	59	59	59	59	59	59
Theta Cuts	Bel. Basic/Basic	-0.7258	-0.7258	-0.7258	-0.7258	-0.7258	-0.7258	-0.7258
Theta Cuts	Basic/Prof.	0.2072	0.2072	0.2072	0.2072	0.2072	0.2072	0.2072
Theta Cuts	Prof./Adv.	1.2862	1.2862	1.2862	1.2862	1.2862	1.2862	1.2862
Impact Pct	Below Basic	27.60	27.44	27.81	44.91	27.60	27.44	44.91
Impact Pct	Basic	25.86	25.86	25.89	26.82	25.86	25.86	26.82
Impact Pct	Proficient	26.70	26.77	26.83	19.26	26.70	26.77	19.26
Impact Pct	Advanced	19.84	19.93	19.47	9.00	19.84	19.93	9.00
Impact Pct	Prof. + Adv.	46.53	46.70	46.30	28.26	46.53	46.70	28.26
Demographics	N	123940	122829	27220	1111	123940	122829	1111
Demographics	Pct City	9.61	9.70	9.74		9.61	9.70	
Demographics	Pct White	66.58	66.60	66.79	64.36	66.58	66.60	64.36
Demographics	Pct Black	14.58	14.46	14.70	27.99	14.58	14.46	27.99
Demographics	Pct Hispanic	10.87	10.93	10.51	4.32	10.87	10.93	4.32
Demographics	Pct Male	51.02	50.97	50.88	56.53	51.02	50.97	56.53
Demographics	Pct Female	48.98	49.03	49.12	43.47	48.98	49.03	43.47
Raw Score	Reliability	0.94						

Grade 5 Mathematics

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	38.17	38.24	38.30	32.81	38.17	38.24	32.81
Raw Score	SD	16.11	16.09	16.12	16.60	16.11	16.09	16.60
Raw Score	Max	72						
Scaled Score	Mean	993.26	993.76	994.24	954.08	993.26	993.76	954.08
Scaled Score	SD	124.47	124.35	124.61	127.29	124.47	124.35	127.29
Scaled Score	Max	1548						
Raw Cuts	Bel. Basic/Basic	26	26	26	26	26	26	26
Raw Cuts	Basic/Prof.	41	41	41	41	41	41	41
Raw Cuts	Prof./Adv.	56	56	56	56	56	56	56
Theta Cuts	Bel. Basic/Basic	-0.5466	-0.5466	-0.5466	-0.5466	-0.5466	-0.5466	-0.5466
Theta Cuts	Basic/Prof.	0.4166	0.4166	0.4166	0.4166	0.4166	0.4166	0.4166
Theta Cuts	Prof./Adv.	1.5222	1.5222	1.5222	1.5222	1.5222	1.5222	1.5222
Impact Pct	Below Basic	27.99	27.80	27.80	43.13	27.99	27.80	43.13
Impact Pct	Basic	27.64	27.67	27.50	25.40	27.64	27.67	25.40
Impact Pct	Proficient	25.91	26.02	25.94	18.11	25.91	26.02	18.11
Impact Pct	Advanced	18.45	18.52	18.77	13.36	18.45	18.52	13.36
Impact Pct	Prof. + Adv.	44.37	44.54	44.71	31.48	44.37	44.54	31.48
Demographics	N	122983	121404	26979	1579	122983	121404	1579
Demographics	Pct City	8.94	9.05	9.06		8.94	9.05	
Demographics	Pct White	67.41	67.35	67.51	72.01	67.41	67.35	72.01
Demographics	Pct Black	14.50	14.48	14.51	15.64	14.50	14.48	15.64
Demographics	Pct Hispanic	10.53	10.56	10.33	8.61	10.53	10.56	8.61
Demographics	Pct Male	51.09	51.06	51.42	53.58	51.09	51.06	53.58
Demographics	Pct Female	48.91	48.94	48.58	46.42	48.91	48.94	46.42
Raw Score	Reliability	0.94						

Grade 6 Mathematics

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	41.95	42.01	42.26	39.40	41.95	42.01	39.40
Raw Score	SD	15.88	15.88	15.78	15.89	15.88	15.88	15.89
Raw Score	Max	72						
Scaled Score	Mean	977.76	978.22	979.89	957.62	977.76	978.22	957.62
Scaled Score	SD	129.93	129.93	128.69	127.96	129.93	129.93	127.96
Scaled Score	Max	1515						
Raw Cuts	Bel. Basic/Basic	32	32	32	32	32	32	32
Raw Cuts	Basic/Prof.	48	48	48	48	48	48	48
Raw Cuts	Prof./Adv.	60	60	60	60	60	60	60
Theta Cuts	Bel. Basic/Basic	-0.3154	-0.3154	-0.3154	-0.3154	-0.3154	-0.3154	-0.3154
Theta Cuts	Basic/Prof.	0.7502	0.7502	0.7502	0.7502	0.7502	0.7502	0.7502
Theta Cuts	Prof./Adv.	1.8156	1.8156	1.8156	1.8156	1.8156	1.8156	1.8156
Impact Pct	Below Basic	30.13	29.98	29.55	36.50	30.13	29.98	36.50
Impact Pct	Basic	28.83	28.82	28.56	29.15	28.83	28.82	29.15
Impact Pct	Proficient	24.14	24.20	24.55	21.55	24.14	24.20	21.55
Impact Pct	Advanced	16.91	17.00	17.35	12.79	16.91	17.00	12.79
Impact Pct	Prof. + Adv.	41.04	41.20	41.89	34.34	41.04	41.20	34.34
Demographics	N	125305	122530	27188	2775	125305	122530	2775
Demographics	Pct City	7.82	7.99	7.98	0.50	7.82	7.99	0.50
Demographics	Pct White	68.51	68.39	68.54	73.98	68.51	68.39	73.98
Demographics	Pct Black	14.15	14.16	14.08	13.30	14.15	14.16	13.30
Demographics	Pct Hispanic	10.18	10.22	10.02	8.43	10.18	10.22	8.43
Demographics	Pct Male	51.16	51.10	51.31	53.55	51.16	51.10	53.55
Demographics	Pct Female	48.84	48.90	48.69	46.45	48.84	48.90	46.45
Raw Score	Reliability	0.94						

Grade 7 Mathematics

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	36.91	36.93	37.02	36.24	36.91	36.93	36.24
Raw Score	SD	15.75	15.75	15.72	15.75	15.75	15.75	15.75
Raw Score	Max	72						
Scaled Score	Mean	968.11	968.26	968.99	962.99	968.11	968.26	962.99
Scaled Score	SD	120.36	120.38	120.33	119.63	120.36	120.38	119.63
Scaled Score	Max	1541						
Raw Cuts	Bel. Basic/Basic	28	28	28	28	28	28	28
Raw Cuts	Basic/Prof.	43	43	43	43	43	43	43
Raw Cuts	Prof./Adv.	58	58	58	58	58	58	58
Theta Cuts	Bel. Basic/Basic	-0.5170	-0.5170	-0.5170	-0.5170	-0.5170	-0.5170	-0.5170
Theta Cuts	Basic/Prof.	0.4404	0.4404	0.4404	0.4404	0.4404	0.4404	0.4404
Theta Cuts	Prof./Adv.	1.6132	1.6132	1.6132	1.6132	1.6132	1.6132	1.6132
Impact Pct	Below Basic	34.92	34.87	34.42	36.73	34.92	34.87	36.73
Impact Pct	Basic	28.10	28.11	28.57	27.56	28.10	28.11	27.56
Impact Pct	Proficient	23.67	23.68	23.54	23.15	23.67	23.68	23.15
Impact Pct	Advanced	13.32	13.34	13.47	12.57	13.32	13.34	12.57
Impact Pct	Prof. + Adv.	36.99	37.02	37.01	35.72	36.99	37.02	35.72
Demographics	N	124959	121490	26955	3469	124959	121490	3469
Demographics	Pct City	7.45	7.64	7.62	0.78	7.45	7.64	0.78
Demographics	Pct White	69.44	69.24	69.69	76.42	69.44	69.24	76.42
Demographics	Pct Black	14.14	14.22	14.25	11.21	14.14	14.22	11.21
Demographics	Pct Hispanic	9.77	9.80	9.49	8.68	9.77	9.80	8.68
Demographics	Pct Male	50.95	50.90	51.07	52.81	50.95	50.90	52.81
Demographics	Pct Female	49.05	49.10	48.93	47.19	49.05	49.10	47.19
Raw Score	Reliability	0.94						

Grade 8 Mathematics

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	37.83	37.89	37.93	35.76	37.83	37.89	35.76
Raw Score	SD	14.93	14.93	14.90	14.98	14.93	14.93	14.98
Raw Score	Max	72						
Scaled Score	Mean	949.08	949.58	949.68	932.26	949.08	949.58	932.26
Scaled Score	SD	123.04	123.07	122.24	120.93	123.04	123.07	120.93
Scaled Score	Max	1662						
Raw Cuts	Bel. Basic/Basic	33	33	33	33	33	33	33
Raw Cuts	Basic/Prof.	47	47	47	47	47	47	47
Raw Cuts	Prof./Adv.	59	59	59	59	59	59	59
Theta Cuts	Bel. Basic/Basic	-0.4305	-0.4305	-0.4305	-0.4305	-0.4305	-0.4305	-0.4305
Theta Cuts	Basic/Prof.	0.5513	0.5513	0.5513	0.5513	0.5513	0.5513	0.5513
Theta Cuts	Prof./Adv.	1.6670	1.6670	1.6670	1.6670	1.6670	1.6670	1.6670
Impact Pct	Below Basic	40.22	40.04	39.75	46.25	40.22	40.04	46.25
Impact Pct	Basic	28.59	28.65	28.74	26.47	28.59	28.65	26.47
Impact Pct	Proficient	20.74	20.79	21.00	18.99	20.74	20.79	18.99
Impact Pct	Advanced	10.45	10.52	10.50	8.29	10.45	10.52	8.29
Impact Pct	Prof. + Adv.	31.19	31.31	31.51	27.28	31.19	31.31	27.28
Demographics	N	123175	119605	26496	3570	123175	119605	3570
Demographics	Pct City	7.32	7.51	7.49	1.06	7.32	7.51	1.06
Demographics	Pct White	69.65	69.43	69.73	77.14	69.65	69.43	77.14
Demographics	Pct Black	14.39	14.46	14.42	12.13	14.39	14.46	12.13
Demographics	Pct Hispanic	9.71	9.80	9.37	6.81	9.71	9.80	6.81
Demographics	Pct Male	51.52	51.45	51.92	53.92	51.52	51.45	53.92
Demographics	Pct Female	48.48	48.55	48.08	46.08	48.48	48.55	46.08
Raw Score	Reliability	0.94						

Grade 4 Science

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	47.81	47.83	48.04	46.99	47.81	47.83	46.99
Raw Score	SD	13.41	13.41	13.47	13.66	13.41	13.41	13.66
Raw Score	Max	68						
Scaled Score	Mean	1424.59	1424.82	1428.60	1412.05	1424.59	1424.82	1412.05
Scaled Score	SD	206.34	206.35	207.48	205.29	206.34	206.35	205.29
Scaled Score	Max	2208						
Raw Cuts	Bel. Basic/Basic	29	29	29	29	29	29	29
Raw Cuts	Basic/Prof.	39	39	39	39	39	39	39
Raw Cuts	Prof./Adv.	55	55	55	55	55	55	55
Theta Cuts	Bel. Basic/Basic	-0.3703	-0.3703	-0.3703	-0.3703	-0.3703	-0.3703	-0.3703
Theta Cuts	Basic/Prof.	0.2808	0.2808	0.2808	0.2808	0.2808	0.2808	0.2808
Theta Cuts	Prof./Adv.	1.5179	1.5179	1.5179	1.5179	1.5179	1.5179	1.5179
Impact Pct	Below Basic	11.66	11.63	11.69	12.82	11.66	11.63	12.82
Impact Pct	Basic	12.16	12.14	11.55	13.17	12.16	12.14	13.17
Impact Pct	Proficient	36.70	36.69	36.21	37.09	36.70	36.69	37.09
Impact Pct	Advanced	39.49	39.54	40.55	36.91	39.49	39.54	36.91
Impact Pct	Prof. + Adv.	76.19	76.23	76.76	74.01	76.19	76.23	74.01
Demographics	N	123818	121556	20188	2262	123818	121556	2262
Demographics	Pct City	9.59	9.77	9.74		9.59	9.77	
Demographics	Pct White	66.60	66.50	66.41	72.33	66.60	66.50	72.33
Demographics	Pct Black	14.56	14.56	14.55	14.59	14.56	14.56	14.59
Demographics	Pct Hispanic	10.88	10.91	11.05	8.89	10.88	10.91	8.89
Demographics	Pct Male	51.01	50.94	51.18	55.00	51.01	50.94	55.00
Demographics	Pct Female	48.99	49.06	48.82	45.00	48.99	49.06	45.00
Raw Score	Reliability	0.94						

Grade 8 Science

		All	Paper Overall	Paper Master	Online	Scored	Scored Paper	Scored Online
Raw Score	Mean	44.47	44.44	44.48	45.32	44.47	44.44	45.32
Raw Score	SD	14.13	14.14	14.15	13.95	14.13	14.14	13.95
Raw Score	Max	68						
Scaled Score	Mean	1310.37	1309.80	1310.73	1325.24	1310.37	1309.80	1325.24
Scaled Score	SD	219.22	219.11	219.65	221.53	219.22	219.11	221.53
Scaled Score	Max	2278						
Raw Cuts	Bel. Basic/Basic	35	35	35	35	35	35	35
Raw Cuts	Basic/Prof.	45	45	45	45	45	45	45
Raw Cuts	Prof./Adv.	56	56	56	56	56	56	56
Theta Cuts	Bel. Basic/Basic	-0.2287	-0.2287	-0.2287	-0.2287	-0.2287	-0.2287	-0.2287
Theta Cuts	Basic/Prof.	0.4468	0.4468	0.4468	0.4468	0.4468	0.4468	0.4468
Theta Cuts	Prof./Adv.	1.4239	1.4239	1.4239	1.4239	1.4239	1.4239	1.4239
Impact Pct	Below Basic	25.57	25.63	25.66	23.90	25.57	25.63	23.90
Impact Pct	Basic	16.81	16.79	16.35	17.18	16.81	16.79	17.18
Impact Pct	Proficient	30.34	30.40	30.90	28.84	30.34	30.40	28.84
Impact Pct	Advanced	27.29	27.18	27.09	30.09	27.29	27.18	30.09
Impact Pct	Prof. + Adv.	57.63	57.58	57.99	58.93	57.63	57.58	58.93
Demographics	N	122955	118402	19654	4553	122955	118402	4553
Demographics	Pct City	7.32	7.57	7.57	0.90	7.32	7.57	0.90
Demographics	Pct White	69.63	69.28	68.93	78.83	69.63	69.28	78.83
Demographics	Pct Black	14.41	14.58	14.87	9.95	14.41	14.58	9.95
Demographics	Pct Hispanic	9.71	9.80	9.71	7.27	9.71	9.80	7.27
Demographics	Pct Male	51.54	51.45	51.35	54.01	51.54	51.45	54.01
Demographics	Pct Female	48.46	48.55	48.65	45.99	48.46	48.55	45.99
Raw Score	Reliability	0.94						

APPENDIX R: PSSA SCORE-REPORT DEVELOPMENT

PENNSYLVANIA SYSTEM OF SCHOOL ASSESSMENT (PSSA)

BACKGROUND

An important aspect of the PSSA transition to the Pennsylvania Core Standard (PCS) is the need to produce revised score reports to support the newly-aligned assessments, specifically the introduction of an English Language Arts assessment with dual reporting of the reading scores and a desire to provide greater detail for the new score reporting categories. PDE also determined that the transition represented an opportunity to reevaluate the score reports as a whole. To that end, PDE and DRC developed a plan to utilize parent and educator focus groups to guide the development of revised PSSA individual student score reports.

This document provides a high-level summary of the focus-group approach that was followed, the feedback that DRC and PDE received, and the direction in which the reports were developed as an output of the process.

THE FOCUS GROUP APPROACH

DRC facilitated seven focus groups at four different locations across the Commonwealth, chosen to provide an opportunity for “geographically-representative” participation.

- A total of 56 educators and 22 parents participated in the seven focus groups.

Prior to the focus groups, DRC collaborated with PDE to select the number and design of the score-report mock-ups that were presented at the focus group meetings.

- Two mock-up designs were selected to give participants an opportunity to visualize key differences (“Sample Student #1” and “Sample Student #2”):
 - Use of the Strength Profile versus a Just-Proficient Mean
 - Reading “Text Types” reported between Reading and Writing versus after Writing
 - ELA dual reporting footnote versions

Focus groups were scheduled for 90 minutes (with the exception of a 120-minute session with the Harrisburg educator group).

- PDE opened each focus group with an overview of the purpose.
- DRC facilitated each session using a survey-question approach (see attached).
 - Participants used the survey to record their individual feedback on particular elements of the report and were also encouraged to share their feedback during the subsequent group discussions.
 - The survey approach ultimately allowed participants to compare and contrast all elements of the two mock-up designs.
 - All written survey feedback was collected and all verbal feedback was recorded by DRC staff.

Some of the main themes of the feedback included (see table on page 4 for additional detail):

- Favorable opinion of the first page with some requests to make information easier to read (larger font, more white space)
 - There were recurring comments against the use of “superior,” “satisfactory,” “marginal,” and “inadequate” in the Performance Level descriptors.

- Consistent input that the information became “overwhelming” with the reporting category definitions appearing within the Score reporting tables
 - There were multiple requests to rewrite the descriptions or move them away from the student’s score.
- Majority of the participants preferred the Strength Profile to the Just Proficient Mean
 - Those who preferred the Just Proficient Mean were often still misinterpreting its meaning.
- Majority of the participants preferred to have the Reading Text Types reported after Writing
 - This location was perceived to provide better delineation that the text type score is additional information rather than a direct element of the total ELA score.

After the focus groups were completed, DRC compiled the feedback for PDE to review and make recommendations. A summary of the feedback is found in the table below.

Focus Group	Strength Profile	Just Proficient Mean	Other, Both, or NR	Text Types Table Placed Directly After the Reading Table	Text Types Table Placed After the Entire ELA Reporting Table	Neither, Other, or NR	ELA Dual Reporting Footnote – Version 1	ELA Dual Reporting Footnote – Version 2	Neither, Other, or NR
IU #4 – Educators (13)	11	2	0	1	8	4	2	9	2
IU #4 – Parents (4)	1	3	0	0	4	0	0	4	0
IU #10 – Educators (12)	9	2	1	1	8	3	1	8	3
IU #10 – Parents (10)	8	2	0	2	8	0	2	7	1
Philadelphia – Educators (8)	4	4	0	3	5	0	3	5	0
Philadelphia – Parents (8)	3	2	3	0	5	3	0	4	4
Harrisburg – Educators (23)	17	4	2	0	22	1	0	21	2
Total	53	19	6	7	60	11	8	58	12

A single, revised mock-up was produced to reflect the following PDE recommendations (“Sample Student 3”):

- Minor changes to Page 1 (re-arrangement, spacing, font size)
- Just Proficient Mean eliminated
- Reading Text Types reported after Writing
- All subjects reported on pages 2 and 3 with Reporting Category definitions moved to page 4

The educator focus group participants were invited to a WebEx to view the revised mock-up, provide input, and respond to a survey question about removing the Strength Profile altogether.

- DRC highlighted the changes on the revised mock up and reviewed an alternate design with the Strength Profile removed.
 - All final changes were viewed favorably by the WebEx attendees (especially the new placement of the Reporting Category definitions on page 4).
 - All-but one attendee voted to retain the Strength Profile.

The final mock-up reviewed at the WebEx was used as a basis for the development and production of the 2015 student reports. The following materials are found on the next several pages of this appendix.

- The Focus Group Survey (Parent version – Educator differed only in the “Participant Information”)
- Student 1 Score Report (reviewed at the focus groups)
- Student 2 Score Report (reviewed at the focus groups)
- Student 3 Score Report (reviewed with the educators at the follow-up WebEx)

SURVEY QUESTIONS FROM PARENT FOCUS GROUP

PARTICIPANT INFORMATION

Name of student’s school _____

Is this school ___ rural ___ urban ___ suburban?

Grade(s) of your student(s) _____

STUDENT REPORT VERSION 1–PAGE 1

After reviewing page 1 of the PSSA Student Report version 1, please respond to questions 1–2. A group discussion will follow.

- 1. How easy/difficult is it to determine how the sample student performed on the PSSA for Mathematics, English Language Arts (ELA), and Science?

- _____ very difficult
- _____ somewhat difficult
- _____ somewhat easy
- _____ very easy

Please briefly explain why you rated this item as you did.

- 2. How would you rate the **readability** of page 1 of the PSSA report (e.g., font size, placement of student information, performance level definitions)?

- _____ not readable
- _____ somewhat readable
- _____ mostly readable
- _____ very readable

Please briefly explain why you rated this item as you did.

REPORTING TABLES VERSION 1–PAGES 2, 3, AND 4

After reviewing pages 2–4 of the PSSA Student Report version 1, please respond to questions 3–7. A group discussion will follow.

3. Overall, how easy/difficult is it to understand the information in the tables (e.g., descriptions of reporting categories, the student’s points, total points possible, strength profile)?

- very difficult
- somewhat difficult
- somewhat easy
- very easy

Please briefly explain why you rated this item as you did.

4. How well did you understand the Strength Profile (high, medium, or low) ratings and the footnote information for the Strength Profile?

- not understandable
- somewhat understandable
- mostly understandable
- very understandable

Please briefly explain why you rated this item as you did.

5. In the ELA table on page 3, points are reported for both the Reading Reporting Categories and the Reading Text Types Reporting Categories. How clear is this section of dual reporting?

- not clear
- somewhat clear
- mostly clear
- very clear

Please briefly explain why you rated this item as you did.

OVERALL REPORT FEEDBACK VERSION 1

6. How easy/difficult was it to read and move through the report, find the next section, and find supporting material to understand the student-score information?

- very difficult
- somewhat difficult
- somewhat easy
- very easy

Please briefly explain why you rated this item as you did.

7. How well did you understand the contents of the report (e.g., performance levels, footnotes, graphics)?

- not understandable
- somewhat understandable
- mostly understandable
- very understandable

Please briefly explain why you rated this item as you did.

STUDENT REPORT VERSION 2–PAGES 2, 3, AND 4

After reviewing the PSSA Student Report version 2, please respond to questions 1–5. A group discussion will follow.

1. How well did you understand the Just Proficient Mean results on pages 2–4 and the footnote information for the Just Proficient Mean?

- not understandable
- somewhat understandable
- mostly understandable
- very understandable

Please briefly explain why you rated this item as you did.

2. The reporting tables on pages 2–4 include a Just Proficient Mean for each reporting category. Now look at pages 2–4 of version 1. The reporting tables include a Strength Profile (high, medium, or low) for each reporting category. Which version of the information do you prefer and why?

- version 1
- version 2

Please explain.

ELA REPORT TABLE-PAGE 3 OF VERSION 1 OR VERSION 2?

3. Look at version 1. The Text Types Reporting Category information follows the Reading Reporting Category information. Now look at version 2. The Text Types Reporting Category information is placed at the end of the ELA table. Which version of the order of information do you prefer and why?

_____ version 1

_____ version 2

English Language Arts Performance Level

700 1112 1255 1469 2255

Below Basic Basic Proficient Advanced

1619 - Scale Score

Student's test scale score is indicated by the (A). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: 1519-1781.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile*
Reading*			
Key Ideas and Details	16	17	High
Craft and Structure/Integration of Knowledge and Ideas	9	12	Medium
Vocabulary Acquisition and Use	7	8	Medium
Text-Dependent Analysis	14	19	Medium
Informational Text	18	19	High
Text-Dependent Analysis	14	18	Medium
Informational Text	18	19	High

* The English Language Arts PSSA Reading section includes passages with a set of questions measuring the Reading Reporting Categories above. Passages are either Literature Text or Informational Text. Therefore, each PSSA Reading question measures one of the Reading Reporting Categories and one of the Text Type Reporting Categories. Each PSSA Reading question counts only once in determining the student's scale score.

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English Language Arts Performance Level

700 1112 1255 1469 2255

Below Basic Basic Proficient Advanced

1619 - Scale Score

Student's test scale score is indicated by the (A). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: 1519-1781.

Score Reporting Category	Student's Points	Total Points Possible	Just Proficient Mean?
Reading*			
Key Ideas and Details	16	17	10.5
Craft and Structure/Integration of Knowledge and Ideas	9	12	8.2
Vocabulary Acquisition and Use	7	9	5.5
Text-Dependent Analysis	14	18	11.0
Text-Dependent Analysis	16	16	9.9
Text-Dependent Analysis	14	18	11.0
Text-Dependent Analysis	16	16	9.9
Text-Dependent Analysis	14	18	11.0
Text-Dependent Analysis	16	16	9.9

* In the box below, all points in the Literature Text Reporting Category and all points in the Informational Text Reporting Category are included within the Reading Reporting Category above. Each PSSA Reading question counts only once in determining the student's scale score.

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Please explain.

4. Which version of the ELA dual reporting footnote do you prefer and why?

_____ version 1

The English Language Arts PSSA Reading section includes passages with a set of questions measuring the Reading Reporting Categories above. Passages are either Literature Text or Informational Text. Therefore, each PSSA Reading question measures one of the Reading Reporting Categories and one of the Text Type Reporting Categories. Each PSSA Reading question counts only once in determining the student's scale score.

_____ version 2

In the box below, all points in the Literature Text Reporting Category and all points in the Informational Text Reporting Category are included within the Reading Reporting Categories above. Each PSSA Reading question counts only once in determining the student's scale score.

Please explain.

REPORT OPTIONS—VERSION 1 OR VERSION 2?

5. Now that you have reviewed the two reports, please select the preferred option from each group below.

- Strength Profile information
- Just Proficient Mean information

- Reading Text Type table placement directly after the Reading score reporting table
- Reading Text Type table placement directly after the entire ELA score reporting table

- ELA dual reporting footnote – version 1
- ELA dual reporting footnote – version 2

Additional Comments and Recommendations

PENNSYLVANIA

System of School Assessment (PSSA)

Student Report

Student Name: Sample Student 1
PA Student ID: *****45154
School: Sample School
District: Sample District
Test Date: Spring 2015
Grade: 4

What Is the Pennsylvania System of School Assessment (PSSA)?

- The PSSA is an assessment used to measure a student's progression toward mastery of the
 - Pennsylvania Core Standards in Mathematics and English Language Arts
 - Pennsylvania Academic Content Standards in Science
- For additional information, visit the Pennsylvania Department of Education's website at www.education.state.pa.us.

What Is Included in This Report?

- This report provides information about the student's recent performances on the
 - Mathematics, English Language Arts, and Science PSSA assessments.
- It is not intended to summarize all aspects of student learning.
- For additional information concerning a student's performance, consult the school or the classroom teacher.
- A Report Interpretation Guide is available at www.education.state.pa.us. Type "student report guide" in the search field or consult the local school district or school.

Student's Results				
Performance Level				
	Goal Range*			
	Below Basic	Basic	Proficient	Advanced
Mathematics			✓	
English Language Arts				✓
Science			✓	

* **Goal Range:** The goal range is for all students in the Commonwealth of Pennsylvania to score proficient or above.

Performance Levels

The Advanced Level reflects superior academic performance, and work at this level demonstrates a thorough command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates advanced academic preparation for engaging successfully in further studies in this content area.

The Proficient Level reflects satisfactory academic performance, and work at this level demonstrates an adequate command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates academic preparation for engaging successfully in further studies in this content area.

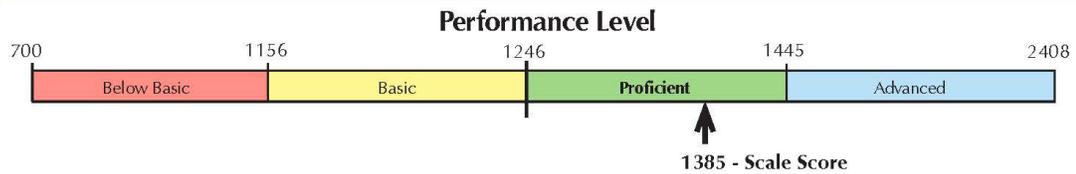
The Basic Level reflects marginal academic performance, and work at this level demonstrates a partial command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates additional academic support may be needed for engaging successfully in further studies in this content area.

The Below Basic Level reflects inadequate academic performance, and work at this level demonstrates a minimal command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates extensive additional academic support may be needed for engaging successfully in further studies in this content area.

www.education.state.pa.us

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Mathematics

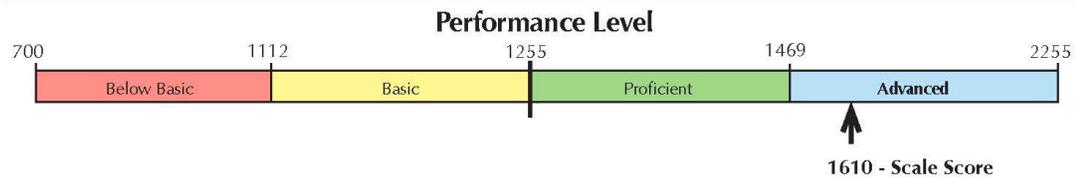


Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1329–1441**.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile ¹
Numbers and Operations in Base Ten Students develop number skills by understanding place value, relative sizes of numbers in each place, and properties of operations. They practice estimating, doing mental calculations, and developing fluency in multiplying whole numbers.	5	14	Low
Numbers and Operations—Fractions Students learn the meaning of fractions by exploring relationships between fractions and division, creating fractions by counting and partitioning, and using unit fractions to represent whole numbers.	10	15	Medium
Operations and Algebraic Thinking Students solve problems using all four arithmetic operations with whole numbers. They use drawings, equations, and symbols to represent quantities and analyze patterns. They also learn how factors and multiples relate to multiplication and division.	16	19	High
Geometry Students compare and classify two-dimensional shapes to better understand two-dimensional objects. They explore problems involving symmetry, visual and spatial reasoning, and how to select tools to answer questions about size and relationships.	10	11	High
Measurement and Data Students use arithmetic operations to solve problems involving measurements and conversions with customary and metric units. They represent and interpret data using line plots, and they use fractions to interpret and calculate intervals.	9	13	Medium

¹ **THE STRENGTH PROFILE (LOW, MEDIUM, HIGH):** The strength profile for each of the PSSA assessments, Mathematics, English Language Arts, and Science, provides an indication of this student's performance within each of the reporting categories. The Strength Profile takes into account the difficulty of the assessment questions and can be used to help identify the student's strengths and/or areas of need.

English Language Arts



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1519–1701**.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile ¹
Reading*			
Key Ideas and Details Students refer to key ideas and details from a passage or passages to summarize important ideas and events, determine a theme or main idea, and draw on evidence from text to support overall inferences and understanding.	16	17	High
Craft and Structure/Integration of Knowledge and Ideas Students demonstrate understanding of a passage or passages by comparing points of view and first-hand/second-hand accounts of similar events; making connections within, between, and/or among texts; referring to text features to support information; and analyzing use of evidence to support overall integration of ideas and key aspects of text.	9	12	Medium
Vocabulary Acquisition and Use Students demonstrate understanding of vocabulary and figurative language in literature and informational texts.	7	9	Medium

* The English Language Arts PSSA Reading section includes passages with a set of questions measuring the Reading Reporting Categories above. Passages are either Literature Text or Informational Text. Therefore, each PSSA Reading question measures one of the Reading Reporting Categories and one of the Text Type Reporting Categories. Each PSSA Reading question counts only once in determining the student's scale score.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile ¹
Reading Text Types			
Literature Text Students read and respond to literature passages, focusing on narrative, poetic, and/or dramatic techniques and drawing on evidence in the text to support comprehension and interpretation.	14	19	Medium
Informational Text Students read and respond to informational passages, focusing on the information and evidence presented on topics, ideas, or procedures and drawing on evidence in the text to support comprehension and interpretation.	18	19	High

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile ¹
Writing			
Types of Writing Students write an essay demonstrating effective techniques appropriate for type and purpose of writing.	8	12	Medium
Language Students demonstrate command of the conventions of standard English grammar and usage, capitalization, punctuation, and spelling, as well as use knowledge of language and its conventions for effect.	14	18	Medium
Text-Dependent Analysis			
Text-Dependent Analysis Students write a response to literature or informational passage or passages, drawing on the evidence presented in the text to support analysis, reflection, and/or research.	16	16	High

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Science



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1341–1439**.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile ¹
The Nature of Science Students use reasoning skills to develop possible solutions for everyday problems. They plan and conduct fair and valid scientific investigations. They identify patterns and use models to help explain natural and human-made systems.	25	34	Medium
Biological Sciences Students evaluate structures and functions of organisms, describe ecological behaviors within living systems, and recognize the interdependencies between humans and the natural world.	9	12	Medium
Physical Sciences Students demonstrate understanding of physical properties of matter and basic energy types and sources. They describe how energy can change form and apply the scientific principles of force and motion.	4	10	Low
Earth and Space Sciences Students identify and describe Earth features and processes that change the environment. They recognize processes and changes associated with weather, climate, the atmosphere, and the Earth-Moon-Sun system.	8	12	Medium

¹ **THE STRENGTH PROFILE (LOW, MEDIUM, HIGH):** The strength profile for each of the PSSA assessments, Mathematics, English Language Arts, and Science, provides an indication of this student's performance within each of the reporting categories. The Strength Profile takes into account the difficulty of the assessment questions and can be used to help identify the student's strengths and/or areas of need.

PENNSYLVANIA

System of School Assessment (PSSA)

Student Report

Student Name: Sample Student 2
PA Student ID: ****45154
School: Sample School
District: Sample District
Test Date: Spring 2015
Grade: 4

Student's Results				
Performance Level				
	Goal Range*			
	Below Basic	Basic	Proficient	Advanced
Mathematics			✓	
English Language Arts				✓
Science			✓	

What Is the Pennsylvania System of School Assessment (PSSA)?

- The PSSA is an assessment used to measure a student's progression toward mastery of the
 - Pennsylvania Core Standards in Mathematics and English Language Arts
 - Pennsylvania Academic Content Standards in Science
- For additional information, visit the Pennsylvania Department of Education's website at www.education.state.pa.us.

What Is Included in This Report?

- This report provides information about the student's recent performances on the
 - Mathematics, English Language Arts, and Science PSSA assessments.
- It is not intended to summarize all aspects of student learning.
- For additional information concerning a student's performance, consult the school or the classroom teacher.
- A Report Interpretation Guide is available at www.education.state.pa.us. Type "student report guide" in the search field or consult the local school district or school.

* **Goal Range:** The goal range is for all students in the Commonwealth of Pennsylvania to score proficient or above.

Performance Levels

The Advanced Level reflects superior academic performance, and work at this level demonstrates a thorough command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates advanced academic preparation for engaging successfully in further studies in this content area.

The Proficient Level reflects satisfactory academic performance, and work at this level demonstrates an adequate command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates academic preparation for engaging successfully in further studies in this content area.

The Basic Level reflects marginal academic performance, and work at this level demonstrates a partial command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates additional academic support may be needed for engaging successfully in further studies in this content area.

The Below Basic Level reflects inadequate academic performance, and work at this level demonstrates a minimal command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates extensive additional academic support may be needed for engaging successfully in further studies in this content area.

www.education.state.pa.us

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Mathematics



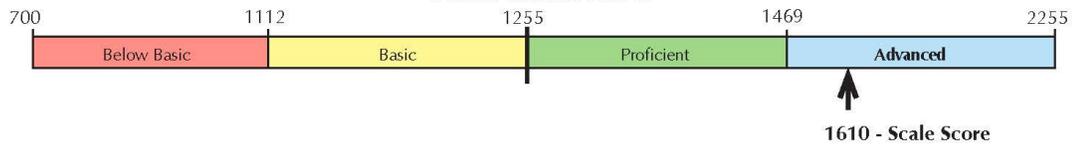
Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1329–1441**.

Score Reporting Category	Student's Points	Total Points Possible	Just Proficient Mean ¹
Numbers and Operations in Base Ten Students develop number skills by understanding place value, relative sizes of numbers in each place, and properties of operations. They practice estimating, doing mental calculations, and developing fluency in multiplying whole numbers.	5	14	6.8
Numbers and Operations—Fractions Students learn the meaning of fractions by exploring relationships between fractions and division, creating fractions by counting and partitioning, and using unit fractions to represent whole numbers.	10	15	8.3
Operations and Algebraic Thinking Students solve problems using all four arithmetic operations with whole numbers. They use drawings, equations, and symbols to represent quantities and analyze patterns. They also learn how factors and multiples relate to multiplication and division.	16	19	11.6
Geometry Students compare and classify two-dimensional shapes to better understand two-dimensional objects. They explore problems involving symmetry, visual and spatial reasoning, and how to select tools to answer questions about size and relationships.	10	11	5.1
Measurement and Data Students use arithmetic operations to solve problems involving measurements and conversions with customary and metric units. They represent and interpret data using line plots, and they use fractions to interpret and calculate intervals.	9	13	8.2

¹ **JUST PROFICIENT MEAN:** The Just Proficient Mean is the average number of points obtained by students who achieved the minimum proficient scale score.

English Language Arts

Performance Level



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1519–1701**.

Score Reporting Category	Student's Points	Total Points Possible	Just Proficient Mean ¹
Reading*			
Key Ideas and Details Students refer to key ideas and details from a passage or passages to summarize important ideas and events, determine a theme or main idea, and draw on evidence from text to support overall inferences and understanding.	16	17	10.5
Craft and Structure/Integration of Knowledge and Ideas Students demonstrate understanding of a passage or passages by comparing points of view and first-hand/second-hand accounts of similar events; making connections within, between, and/or among texts; referring to text features to support information; and analyzing use of evidence to support overall integration of ideas and key aspects of text.	9	12	8.2
Vocabulary Acquisition and Use Students demonstrate understanding of vocabulary and figurative language in literature and informational texts.	7	9	5.5
Writing			
Types of Writing Students write an essay demonstrating effective techniques appropriate for type and purpose of writing.	8	12	6.9
Language Students demonstrate command of the conventions of standard English grammar and usage, capitalization, punctuation, and spelling, as well as use knowledge of language and its conventions for effect.	14	18	11.0
Text-Dependent Analysis			
Text-Dependent Analysis Students write a response to literature or informational passage or passages, drawing on the evidence presented in the text to support analysis, reflection, and/or research.	16	16	9.9

* In the box below, all points in the Literature Text Reporting Category and all points in the Informational Text Reporting Category are included within the Reading Reporting Categories above. Each PSSA Reading question counts only once in determining the student's scale score.

Score Reporting Category	Student's Points	Total Points Possible	Just Proficient Mean ¹
Reading Text Types			
Literature Text Students read and respond to literature passages, focusing on narrative, poetic, and/or dramatic techniques and drawing on evidence in the text to support comprehension and interpretation.	14	19	13.3
Informational Text Students read and respond to informational passages, focusing on the information and evidence presented on topics, ideas, or procedures and drawing on evidence in the text to support comprehension and interpretation.	18	19	10.9

Science



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1341–1439**.

Score Reporting Category	Student's Points	Total Points Possible	Just Proficient Mean ¹
The Nature of Science Students use reasoning skills to develop possible solutions for everyday problems. They plan and conduct fair and valid scientific investigations. They identify patterns and use models to help explain natural and human-made systems.	25	34	21.4
Biological Sciences Students evaluate structures and functions of organisms, describe ecological behaviors within living systems, and recognize the interdependencies between humans and the natural world.	9	12	6.8
Physical Sciences Students demonstrate understanding of physical properties of matter and basic energy types and sources. They describe how energy can change form and apply the scientific principles of force and motion.	4	10	4.7
Earth and Space Sciences Students identify and describe Earth features and processes that change the environment. They recognize processes and changes associated with weather, climate, the atmosphere, and the Earth-Moon-Sun system.	8	12	6.2

¹ **JUST PROFICIENT MEAN:** The Just Proficient Mean is the average number of points obtained by students who achieved the minimum proficient scale score.

PENNSYLVANIA

System of School Assessment (PSSA)

Student Report

Student Name: Sample Student 3
PA Student ID: *****45154
School: Sample School
District: Sample District
Test Date: Spring 2015
Grade: 4

What Is the Pennsylvania System of School Assessment (PSSA)?

- The PSSA is an assessment system used to measure a student's progression toward mastery of the
 - Pennsylvania Core Standards in Mathematics and English Language Arts
 - Pennsylvania Academic Content Standards in Science
- For additional information, visit the Pennsylvania Department of Education's website at www.education.state.pa.us.

What Is Included in This Report?

- This report provides information about the student's recent performances on the
 - Mathematics, English Language Arts, and Science PSSA assessments
- It is not intended to summarize all aspects of student learning.

For Additional Information

- For more information about a student's performance, consult the school or the classroom teacher.
- A Report Interpretation Guide is available at www.education.state.pa.us. Type "student report guide" in the search field or consult the local school district or school.

Student's Results				
Performance Level				
	Goal Range*			
	Below Basic	Basic	Proficient	Advanced
Mathematics			✓	
Science			✓	
English Language Arts				✓

* **Goal Range:** The goal range is for all students in the Commonwealth of Pennsylvania to score proficient or above.

Performance Levels

The Below Basic Level reflects inadequate academic performance, and work at this level demonstrates a minimal command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates extensive additional academic support may be needed for engaging successfully in further studies in this content area.

The Basic Level reflects marginal academic performance, and work at this level demonstrates a partial command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates additional academic support may be needed for engaging successfully in further studies in this content area.

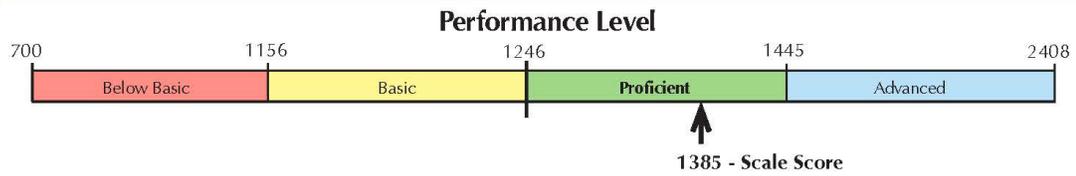
The Proficient Level reflects satisfactory academic performance, and work at this level demonstrates an adequate command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates academic preparation for engaging successfully in further studies in this content area.

The Advanced Level reflects superior academic performance, and work at this level demonstrates a thorough command of and ability to apply the knowledge, skills, and practices represented in the Pennsylvania standards. Consistent performance at this level indicates advanced academic preparation for engaging successfully in further studies in this content area.

www.education.state.pa.us

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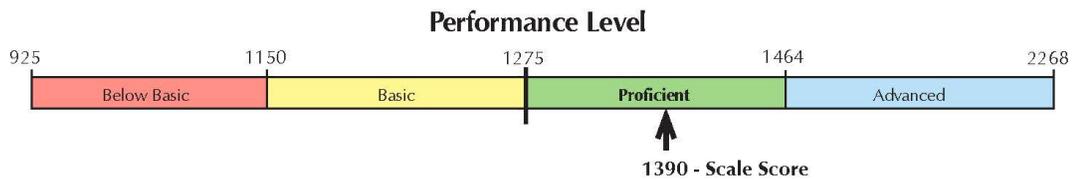
Mathematics



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1331–1439**.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile [†]
Numbers and Operations in Base Ten	5	14	Low
Numbers and Operations—Fractions	10	15	Medium
Operations and Algebraic Thinking	16	19	High
Geometry	10	11	High
Measurement and Data	9	13	Medium

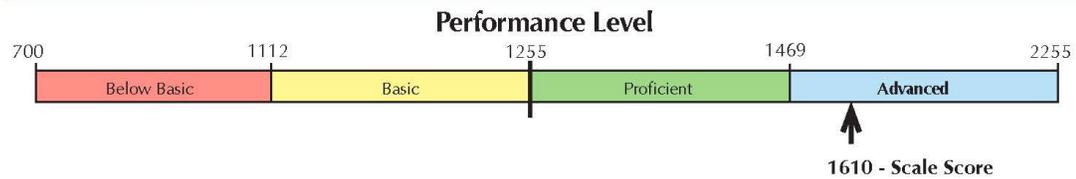
Science



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1341–1439**.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile [†]
The Nature of Science	25	34	Medium
Biological Sciences	9	12	Medium
Physical Sciences	4	10	Low
Earth and Space Sciences	8	12	Medium

English Language Arts



Student's test scale score is indicated by the (↑). If this student were to test again under similar circumstances, the student's score would likely remain in the following range: **1519–1701**.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile [†]
Reading[‡]			
Key Ideas and Details	16	17	High
Craft and Structure/Integration of Knowledge and Ideas	9	12	Medium
Vocabulary Acquisition and Use	7	9	Medium
Writing			
Types of Writing	8	12	Medium
Language	14	18	Medium
Text-Dependent Analysis			
Text-Dependent Analysis	16	16	High

[‡] In the box below, all points in the Literature Text Reporting Category and all points in the Informational Text Reporting Category are included within the Reading Reporting Categories above. Each PSSA Reading question counts only once in determining the student's scale score.

Score Reporting Category	Student's Points	Total Points Possible	Strength Profile [†]
Text Types			
Literature Text	14	19	Medium
Informational Text	18	19	High

To learn more about the Score Reporting Categories, see page 4.

[†] **The Strength Profile (Low, Medium, High):** The strength profile provides an indication of this student's performance within each of the reporting categories. The Strength Profile takes into account the difficulty of the assessment questions and can be used to help identify the student's strengths and/or areas of need.

Score Reporting Category Descriptions

Mathematics

- **Numbers and Operations in Base Ten**
Students develop number skills by understanding place value, relative sizes of numbers in each place, and properties of operations. They practice estimating, doing mental calculations, and developing fluency in multiplying whole numbers.
- **Numbers and Operations—Fractions**
Students learn the meaning of fractions by exploring relationships between fractions and division, creating fractions by counting and partitioning, and using unit fractions to represent whole numbers.
- **Operations and Algebraic Thinking**
Students solve problems using all four arithmetic operations with whole numbers. They use drawings, equations, and symbols to represent quantities and analyze patterns. They also learn how factors and multiples relate to multiplication and division.
- **Geometry**
Students compare and classify two-dimensional shapes to better understand two-dimensional objects. They explore problems involving symmetry, visual and spatial reasoning, and how to select tools to answer questions about size and relationships.
- **Measurement and Data**
Students use arithmetic operations to solve problems involving measurements and conversions with customary and metric units. They represent and interpret data using line plots, and they use fractions to interpret and calculate intervals.

Science

- **The Nature of Science**
Students use reasoning skills to develop possible solutions for everyday problems. They plan and conduct fair and valid scientific investigations. They identify patterns and use models to help explain natural and human-made systems.
- **Biological Sciences**
Students evaluate structures and functions of organisms, describe ecological behaviors within living systems, and recognize the interdependencies between humans and the natural world.
- **Physical Sciences**
Students demonstrate understanding of physical properties of matter and basic energy types and sources. They describe how energy can change form and apply the scientific principles of force and motion.
- **Earth and Space Sciences**
Students identify and describe Earth features and processes that change the environment. They recognize processes and changes associated with weather, climate, the atmosphere, and the Earth-Moon-Sun system.

English Language Arts

- **Key Ideas and Details**
Students refer to key ideas and details in passages to summarize important ideas/events, determine a theme or main idea, and draw on evidence from text to support overall inferences and understanding.
- **Craft and Structure/Integration of Knowledge and Ideas**
Students demonstrate understanding of passages by comparing points of view and first-hand/second-hand accounts of similar events; making connections within and between texts; referring to text features to support information; and analyzing use of evidence to support overall integration of ideas/key aspects of text.
- **Vocabulary Acquisition and Use**
Students demonstrate understanding of vocabulary and figurative language in literature and informational texts.

- **Types of Writing**
Students write opinion, informative, or narrative essays demonstrating effective techniques as appropriate for type and purpose.
- **Language**
Students demonstrate command of the conventions of standard English grammar and usage, capitalization, punctuation, and spelling and use knowledge of language and its conventions for effect.

- **Text-Dependent Analysis**
Students write a response to literature or informational passages, drawing on the evidence presented in the text to support analysis, reflection, and/or research.

- **Literature Text**
Students read and respond to literature passages, focusing on narrative, poetic, and/or dramatic techniques and drawing on evidence in the text to support comprehension and understanding.
- **Informational Text**
Students read and respond to informational passages, focusing on the information and evidence presented on topics, ideas, or procedures and drawing on evidence in the text to support comprehension and interpretation.

APPENDIX S: MODE STUDY

EXPLORATORY ANALYSIS OF MODE EFFECTS FOR THE PSSA – PAPER VERSUS ONLINE

The Pennsylvania System of School Assessment (PSSA) tests in mathematics, English language arts, and science are administered in both paper- and computer-based formats. In the Standards for Educational and Psychological Testing (AERA et al., 2014) comparability of scores across testing conditions is emphasized as means to support fairness in testing, stating that, “Comparability of scores enables test users to make comparable inferences based on the scores for all test takers” (AERA et al., 2014, p. 59). As PSSA scores are intended be interpreted in the same manner across test modes, it is important to assess the invariance of measurement across modes.

An important consideration in evaluating mode effects is sample size. Online participation rates in the PSSAs have consistently been under 5%, making it challenging to assess score comparability across modes due to the likely limitations in the generalizability of results of any such study to the full population of examinees. Accordingly, this appendix details a preliminary exploratory analysis of mode comparability on the PSSA, based on the model person fit from the 2016 calibration and equating samples for grades 3-8 ELA and Mathematics assessments, and grades 4 and 8 Science assessments. Some initial insight into the comparability of scores from paper and pencil and online administrations is gained.

Table 1 Final N-Counts and Percent by Mode, 2016

Subject	Grade	N-Counts Paper	N-Counts CBT	Proportion (%) Paper	Proportion (%) CBT
ELA	3	124450	970	99.23	0.77
ELA	4	122829	1111	99.10	0.90
ELA	5	121404	1579	98.72	1.28
ELA	6	122530	2775	97.79	2.21
ELA	7	121490	3469	97.22	2.78
ELA	8	119605	3570	97.10	2.90
Mathematics	3	124351	933	99.26	0.74
Mathematics	4	122516	1081	99.13	0.87
Mathematics	5	121311	1557	98.73	1.27
Mathematics	6	122454	2809	97.76	2.24
Mathematics	7	121795	3166	97.47	2.53
Mathematics	8	119629	3646	97.04	2.96
Science	4	121556	2262	98.17	1.83
Science	8	118402	4553	96.30	3.70

Until such time that online participation reaches a sufficiently large sample size, any true population differences between scores on the paper- and computer-based modes may be difficult to distinguish from differences that are attributable to sampling and random error. In the interim, however, this exploration of person fit statistics was conducted to both set up a framework for analysis, and to gain some initial insight into whether evidence of mode effects due to conditions other than examinee ability exists. To begin this exploration, the question investigated here is, does the online testing mode measure the PSSA constructs for the population of students overall and by gender, ethnicity, IEP, and ELL status in a way that is invariant from the paper and pencil mode of administration? Results of this exploration do not suggest that mode effects are present for online versus paper. Nor does this study suggest the presence of effects by subgroup across modes or by device type. Note that some categories for ethnicity and for device type did not have sufficient cases for analyses. Accordingly, results are presented for Black, Hispanic, and White examinees, and for Chromebook, Mac, and Windows users only.¹

¹ Summary statistics tables (2-7) include N counts for all groups designated on the PSSA tests for reference, however person fit means and standard deviation for groups with fewer than 10 examinees are not shown.

METHOD

The data used in this study are from the final calibration samples for the 2016 administration of the PSSAs. Case counts for each of the 14 assessments, for online and paper are provided in Table 1.

Englehard (2009) provides a framework and methods for defining measurement quality in terms of measurement invariance across conditions and sub-populations as measured by model fit (by item—differential item function or “DIF,” and by person—differential person functioning or “DPF”). The method employed used residual analysis to explore differences between observed and expected responses by individuals and groups, under different conditions, and given a specified item response theory (IRT) model. Although they are not exact tests of fit, these methods allow for insight into the invariance properties of an assessment through these types of fit analyses. In this study, the preliminary focus is on person fit at the test level. Item level analyses were conducted for each of these tests, but are not reported here in detail as no item showed a mode interaction effect size greater than 0.00.

The IRT model used for the PSSA is based on the work of Georg Rasch. The Rasch partial credit model (RPCM; Wright and Masters, 1982) was used to calibrate PSSA items because both multiple-choice (MC) and open-ended (OE) items were part of the assessment. The RPCM extends the Rasch model (Rasch, 1960) for dichotomous (0, 1) items so that it accommodates the polytomous OE item data. Under the RPCM, for a given item i with m_i score categories, the probability of person n scoring x ($x = 0, 1, 2, \dots, m_i$) is given by:

$$P_{ni}(X = x) = \frac{\exp \sum_{j=0}^x (\theta_n - D_{ij})}{\sum_{k=0}^{m_i} \exp \sum_{j=0}^k (\theta_n - D_{ij})},$$

where θ_n represents a student’s proficiency (ability) level, and D_{ij} is the step difficulty of the j^{th} step on item i . For dichotomous MC items, the RPCM reduces to the standard Rasch model and the single step difficulty is referred to as the item’s difficulty. The Rasch model predicts the probability of person n getting item i correct as follows:

$$P_{ni}(X = 1) = \frac{\exp(\theta_n - D_{ij})}{1 + \exp(\theta_n - D_{ij})}.$$

The Rasch model places both student ability and item difficulty (estimated in terms of log-odds or logits) on the same continuum. When the model assumptions are met, the Rasch model provides estimates of a person’s ability which are independent of the items employed in the assessment, and conversely, estimates item difficulty independently of the sample of examinees. Item calibration was implemented via WINSTEPS 3.81.00 computer program (Wright and Linacre, 2014), which employs unconditional (UCON), joint-maximum-likelihood estimation (JMLE).

To produce person fit values, residuals of IRT model (essentially the differences between observed and expected responses) are summarized to create the mean square error statistics (MSE) of Infit and Outfit for items and persons. In this study, we use the unstandardized measures of Infit and Outfit, which are essentially MSE residuals and have expected values of 1.0 and a standard deviation of about 0.2 (Bond, & Fox, 2007). Such values represent adequate fit, whereas values greater than 2.0 represent more variability than expected, and less than 1.0 can mean students did not independently respond to items. In this study, Infit and Outfit values for persons were produced in WINSTEPS and the main, and interaction effects between condition (mode) and group (student groups) were produced by SAS® PROC GLM. The student groups examined are by:

- Gender (male or female)
- Ethnicity (dummy variables created for: Black, Hispanic, and White)
- English language learner status (yes or no)
- Individualized education plan (yes or no)

- Device type (dummy variables created for: Chromebook, Mac, Windows)

The proportion of variance (η^2) explained by condition, group, and condition by group interaction in the person fit measure was also computed, and descriptive statistical summaries are provided.

Results

A summary of person fit statistics is provided, followed by a description of the main and interaction effects.

SUMMARY OF PERSON FIT STATISTICS

Person Infit and Outfit values are summarized in Tables 2-7, which displays means and standard deviations for Infit and Outfit, for each of the PSSA assessments by mode, by mode and gender, by mode and ethnicity, by mode and ELL status and by mode and IEP status. Across all conditions and groups with more than 10 cases, mean values are very close to 1 as expected for both online and paper, and standard deviations range from about 0.1 to 0.4, with most falling around 0.2. Results based on case counts below 10 are suppressed from these summaries.

Table 2 Summary of Infit and Outfit by Mode

Content	Grade	Mode	Statistic	Infit	Outfit
ELA	3	Online	N	933	933
ELA	3	Online	MEAN	1.03	1.03
ELA	3	Online	STD	0.23	0.31
ELA	3	Paper	N	124351	124351
ELA	3	Paper	MEAN	1.02	0.98
ELA	3	Paper	STD	0.26	0.30
ELA	4	Online	N	1081	1081
ELA	4	Online	MEAN	1.01	1.06
ELA	4	Online	STD	0.30	0.35
ELA	4	Paper	N	122516	122516
ELA	4	Paper	MEAN	0.99	1.02
ELA	4	Paper	STD	0.32	0.46
ELA	5	Online	N	1557	1557
ELA	5	Online	MEAN	1.02	1.06
ELA	5	Online	STD	0.30	0.38
ELA	5	Paper	N	121311	121311
ELA	5	Paper	MEAN	1.00	1.01
ELA	5	Paper	STD	0.31	0.37
ELA	6	Online	N	2809	2809
ELA	6	Online	MEAN	1.00	1.02
ELA	6	Online	STD	0.30	0.36
ELA	6	Paper	N	122454	122454
ELA	6	Paper	MEAN	0.99	1.01
ELA	6	Paper	STD	0.32	0.40
ELA	7	Online	N	3166	3166

Content	Grade	Mode	Statistic	Infit	Outfit
ELA	7	Online	MEAN	0.98	1.00
ELA	7	Online	STD	0.28	0.37
ELA	7	Paper	N	121795	121795
ELA	7	Paper	MEAN	1.00	1.02
ELA	7	Paper	STD	0.31	0.40
ELA	8	Online	N	3646	3646
ELA	8	Online	MEAN	0.99	1.04
ELA	8	Online	STD	0.30	0.39
ELA	8	Paper	N	119629	119629
ELA	8	Paper	MEAN	0.98	1.04
ELA	8	Paper	STD	0.32	0.48
Mathematics	3	Online	N	970	970
Mathematics	3	Online	MEAN	1.04	1.06
Mathematics	3	Online	STD	0.18	0.31
Mathematics	3	Paper	N	124450	124450
Mathematics	3	Paper	MEAN	1.00	0.98
Mathematics	3	Paper	STD	0.21	0.32
Mathematics	4	Online	N	1111	1111
Mathematics	4	Online	MEAN	1.00	1.03
Mathematics	4	Online	STD	0.17	0.25
Mathematics	4	Paper	N	122829	122829
Mathematics	4	Paper	MEAN	1.01	1.00
Mathematics	4	Paper	STD	0.23	0.27
Mathematics	5	Online	N	1579	1579
Mathematics	5	Online	MEAN	1.02	1.04
Mathematics	5	Online	STD	0.14	0.21
Mathematics	5	Paper	N	121404	121404
Mathematics	5	Paper	MEAN	1.01	0.99
Mathematics	5	Paper	STD	0.17	0.19
Mathematics	6	Online	N	2775	2775
Mathematics	6	Online	MEAN	1.02	1.00
Mathematics	6	Online	STD	0.21	0.26
Mathematics	6	Paper	N	122530	122530
Mathematics	6	Paper	MEAN	1.01	0.99
Mathematics	6	Paper	STD	0.22	0.26
Mathematics	7	Online	N	3469	3469
Mathematics	7	Online	MEAN	0.98	0.99
Mathematics	7	Online	STD	0.14	0.17

Content	Grade	Mode	Statistic	Infit	Outfit
Mathematics	7	Paper	N	121490	121490
Mathematics	7	Paper	MEAN	0.99	1.00
Mathematics	7	Paper	STD	0.16	0.16
Mathematics	8	Online	N	3570	3570
Mathematics	8	Online	MEAN	1.02	1.01
Mathematics	8	Online	STD	0.18	0.23
Mathematics	8	Paper	N	119605	119605
Mathematics	8	Paper	MEAN	1.00	0.99
Mathematics	8	Paper	STD	0.16	0.23
Science	4	Online	N	2262	2262
Science	4	Online	MEAN	1.00	0.95
Science	4	Online	STD	0.12	0.22
Science	4	Paper	N	121556	121556
Science	4	Paper	MEAN	1.01	0.97
Science	4	Paper	STD	0.13	0.24
Science	8	Online	N	4553	4553
Science	8	Online	MEAN	1.02	1.00
Science	8	Online	STD	0.13	0.17
Science	8	Paper	N	118402	118402
Science	8	Paper	MEAN	1.01	0.99
Science	8	Paper	STD	0.13	0.17

Table 3 Summary of Infit and Outfit by Ethnicity

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	3	Online	American Indian/Alaskan	N	1	1
ELA	3	Online	American Indian/Alaskan	MIN	*	*
ELA	3	Online	American Indian/Alaskan	MAX	*	*
ELA	3	Online	American Indian/Alaskan	MEAN	*	*
ELA	3	Online	American Indian/Alaskan	STD	*	*
ELA	3	Online	Black/African American	N	310	310
ELA	3	Online	Black/African American	MIN	0.52	0.26
ELA	3	Online	Black/African American	MAX	1.71	2.47
ELA	3	Online	Black/African American	MEAN	1.01	1.07
ELA	3	Online	Black/African American	STD	0.22	0.31
ELA	3	Online	Hispanic	N	57	57
ELA	3	Online	Hispanic	MIN	0.68	0.60
ELA	3	Online	Hispanic	MAX	1.75	2.75
ELA	3	Online	Hispanic	MEAN	1.10	1.17
ELA	3	Online	Hispanic	STD	0.26	0.39
ELA	3	Online	White/Caucasian	N	518	518
ELA	3	Online	White/Caucasian	MIN	0.51	0.22
ELA	3	Online	White/Caucasian	MAX	2.15	2.62
ELA	3	Online	White/Caucasian	MEAN	1.03	1.00
ELA	3	Online	White/Caucasian	STD	0.23	0.29
ELA	3	Online	Multiracial	N	30	30
ELA	3	Online	Multiracial	MIN	0.53	0.58
ELA	3	Online	Multiracial	MAX	1.41	1.70
ELA	3	Online	Multiracial	MEAN	0.97	0.95
ELA	3	Online	Multiracial	STD	0.19	0.27
ELA	3	Online	Asian	N	16	16
ELA	3	Online	Asian	MIN	0.70	0.58
ELA	3	Online	Asian	MAX	1.56	1.64
ELA	3	Online	Asian	MEAN	1.09	1.04
ELA	3	Online	Asian	STD	0.26	0.34
ELA	3	Online	Hawaiian/Pacific Islander	N	1	1
ELA	3	Online	Hawaiian/Pacific Islander	MIN	*	*
ELA	3	Online	Hawaiian/Pacific Islander	MAX	*	*
ELA	3	Online	Hawaiian/Pacific Islander	MEAN	*	*
ELA	3	Online	Hawaiian/Pacific Islander	STD	*	*
ELA	3	Paper	American Indian/Alaskan	N	182	182
ELA	3	Paper	American Indian/Alaskan	MIN	0.61	0.21
ELA	3	Paper	American Indian/Alaskan	MAX	2.24	2.45

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	3	Paper	American Indian/Alaskan	MEAN	1.04	1.00
ELA	3	Paper	American Indian/Alaskan	STD	0.26	0.29
ELA	3	Paper	Black/African American	N	18310	18310
ELA	3	Paper	Black/African American	MIN	0.38	0.19
ELA	3	Paper	Black/African American	MAX	2.90	5.06
ELA	3	Paper	Black/African American	MEAN	1.05	1.07
ELA	3	Paper	Black/African American	STD	0.23	0.29
ELA	3	Paper	Hispanic	N	13920	13920
ELA	3	Paper	Hispanic	MIN	0.35	0.09
ELA	3	Paper	Hispanic	MAX	2.60	3.91
ELA	3	Paper	Hispanic	MEAN	1.04	1.05
ELA	3	Paper	Hispanic	STD	0.23	0.29
ELA	3	Paper	White/Caucasian	N	81542	81542
ELA	3	Paper	White/Caucasian	MIN	0.25	0.08
ELA	3	Paper	White/Caucasian	MAX	3.54	7.80
ELA	3	Paper	White/Caucasian	MEAN	1.01	0.95
ELA	3	Paper	White/Caucasian	STD	0.27	0.29
ELA	3	Paper	Multiracial	N	5577	5577
ELA	3	Paper	Multiracial	MIN	0.25	0.08
ELA	3	Paper	Multiracial	MAX	2.69	3.42
ELA	3	Paper	Multiracial	MEAN	1.03	1.00
ELA	3	Paper	Multiracial	STD	0.25	0.30
ELA	3	Paper	Asian	N	4707	4707
ELA	3	Paper	Asian	MIN	0.25	0.08
ELA	3	Paper	Asian	MAX	2.99	4.27
ELA	3	Paper	Asian	MEAN	1.04	0.97
ELA	3	Paper	Asian	STD	0.31	0.35
ELA	3	Paper	Hawaiian/Pacific Islander	N	113	113
ELA	3	Paper	Hawaiian/Pacific Islander	MIN	0.50	0.24
ELA	3	Paper	Hawaiian/Pacific Islander	MAX	1.77	2.39
ELA	3	Paper	Hawaiian/Pacific Islander	MEAN	0.97	0.93
ELA	3	Paper	Hawaiian/Pacific Islander	STD	0.22	0.27
ELA	4	Online	American Indian/Alaskan	N	1	1
ELA	4	Online	American Indian/Alaskan	MIN	*	*
ELA	4	Online	American Indian/Alaskan	MAX	*	*
ELA	4	Online	American Indian/Alaskan	MEAN	*	*
ELA	4	Online	American Indian/Alaskan	STD	*	*
ELA	4	Online	Black/African American	N	285	285
ELA	4	Online	Black/African American	MIN	0.47	0.35

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	4	Online	Black/African American	MAX	1.96	2.44
ELA	4	Online	Black/African American	MEAN	1.01	1.06
ELA	4	Online	Black/African American	STD	0.25	0.31
ELA	4	Online	Hispanic	N	53	53
ELA	4	Online	Hispanic	MIN	0.64	0.63
ELA	4	Online	Hispanic	MAX	1.63	2.00
ELA	4	Online	Hispanic	MEAN	1.04	1.12
ELA	4	Online	Hispanic	STD	0.24	0.30
ELA	4	Online	White/Caucasian	N	700	700
ELA	4	Online	White/Caucasian	MIN	0.37	0.27
ELA	4	Online	White/Caucasian	MAX	3.57	4.51
ELA	4	Online	White/Caucasian	MEAN	1.02	1.06
ELA	4	Online	White/Caucasian	STD	0.32	0.37
ELA	4	Online	Multiracial	N	24	24
ELA	4	Online	Multiracial	MIN	0.64	0.57
ELA	4	Online	Multiracial	MAX	1.41	1.54
ELA	4	Online	Multiracial	MEAN	0.91	0.94
ELA	4	Online	Multiracial	STD	0.19	0.21
ELA	4	Online	Asian	N	15	15
ELA	4	Online	Asian	MIN	0.57	0.49
ELA	4	Online	Asian	MAX	1.31	1.20
ELA	4	Online	Asian	MEAN	0.87	0.86
ELA	4	Online	Asian	STD	0.20	0.20
ELA	4	Online	Hawaiian/Pacific Islander	N	3	3
ELA	4	Online	Hawaiian/Pacific Islander	MIN	1.06	1.06
ELA	4	Online	Hawaiian/Pacific Islander	MAX	1.80	2.74
ELA	4	Online	Hawaiian/Pacific Islander	MEAN	1.34	1.70
ELA	4	Online	Hawaiian/Pacific Islander	STD	0.40	0.91
ELA	4	Paper	American Indian/Alaskan	N	173	173
ELA	4	Paper	American Indian/Alaskan	MIN	0.34	0.28
ELA	4	Paper	American Indian/Alaskan	MAX	1.96	2.71
ELA	4	Paper	American Indian/Alaskan	MEAN	0.97	1.02
ELA	4	Paper	American Indian/Alaskan	STD	0.26	0.37
ELA	4	Paper	Black/African American	N	17673	17673
ELA	4	Paper	Black/African American	MIN	0.18	0.03
ELA	4	Paper	Black/African American	MAX	4.91	9.90
ELA	4	Paper	Black/African American	MEAN	1.00	1.05
ELA	4	Paper	Black/African American	STD	0.27	0.32
ELA	4	Paper	Hispanic	N	13358	13358

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	4	Paper	Hispanic	MIN	0.18	0.07
ELA	4	Paper	Hispanic	MAX	4.51	9.90
ELA	4	Paper	Hispanic	MEAN	0.99	1.04
ELA	4	Paper	Hispanic	STD	0.27	0.32
ELA	4	Paper	White/Caucasian	N	81681	81681
ELA	4	Paper	White/Caucasian	MIN	0.18	0.03
ELA	4	Paper	White/Caucasian	MAX	4.73	9.90
ELA	4	Paper	White/Caucasian	MEAN	0.98	1.01
ELA	4	Paper	White/Caucasian	STD	0.34	0.49
ELA	4	Paper	Multiracial	N	4901	4901
ELA	4	Paper	Multiracial	MIN	0.18	0.03
ELA	4	Paper	Multiracial	MAX	3.78	9.90
ELA	4	Paper	Multiracial	MEAN	0.99	1.03
ELA	4	Paper	Multiracial	STD	0.31	0.39
ELA	4	Paper	Asian	N	4623	4623
ELA	4	Paper	Asian	MIN	0.18	0.03
ELA	4	Paper	Asian	MAX	3.92	9.90
ELA	4	Paper	Asian	MEAN	0.99	1.06
ELA	4	Paper	Asian	STD	0.40	0.74
ELA	4	Paper	Hawaiian/Pacific Islander	N	107	107
ELA	4	Paper	Hawaiian/Pacific Islander	MIN	0.39	0.39
ELA	4	Paper	Hawaiian/Pacific Islander	MAX	3.10	2.89
ELA	4	Paper	Hawaiian/Pacific Islander	MEAN	0.99	1.01
ELA	4	Paper	Hawaiian/Pacific Islander	STD	0.34	0.36
ELA	5	Online	American Indian/Alaskan	N	9	9
ELA	5	Online	American Indian/Alaskan	MIN	*	*
ELA	5	Online	American Indian/Alaskan	MAX	*	*
ELA	5	Online	American Indian/Alaskan	MEAN	*	*
ELA	5	Online	American Indian/Alaskan	STD	*	*
ELA	5	Online	Black/African American	N	228	228
ELA	5	Online	Black/African American	MIN	0.43	0.37
ELA	5	Online	Black/African American	MAX	2.33	3.76
ELA	5	Online	Black/African American	MEAN	1.08	1.21
ELA	5	Online	Black/African American	STD	0.31	0.47
ELA	5	Online	Hispanic	N	135	135
ELA	5	Online	Hispanic	MIN	0.16	0.04
ELA	5	Online	Hispanic	MAX	2.05	2.46
ELA	5	Online	Hispanic	MEAN	1.03	1.10
ELA	5	Online	Hispanic	STD	0.30	0.37

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	5	Online	White/Caucasian	N	1130	1130
ELA	5	Online	White/Caucasian	MIN	0.30	0.15
ELA	5	Online	White/Caucasian	MAX	3.36	5.87
ELA	5	Online	White/Caucasian	MEAN	1.01	1.02
ELA	5	Online	White/Caucasian	STD	0.30	0.36
ELA	5	Online	Multiracial	N	37	37
ELA	5	Online	Multiracial	MIN	0.59	0.67
ELA	5	Online	Multiracial	MAX	2.33	2.33
ELA	5	Online	Multiracial	MEAN	1.04	1.07
ELA	5	Online	Multiracial	STD	0.34	0.42
ELA	5	Online	Asian	N	18	18
ELA	5	Online	Asian	MIN	0.66	0.66
ELA	5	Online	Asian	MAX	1.92	1.68
ELA	5	Online	Asian	MEAN	1.02	0.92
ELA	5	Online	Asian	STD	0.29	0.28
ELA	5	Paper	American Indian/Alaskan	N	199	199
ELA	5	Paper	American Indian/Alaskan	MIN	0.30	0.13
ELA	5	Paper	American Indian/Alaskan	MAX	1.98	4.29
ELA	5	Paper	American Indian/Alaskan	MEAN	1.00	1.03
ELA	5	Paper	American Indian/Alaskan	STD	0.28	0.38
ELA	5	Paper	Black/African American	N	17537	17537
ELA	5	Paper	Black/African American	MIN	0.32	0.19
ELA	5	Paper	Black/African American	MAX	3.77	6.19
ELA	5	Paper	Black/African American	MEAN	1.02	1.08
ELA	5	Paper	Black/African American	STD	0.28	0.34
ELA	5	Paper	Hispanic	N	12787	12787
ELA	5	Paper	Hispanic	MIN	0.30	0.15
ELA	5	Paper	Hispanic	MAX	3.39	7.26
ELA	5	Paper	Hispanic	MEAN	1.02	1.06
ELA	5	Paper	Hispanic	STD	0.28	0.35
ELA	5	Paper	White/Caucasian	N	81762	81762
ELA	5	Paper	White/Caucasian	MIN	0.16	0.04
ELA	5	Paper	White/Caucasian	MAX	4.82	9.90
ELA	5	Paper	White/Caucasian	MEAN	0.99	0.99
ELA	5	Paper	White/Caucasian	STD	0.31	0.37
ELA	5	Paper	Multiracial	N	4339	4339
ELA	5	Paper	Multiracial	MIN	0.16	0.04
ELA	5	Paper	Multiracial	MAX	4.01	7.01
ELA	5	Paper	Multiracial	MEAN	1.01	1.03

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	5	Paper	Multiracial	STD	0.32	0.37
ELA	5	Paper	Asian	N	4612	4612
ELA	5	Paper	Asian	MIN	0.16	0.04
ELA	5	Paper	Asian	MAX	4.15	9.90
ELA	5	Paper	Asian	MEAN	1.05	1.07
ELA	5	Paper	Asian	STD	0.42	0.58
ELA	5	Paper	Hawaiian/Pacific Islander	N	75	75
ELA	5	Paper	Hawaiian/Pacific Islander	MIN	0.51	0.57
ELA	5	Paper	Hawaiian/Pacific Islander	MAX	2.14	1.95
ELA	5	Paper	Hawaiian/Pacific Islander	MEAN	1.07	1.02
ELA	5	Paper	Hawaiian/Pacific Islander	STD	0.31	0.29
ELA	6	Online	American Indian/Alaskan	N	5	5
ELA	6	Online	American Indian/Alaskan	MIN	*	*
ELA	6	Online	American Indian/Alaskan	MAX	*	*
ELA	6	Online	American Indian/Alaskan	MEAN	*	*
ELA	6	Online	American Indian/Alaskan	STD	*	*
ELA	6	Online	Black/African American	N	365	365
ELA	6	Online	Black/African American	MIN	0.56	0.50
ELA	6	Online	Black/African American	MAX	2.42	3.02
ELA	6	Online	Black/African American	MEAN	1.04	1.12
ELA	6	Online	Black/African American	STD	0.34	0.42
ELA	6	Online	Hispanic	N	237	237
ELA	6	Online	Hispanic	MIN	0.63	0.60
ELA	6	Online	Hispanic	MAX	2.66	2.43
ELA	6	Online	Hispanic	MEAN	1.02	1.04
ELA	6	Online	Hispanic	STD	0.28	0.26
ELA	6	Online	White/Caucasian	N	2090	2090
ELA	6	Online	White/Caucasian	MIN	0.43	0.30
ELA	6	Online	White/Caucasian	MAX	3.28	9.90
ELA	6	Online	White/Caucasian	MEAN	0.99	1.00
ELA	6	Online	White/Caucasian	STD	0.29	0.34
ELA	6	Online	Multiracial	N	64	64
ELA	6	Online	Multiracial	MIN	0.54	0.48
ELA	6	Online	Multiracial	MAX	2.41	2.79
ELA	6	Online	Multiracial	MEAN	1.08	1.09
ELA	6	Online	Multiracial	STD	0.37	0.34
ELA	6	Online	Asian	N	48	48
ELA	6	Online	Asian	MIN	0.62	0.55
ELA	6	Online	Asian	MAX	3.37	4.89

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	6	Online	Asian	MEAN	1.07	1.10
ELA	6	Online	Asian	STD	0.48	0.70
ELA	6	Paper	American Indian/Alaskan	N	167	167
ELA	6	Paper	American Indian/Alaskan	MIN	0.52	0.42
ELA	6	Paper	American Indian/Alaskan	MAX	2.81	4.85
ELA	6	Paper	American Indian/Alaskan	MEAN	0.98	1.01
ELA	6	Paper	American Indian/Alaskan	STD	0.31	0.44
ELA	6	Paper	Black/African American	N	17328	17328
ELA	6	Paper	Black/African American	MIN	0.25	0.18
ELA	6	Paper	Black/African American	MAX	3.28	7.01
ELA	6	Paper	Black/African American	MEAN	1.00	1.04
ELA	6	Paper	Black/African American	STD	0.28	0.31
ELA	6	Paper	Hispanic	N	12483	12483
ELA	6	Paper	Hispanic	MIN	0.12	0.05
ELA	6	Paper	Hispanic	MAX	3.51	6.72
ELA	6	Paper	Hispanic	MEAN	1.00	1.04
ELA	6	Paper	Hispanic	STD	0.29	0.32
ELA	6	Paper	White/Caucasian	N	83792	83792
ELA	6	Paper	White/Caucasian	MIN	0.12	0.05
ELA	6	Paper	White/Caucasian	MAX	4.29	9.90
ELA	6	Paper	White/Caucasian	MEAN	0.98	0.99
ELA	6	Paper	White/Caucasian	STD	0.33	0.41
ELA	6	Paper	Multiracial	N	3815	3815
ELA	6	Paper	Multiracial	MIN	0.12	0.05
ELA	6	Paper	Multiracial	MAX	4.19	9.90
ELA	6	Paper	Multiracial	MEAN	1.00	1.03
ELA	6	Paper	Multiracial	STD	0.32	0.42
ELA	6	Paper	Asian	N	4775	4775
ELA	6	Paper	Asian	MIN	0.12	0.05
ELA	6	Paper	Asian	MAX	4.44	9.90
ELA	6	Paper	Asian	MEAN	1.04	1.08
ELA	6	Paper	Asian	STD	0.43	0.67
ELA	6	Paper	Hawaiian/Pacific Islander	N	94	94
ELA	6	Paper	Hawaiian/Pacific Islander	MIN	0.55	0.38
ELA	6	Paper	Hawaiian/Pacific Islander	MAX	2.31	4.27
ELA	6	Paper	Hawaiian/Pacific Islander	MEAN	0.95	0.99
ELA	6	Paper	Hawaiian/Pacific Islander	STD	0.30	0.50
ELA	7	Online	American Indian/Alaskan	N	4	4
ELA	7	Online	American Indian/Alaskan	MIN	*	*

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	7	Online	American Indian/Alaskan	MAX	*	*
ELA	7	Online	American Indian/Alaskan	MEAN	*	*
ELA	7	Online	American Indian/Alaskan	STD	*	*
ELA	7	Online	Black/African American	N	367	367
ELA	7	Online	Black/African American	MIN	0.58	0.48
ELA	7	Online	Black/African American	MAX	2.06	2.39
ELA	7	Online	Black/African American	MEAN	1.01	1.10
ELA	7	Online	Black/African American	STD	0.25	0.36
ELA	7	Online	Hispanic	N	248	248
ELA	7	Online	Hispanic	MIN	0.55	0.56
ELA	7	Online	Hispanic	MAX	2.50	3.27
ELA	7	Online	Hispanic	MEAN	1.03	1.09
ELA	7	Online	Hispanic	STD	0.29	0.42
ELA	7	Online	White/Caucasian	N	2427	2427
ELA	7	Online	White/Caucasian	MIN	0.28	0.21
ELA	7	Online	White/Caucasian	MAX	3.09	8.69
ELA	7	Online	White/Caucasian	MEAN	0.97	0.98
ELA	7	Online	White/Caucasian	STD	0.28	0.36
ELA	7	Online	Multiracial	N	64	64
ELA	7	Online	Multiracial	MIN	0.64	0.61
ELA	7	Online	Multiracial	MAX	1.66	1.82
ELA	7	Online	Multiracial	MEAN	1.00	1.01
ELA	7	Online	Multiracial	STD	0.26	0.25
ELA	7	Online	Asian	N	54	54
ELA	7	Online	Asian	MIN	0.46	0.09
ELA	7	Online	Asian	MAX	2.46	2.51
ELA	7	Online	Asian	MEAN	1.01	0.95
ELA	7	Online	Asian	STD	0.40	0.39
ELA	7	Online	Hawaiian/Pacific Islander	N	2	2
ELA	7	Online	Hawaiian/Pacific Islander	MIN	*	*
ELA	7	Online	Hawaiian/Pacific Islander	MAX	*	*
ELA	7	Online	Hawaiian/Pacific Islander	MEAN	*	*
ELA	7	Online	Hawaiian/Pacific Islander	STD	*	*
ELA	7	Paper	American Indian/Alaskan	N	172	172
ELA	7	Paper	American Indian/Alaskan	MIN	0.54	0.45
ELA	7	Paper	American Indian/Alaskan	MAX	3.26	3.88
ELA	7	Paper	American Indian/Alaskan	MEAN	0.97	1.02
ELA	7	Paper	American Indian/Alaskan	STD	0.31	0.38
ELA	7	Paper	Black/African American	N	17272	17272

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	7	Paper	Black/African American	MIN	0.45	0.26
ELA	7	Paper	Black/African American	MAX	3.78	4.94
ELA	7	Paper	Black/African American	MEAN	1.01	1.07
ELA	7	Paper	Black/African American	STD	0.28	0.37
ELA	7	Paper	Hispanic	N	11954	11954
ELA	7	Paper	Hispanic	MIN	0.15	0.06
ELA	7	Paper	Hispanic	MAX	3.86	6.81
ELA	7	Paper	Hispanic	MEAN	1.01	1.07
ELA	7	Paper	Hispanic	STD	0.28	0.39
ELA	7	Paper	White/Caucasian	N	84382	84382
ELA	7	Paper	White/Caucasian	MIN	0.15	0.06
ELA	7	Paper	White/Caucasian	MAX	4.15	9.90
ELA	7	Paper	White/Caucasian	MEAN	0.99	0.99
ELA	7	Paper	White/Caucasian	STD	0.31	0.40
ELA	7	Paper	Multiracial	N	3347	3347
ELA	7	Paper	Multiracial	MIN	0.29	0.26
ELA	7	Paper	Multiracial	MAX	3.87	6.89
ELA	7	Paper	Multiracial	MEAN	1.01	1.03
ELA	7	Paper	Multiracial	STD	0.31	0.39
ELA	7	Paper	Asian	N	4584	4584
ELA	7	Paper	Asian	MIN	0.15	0.06
ELA	7	Paper	Asian	MAX	4.11	9.90
ELA	7	Paper	Asian	MEAN	1.04	1.07
ELA	7	Paper	Asian	STD	0.40	0.57
ELA	7	Paper	Hawaiian/Pacific Islander	N	84	84
ELA	7	Paper	Hawaiian/Pacific Islander	MIN	0.30	0.35
ELA	7	Paper	Hawaiian/Pacific Islander	MAX	2.05	2.68
ELA	7	Paper	Hawaiian/Pacific Islander	MEAN	1.02	1.01
ELA	7	Paper	Hawaiian/Pacific Islander	STD	0.29	0.35
ELA	8	Online	American Indian/Alaskan	N	3	3
ELA	8	Online	American Indian/Alaskan	MIN	*	*
ELA	8	Online	American Indian/Alaskan	MAX	*	*
ELA	8	Online	American Indian/Alaskan	MEAN	*	*
ELA	8	Online	American Indian/Alaskan	STD	*	*
ELA	8	Online	Black/African American	N	404	404
ELA	8	Online	Black/African American	MIN	0.38	0.28
ELA	8	Online	Black/African American	MAX	2.23	2.82
ELA	8	Online	Black/African American	MEAN	1.03	1.10
ELA	8	Online	Black/African American	STD	0.29	0.34

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	8	Online	Hispanic	N	242	242
ELA	8	Online	Hispanic	MIN	0.54	0.45
ELA	8	Online	Hispanic	MAX	2.64	4.21
ELA	8	Online	Hispanic	MEAN	1.00	1.09
ELA	8	Online	Hispanic	STD	0.28	0.39
ELA	8	Online	White/Caucasian	N	2864	2864
ELA	8	Online	White/Caucasian	MIN	0.26	0.10
ELA	8	Online	White/Caucasian	MAX	3.17	9.90
ELA	8	Online	White/Caucasian	MEAN	0.98	1.02
ELA	8	Online	White/Caucasian	STD	0.30	0.39
ELA	8	Online	Multiracial	N	80	80
ELA	8	Online	Multiracial	MIN	0.58	0.59
ELA	8	Online	Multiracial	MAX	2.64	4.08
ELA	8	Online	Multiracial	MEAN	1.04	1.09
ELA	8	Online	Multiracial	STD	0.36	0.44
ELA	8	Online	Asian	N	53	53
ELA	8	Online	Asian	MIN	0.43	0.49
ELA	8	Online	Asian	MAX	2.09	3.07
ELA	8	Online	Asian	MEAN	1.01	1.12
ELA	8	Online	Asian	STD	0.36	0.57
ELA	8	Paper	American Indian/Alaskan	N	185	185
ELA	8	Paper	American Indian/Alaskan	MIN	0.41	0.24
ELA	8	Paper	American Indian/Alaskan	MAX	3.27	4.84
ELA	8	Paper	American Indian/Alaskan	MEAN	1.03	1.09
ELA	8	Paper	American Indian/Alaskan	STD	0.40	0.52
ELA	8	Paper	Black/African American	N	17314	17314
ELA	8	Paper	Black/African American	MIN	0.18	0.07
ELA	8	Paper	Black/African American	MAX	3.39	9.90
ELA	8	Paper	Black/African American	MEAN	0.99	1.05
ELA	8	Paper	Black/African American	STD	0.28	0.35
ELA	8	Paper	Hispanic	N	11694	11694
ELA	8	Paper	Hispanic	MIN	0.24	0.12
ELA	8	Paper	Hispanic	MAX	3.11	9.90
ELA	8	Paper	Hispanic	MEAN	1.00	1.06
ELA	8	Paper	Hispanic	STD	0.29	0.38
ELA	8	Paper	White/Caucasian	N	83070	83070
ELA	8	Paper	White/Caucasian	MIN	0.18	0.07
ELA	8	Paper	White/Caucasian	MAX	4.18	9.90
ELA	8	Paper	White/Caucasian	MEAN	0.97	1.03

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
ELA	8	Paper	White/Caucasian	STD	0.32	0.48
ELA	8	Paper	Multiracial	N	2792	2792
ELA	8	Paper	Multiracial	MIN	0.18	0.07
ELA	8	Paper	Multiracial	MAX	2.97	9.90
ELA	8	Paper	Multiracial	MEAN	0.98	1.03
ELA	8	Paper	Multiracial	STD	0.31	0.45
ELA	8	Paper	Asian	N	4480	4480
ELA	8	Paper	Asian	MIN	0.18	0.07
ELA	8	Paper	Asian	MAX	3.80	9.90
ELA	8	Paper	Asian	MEAN	1.03	1.17
ELA	8	Paper	Asian	STD	0.42	0.84
ELA	8	Paper	Hawaiian/Pacific Islander	N	94	94
ELA	8	Paper	Hawaiian/Pacific Islander	MIN	0.39	0.31
ELA	8	Paper	Hawaiian/Pacific Islander	MAX	2.78	2.75
ELA	8	Paper	Hawaiian/Pacific Islander	MEAN	0.98	1.03
ELA	8	Paper	Hawaiian/Pacific Islander	STD	0.37	0.39
Mathematics	3	Online	American Indian/Alaskan	N	1	1
Mathematics	3	Online	American Indian/Alaskan	MIN	*	*
Mathematics	3	Online	American Indian/Alaskan	MAX	*	*
Mathematics	3	Online	American Indian/Alaskan	MEAN	*	*
Mathematics	3	Online	American Indian/Alaskan	STD	*	*
Mathematics	3	Online	Black/African American	N	332	332
Mathematics	3	Online	Black/African American	MIN	0.61	0.26
Mathematics	3	Online	Black/African American	MAX	1.53	1.90
Mathematics	3	Online	Black/African American	MEAN	1.05	1.09
Mathematics	3	Online	Black/African American	STD	0.17	0.25
Mathematics	3	Online	Hispanic	N	63	63
Mathematics	3	Online	Hispanic	MIN	0.72	0.52
Mathematics	3	Online	Hispanic	MAX	1.50	1.86
Mathematics	3	Online	Hispanic	MEAN	1.08	1.12
Mathematics	3	Online	Hispanic	STD	0.18	0.29
Mathematics	3	Online	White/Caucasian	N	529	529
Mathematics	3	Online	White/Caucasian	MIN	0.40	0.17
Mathematics	3	Online	White/Caucasian	MAX	1.75	5.66
Mathematics	3	Online	White/Caucasian	MEAN	1.02	1.03
Mathematics	3	Online	White/Caucasian	STD	0.18	0.35
Mathematics	3	Online	Multiracial	N	32	32
Mathematics	3	Online	Multiracial	MIN	0.70	0.62
Mathematics	3	Online	Multiracial	MAX	1.60	1.47

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	3	Online	Multiracial	MEAN	1.04	1.04
Mathematics	3	Online	Multiracial	STD	0.20	0.23
Mathematics	3	Online	Asian	N	12	12
Mathematics	3	Online	Asian	MIN	0.74	0.74
Mathematics	3	Online	Asian	MAX	1.28	1.84
Mathematics	3	Online	Asian	MEAN	1.00	1.01
Mathematics	3	Online	Asian	STD	0.19	0.32
Mathematics	3	Online	Hawaiian/Pacific Islander	N	1	1
Mathematics	3	Online	Hawaiian/Pacific Islander	MIN	*	*
Mathematics	3	Online	Hawaiian/Pacific Islander	MAX	*	*
Mathematics	3	Online	Hawaiian/Pacific Islander	MEAN	*	*
Mathematics	3	Online	Hawaiian/Pacific Islander	STD	*	*
Mathematics	3	Paper	American Indian/Alaskan	N	182	182
Mathematics	3	Paper	American Indian/Alaskan	MIN	0.46	0.06
Mathematics	3	Paper	American Indian/Alaskan	MAX	1.63	2.38
Mathematics	3	Paper	American Indian/Alaskan	MEAN	0.98	0.98
Mathematics	3	Paper	American Indian/Alaskan	STD	0.18	0.33
Mathematics	3	Paper	Black/African American	N	18356	18356
Mathematics	3	Paper	Black/African American	MIN	0.38	0.06
Mathematics	3	Paper	Black/African American	MAX	2.27	3.76
Mathematics	3	Paper	Black/African American	MEAN	1.02	1.04
Mathematics	3	Paper	Black/African American	STD	0.17	0.25
Mathematics	3	Paper	Hispanic	N	13951	13951
Mathematics	3	Paper	Hispanic	MIN	0.29	0.05
Mathematics	3	Paper	Hispanic	MAX	2.93	6.20
Mathematics	3	Paper	Hispanic	MEAN	1.01	1.02
Mathematics	3	Paper	Hispanic	STD	0.18	0.26
Mathematics	3	Paper	White/Caucasian	N	81551	81551
Mathematics	3	Paper	White/Caucasian	MIN	0.29	0.05
Mathematics	3	Paper	White/Caucasian	MAX	3.47	7.54
Mathematics	3	Paper	White/Caucasian	MEAN	0.99	0.96
Mathematics	3	Paper	White/Caucasian	STD	0.21	0.33
Mathematics	3	Paper	Multiracial	N	5577	5577
Mathematics	3	Paper	Multiracial	MIN	0.29	0.05
Mathematics	3	Paper	Multiracial	MAX	2.40	5.69
Mathematics	3	Paper	Multiracial	MEAN	1.00	1.00
Mathematics	3	Paper	Multiracial	STD	0.20	0.31
Mathematics	3	Paper	Asian	N	4720	4720
Mathematics	3	Paper	Asian	MIN	0.29	0.05

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	3	Paper	Asian	MAX	4.02	9.90
Mathematics	3	Paper	Asian	MEAN	0.99	0.95
Mathematics	3	Paper	Asian	STD	0.26	0.50
Mathematics	3	Paper	Hawaiian/Pacific Islander	N	113	113
Mathematics	3	Paper	Hawaiian/Pacific Islander	MIN	0.46	0.06
Mathematics	3	Paper	Hawaiian/Pacific Islander	MAX	1.94	2.61
Mathematics	3	Paper	Hawaiian/Pacific Islander	MEAN	0.98	0.93
Mathematics	3	Paper	Hawaiian/Pacific Islander	STD	0.22	0.34
Mathematics	4	Online	American Indian/Alaskan	N	1	1
Mathematics	4	Online	American Indian/Alaskan	MIN	*	*
Mathematics	4	Online	American Indian/Alaskan	MAX	*	*
Mathematics	4	Online	American Indian/Alaskan	MEAN	*	*
Mathematics	4	Online	American Indian/Alaskan	STD	*	*
Mathematics	4	Online	Black/African American	N	311	311
Mathematics	4	Online	Black/African American	MIN	0.67	0.41
Mathematics	4	Online	Black/African American	MAX	1.53	2.65
Mathematics	4	Online	Black/African American	MEAN	1.01	1.08
Mathematics	4	Online	Black/African American	STD	0.16	0.28
Mathematics	4	Online	Hispanic	N	48	48
Mathematics	4	Online	Hispanic	MIN	0.78	0.75
Mathematics	4	Online	Hispanic	MAX	1.26	1.67
Mathematics	4	Online	Hispanic	MEAN	1.03	1.11
Mathematics	4	Online	Hispanic	STD	0.12	0.24
Mathematics	4	Online	White/Caucasian	N	715	715
Mathematics	4	Online	White/Caucasian	MIN	0.60	0.18
Mathematics	4	Online	White/Caucasian	MAX	2.09	2.02
Mathematics	4	Online	White/Caucasian	MEAN	0.99	0.99
Mathematics	4	Online	White/Caucasian	STD	0.18	0.24
Mathematics	4	Online	Multiracial	N	22	22
Mathematics	4	Online	Multiracial	MIN	0.79	0.76
Mathematics	4	Online	Multiracial	MAX	1.39	1.33
Mathematics	4	Online	Multiracial	MEAN	0.96	1.01
Mathematics	4	Online	Multiracial	STD	0.14	0.13
Mathematics	4	Online	Asian	N	13	13
Mathematics	4	Online	Asian	MIN	0.73	0.60
Mathematics	4	Online	Asian	MAX	1.42	1.27
Mathematics	4	Online	Asian	MEAN	1.00	1.02
Mathematics	4	Online	Asian	STD	0.19	0.22
Mathematics	4	Online	Hawaiian/Pacific Islander	N	1	1

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	4	Online	Hawaiian/Pacific Islander	MIN	*	*
Mathematics	4	Online	Hawaiian/Pacific Islander	MAX	*	*
Mathematics	4	Online	Hawaiian/Pacific Islander	MEAN	*	*
Mathematics	4	Online	Hawaiian/Pacific Islander	STD	*	*
Mathematics	4	Paper	American Indian/Alaskan	N	173	173
Mathematics	4	Paper	American Indian/Alaskan	MIN	0.55	0.26
Mathematics	4	Paper	American Indian/Alaskan	MAX	1.96	2.81
Mathematics	4	Paper	American Indian/Alaskan	MEAN	1.03	1.01
Mathematics	4	Paper	American Indian/Alaskan	STD	0.24	0.31
Mathematics	4	Paper	Black/African American	N	17764	17764
Mathematics	4	Paper	Black/African American	MIN	0.54	0.06
Mathematics	4	Paper	Black/African American	MAX	3.27	3.87
Mathematics	4	Paper	Black/African American	MEAN	1.02	1.06
Mathematics	4	Paper	Black/African American	STD	0.17	0.24
Mathematics	4	Paper	Hispanic	N	13421	13421
Mathematics	4	Paper	Hispanic	MIN	0.55	0.06
Mathematics	4	Paper	Hispanic	MAX	2.90	3.78
Mathematics	4	Paper	Hispanic	MEAN	1.01	1.03
Mathematics	4	Paper	Hispanic	STD	0.19	0.23
Mathematics	4	Paper	White/Caucasian	N	81799	81799
Mathematics	4	Paper	White/Caucasian	MIN	0.52	0.06
Mathematics	4	Paper	White/Caucasian	MAX	4.26	8.12
Mathematics	4	Paper	White/Caucasian	MEAN	1.01	0.98
Mathematics	4	Paper	White/Caucasian	STD	0.25	0.27
Mathematics	4	Paper	Multiracial	N	4931	4931
Mathematics	4	Paper	Multiracial	MIN	0.54	0.06
Mathematics	4	Paper	Multiracial	MAX	3.71	3.54
Mathematics	4	Paper	Multiracial	MEAN	1.01	1.01
Mathematics	4	Paper	Multiracial	STD	0.21	0.25
Mathematics	4	Paper	Asian	N	4632	4632
Mathematics	4	Paper	Asian	MIN	0.56	0.06
Mathematics	4	Paper	Asian	MAX	3.69	8.12
Mathematics	4	Paper	Asian	MEAN	1.02	0.96
Mathematics	4	Paper	Asian	STD	0.28	0.36
Mathematics	4	Paper	Hawaiian/Pacific Islander	N	109	109
Mathematics	4	Paper	Hawaiian/Pacific Islander	MIN	0.63	0.06
Mathematics	4	Paper	Hawaiian/Pacific Islander	MAX	1.73	2.42
Mathematics	4	Paper	Hawaiian/Pacific Islander	MEAN	1.05	1.00
Mathematics	4	Paper	Hawaiian/Pacific Islander	STD	0.24	0.30

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	5	Online	American Indian/Alaskan	N	10	10
Mathematics	5	Online	American Indian/Alaskan	MIN	*	*
Mathematics	5	Online	American Indian/Alaskan	MAX	*	*
Mathematics	5	Online	American Indian/Alaskan	MEAN	*	*
Mathematics	5	Online	American Indian/Alaskan	STD	*	*
Mathematics	5	Online	Black/African American	N	247	247
Mathematics	5	Online	Black/African American	MIN	0.77	0.81
Mathematics	5	Online	Black/African American	MAX	1.37	1.70
Mathematics	5	Online	Black/African American	MEAN	1.04	1.12
Mathematics	5	Online	Black/African American	STD	0.10	0.17
Mathematics	5	Online	Hispanic	N	136	136
Mathematics	5	Online	Hispanic	MIN	0.76	0.62
Mathematics	5	Online	Hispanic	MAX	1.52	1.56
Mathematics	5	Online	Hispanic	MEAN	1.03	1.05
Mathematics	5	Online	Hispanic	STD	0.13	0.17
Mathematics	5	Online	White/Caucasian	N	1137	1137
Mathematics	5	Online	White/Caucasian	MIN	0.47	0.07
Mathematics	5	Online	White/Caucasian	MAX	1.90	3.07
Mathematics	5	Online	White/Caucasian	MEAN	1.01	1.02
Mathematics	5	Online	White/Caucasian	STD	0.15	0.21
Mathematics	5	Online	Multiracial	N	36	36
Mathematics	5	Online	Multiracial	MIN	0.72	0.51
Mathematics	5	Online	Multiracial	MAX	1.24	1.59
Mathematics	5	Online	Multiracial	MEAN	1.02	1.09
Mathematics	5	Online	Multiracial	STD	0.14	0.25
Mathematics	5	Online	Asian	N	12	12
Mathematics	5	Online	Asian	MIN	0.78	0.83
Mathematics	5	Online	Asian	MAX	1.29	1.17
Mathematics	5	Online	Asian	MEAN	0.98	0.98
Mathematics	5	Online	Asian	STD	0.16	0.12
Mathematics	5	Online	Hawaiian/Pacific Islander	N	1	1
Mathematics	5	Online	Hawaiian/Pacific Islander	MIN	*	*
Mathematics	5	Online	Hawaiian/Pacific Islander	MAX	*	*
Mathematics	5	Online	Hawaiian/Pacific Islander	MEAN	*	*
Mathematics	5	Online	Hawaiian/Pacific Islander	STD	*	*
Mathematics	5	Paper	American Indian/Alaskan	N	199	199
Mathematics	5	Paper	American Indian/Alaskan	MIN	0.72	0.20
Mathematics	5	Paper	American Indian/Alaskan	MAX	2.07	1.62
Mathematics	5	Paper	American Indian/Alaskan	MEAN	1.03	1.02

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	5	Paper	American Indian/Alaskan	STD	0.17	0.17
Mathematics	5	Paper	Black/African American	N	17581	17581
Mathematics	5	Paper	Black/African American	MIN	0.47	0.07
Mathematics	5	Paper	Black/African American	MAX	2.15	2.95
Mathematics	5	Paper	Black/African American	MEAN	1.03	1.06
Mathematics	5	Paper	Black/African American	STD	0.12	0.16
Mathematics	5	Paper	Hispanic	N	12816	12816
Mathematics	5	Paper	Hispanic	MIN	0.47	0.06
Mathematics	5	Paper	Hispanic	MAX	2.88	2.64
Mathematics	5	Paper	Hispanic	MEAN	1.01	1.03
Mathematics	5	Paper	Hispanic	STD	0.13	0.16
Mathematics	5	Paper	White/Caucasian	N	81764	81764
Mathematics	5	Paper	White/Caucasian	MIN	0.47	0.06
Mathematics	5	Paper	White/Caucasian	MAX	3.12	4.99
Mathematics	5	Paper	White/Caucasian	MEAN	1.00	0.97
Mathematics	5	Paper	White/Caucasian	STD	0.18	0.19
Mathematics	5	Paper	Multiracial	N	4354	4354
Mathematics	5	Paper	Multiracial	MIN	0.47	0.06
Mathematics	5	Paper	Multiracial	MAX	2.38	2.22
Mathematics	5	Paper	Multiracial	MEAN	1.02	1.01
Mathematics	5	Paper	Multiracial	STD	0.16	0.18
Mathematics	5	Paper	Asian	N	4616	4616
Mathematics	5	Paper	Asian	MIN	0.47	0.06
Mathematics	5	Paper	Asian	MAX	2.88	3.04
Mathematics	5	Paper	Asian	MEAN	1.01	0.95
Mathematics	5	Paper	Asian	STD	0.22	0.26
Mathematics	6	Paper	Hawaiian/Pacific Islander	N	74	74
Mathematics	6	Paper	Hawaiian/Pacific Islander	MIN	0.69	0.38
Mathematics	6	Paper	Hawaiian/Pacific Islander	MAX	1.47	1.99
Mathematics	6	Paper	Hawaiian/Pacific Islander	MEAN	1.03	0.99
Mathematics	6	Paper	Hawaiian/Pacific Islander	STD	0.16	0.23
Mathematics	6	Online	American Indian/Alaskan	N	5	5
Mathematics	6	Online	American Indian/Alaskan	MIN	*	*
Mathematics	6	Online	American Indian/Alaskan	MAX	*	*
Mathematics	6	Online	American Indian/Alaskan	MEAN	*	*
Mathematics	6	Online	American Indian/Alaskan	STD	*	*
Mathematics	6	Online	Black/African American	N	369	369
Mathematics	6	Online	Black/African American	MIN	0.48	0.43
Mathematics	6	Online	Black/African American	MAX	2.16	1.62

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	6	Online	Black/African American	MEAN	1.03	1.06
Mathematics	6	Online	Black/African American	STD	0.15	0.18
Mathematics	6	Online	Hispanic	N	234	234
Mathematics	6	Online	Hispanic	MIN	0.63	0.11
Mathematics	6	Online	Hispanic	MAX	1.78	2.44
Mathematics	6	Online	Hispanic	MEAN	1.01	1.00
Mathematics	6	Online	Hispanic	STD	0.18	0.21
Mathematics	6	Online	White/Caucasian	N	2053	2053
Mathematics	6	Online	White/Caucasian	MIN	0.38	0.03
Mathematics	6	Online	White/Caucasian	MAX	3.49	4.99
Mathematics	6	Online	White/Caucasian	MEAN	1.02	0.99
Mathematics	6	Online	White/Caucasian	STD	0.22	0.28
Mathematics	6	Online	Multiracial	N	66	66
Mathematics	6	Online	Multiracial	MIN	0.58	0.72
Mathematics	6	Online	Multiracial	MAX	1.61	1.54
Mathematics	6	Online	Multiracial	MEAN	1.07	1.07
Mathematics	6	Online	Multiracial	STD	0.19	0.19
Mathematics	6	Online	Asian	N	48	48
Mathematics	6	Online	Asian	MIN	0.60	0.46
Mathematics	6	Online	Asian	MAX	1.76	1.67
Mathematics	6	Online	Asian	MEAN	0.95	0.98
Mathematics	6	Online	Asian	STD	0.24	0.22
Mathematics	6	Paper	American Indian/Alaskan	N	165	165
Mathematics	6	Paper	American Indian/Alaskan	MIN	0.51	0.46
Mathematics	6	Paper	American Indian/Alaskan	MAX	1.64	1.95
Mathematics	6	Paper	American Indian/Alaskan	MEAN	1.02	1.00
Mathematics	6	Paper	American Indian/Alaskan	STD	0.17	0.19
Mathematics	6	Paper	Black/African American	N	17356	17356
Mathematics	6	Paper	Black/African American	MIN	0.39	0.03
Mathematics	6	Paper	Black/African American	MAX	3.10	4.12
Mathematics	6	Paper	Black/African American	MEAN	1.02	1.03
Mathematics	6	Paper	Black/African American	STD	0.15	0.18
Mathematics	6	Paper	Hispanic	N	12527	12527
Mathematics	6	Paper	Hispanic	MIN	0.36	0.03
Mathematics	6	Paper	Hispanic	MAX	2.56	3.96
Mathematics	6	Paper	Hispanic	MEAN	1.01	1.02
Mathematics	6	Paper	Hispanic	STD	0.16	0.19
Mathematics	6	Paper	White/Caucasian	N	83798	83798
Mathematics	6	Paper	White/Caucasian	MIN	0.36	0.03

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	6	Paper	White/Caucasian	MAX	3.87	9.90
Mathematics	6	Paper	White/Caucasian	MEAN	1.01	0.98
Mathematics	6	Paper	White/Caucasian	STD	0.23	0.27
Mathematics	6	Paper	Multiracial	N	3813	3813
Mathematics	6	Paper	Multiracial	MIN	0.38	0.03
Mathematics	6	Paper	Multiracial	MAX	3.80	3.56
Mathematics	6	Paper	Multiracial	MEAN	1.01	1.01
Mathematics	6	Paper	Multiracial	STD	0.21	0.24
Mathematics	6	Paper	Asian	N	4777	4777
Mathematics	6	Paper	Asian	MIN	0.36	0.03
Mathematics	6	Paper	Asian	MAX	4.21	9.16
Mathematics	6	Paper	Asian	MEAN	1.00	0.97
Mathematics	6	Paper	Asian	STD	0.29	0.42
Mathematics	7	Paper	Hawaiian/Pacific Islander	N	94	94
Mathematics	7	Paper	Hawaiian/Pacific Islander	MIN	0.36	0.07
Mathematics	7	Paper	Hawaiian/Pacific Islander	MAX	1.76	2.06
Mathematics	7	Paper	Hawaiian/Pacific Islander	MEAN	1.00	0.97
Mathematics	7	Paper	Hawaiian/Pacific Islander	STD	0.21	0.26
Mathematics	7	Online	American Indian/Alaskan	N	5	5
Mathematics	7	Online	American Indian/Alaskan	MIN	*	*
Mathematics	7	Online	American Indian/Alaskan	MAX	*	*
Mathematics	7	Online	American Indian/Alaskan	MEAN	*	*
Mathematics	7	Online	American Indian/Alaskan	STD	*	*
Mathematics	7	Online	Black/African American	N	389	389
Mathematics	7	Online	Black/African American	MIN	0.77	0.78
Mathematics	7	Online	Black/African American	MAX	1.40	1.76
Mathematics	7	Online	Black/African American	MEAN	1.03	1.07
Mathematics	7	Online	Black/African American	STD	0.11	0.15
Mathematics	7	Online	Hispanic	N	301	301
Mathematics	7	Online	Hispanic	MIN	0.47	0.06
Mathematics	7	Online	Hispanic	MAX	1.56	1.82
Mathematics	7	Online	Hispanic	MEAN	0.99	1.02
Mathematics	7	Online	Hispanic	STD	0.13	0.17
Mathematics	7	Online	White/Caucasian	N	2651	2651
Mathematics	7	Online	White/Caucasian	MIN	0.47	0.06
Mathematics	7	Online	White/Caucasian	MAX	1.80	2.65
Mathematics	7	Online	White/Caucasian	MEAN	0.97	0.98
Mathematics	7	Online	White/Caucasian	STD	0.14	0.16
Mathematics	7	Online	Multiracial	N	70	70

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	7	Online	Multiracial	MIN	0.78	0.81
Mathematics	7	Online	Multiracial	MAX	1.41	1.41
Mathematics	7	Online	Multiracial	MEAN	1.00	1.04
Mathematics	7	Online	Multiracial	STD	0.11	0.12
Mathematics	7	Online	Asian	N	52	52
Mathematics	7	Online	Asian	MIN	0.66	0.27
Mathematics	7	Online	Asian	MAX	2.40	1.40
Mathematics	7	Online	Asian	MEAN	1.07	0.96
Mathematics	7	Online	Asian	STD	0.29	0.22
Mathematics	7	Online	Hawaiian/Pacific Islander	N	1	1
Mathematics	7	Online	Hawaiian/Pacific Islander	MIN	*	*
Mathematics	7	Online	Hawaiian/Pacific Islander	MAX	*	*
Mathematics	7	Online	Hawaiian/Pacific Islander	MEAN	*	*
Mathematics	7	Online	Hawaiian/Pacific Islander	STD	*	*
Mathematics	7	Paper	American Indian/Alaskan	N	171	171
Mathematics	7	Paper	American Indian/Alaskan	MIN	0.65	0.66
Mathematics	7	Paper	American Indian/Alaskan	MAX	1.66	1.46
Mathematics	7	Paper	American Indian/Alaskan	MEAN	0.99	1.00
Mathematics	7	Paper	American Indian/Alaskan	STD	0.14	0.14
Mathematics	7	Paper	Black/African American	N	17274	17274
Mathematics	7	Paper	Black/African American	MIN	0.56	0.07
Mathematics	7	Paper	Black/African American	MAX	2.43	2.52
Mathematics	7	Paper	Black/African American	MEAN	1.01	1.04
Mathematics	7	Paper	Black/African American	STD	0.12	0.14
Mathematics	7	Paper	Hispanic	N	11910	11910
Mathematics	7	Paper	Hispanic	MIN	0.42	0.08
Mathematics	7	Paper	Hispanic	MAX	2.49	2.10
Mathematics	7	Paper	Hispanic	MEAN	1.01	1.03
Mathematics	7	Paper	Hispanic	STD	0.13	0.14
Mathematics	7	Paper	White/Caucasian	N	84122	84122
Mathematics	7	Paper	White/Caucasian	MIN	0.42	0.06
Mathematics	7	Paper	White/Caucasian	MAX	3.29	5.35
Mathematics	7	Paper	White/Caucasian	MEAN	0.99	0.98
Mathematics	7	Paper	White/Caucasian	STD	0.17	0.16
Mathematics	7	Paper	Multiracial	N	3333	3333
Mathematics	7	Paper	Multiracial	MIN	0.48	0.16
Mathematics	7	Paper	Multiracial	MAX	2.24	1.71
Mathematics	7	Paper	Multiracial	MEAN	1.00	1.01
Mathematics	7	Paper	Multiracial	STD	0.15	0.14

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	7	Paper	Asian	N	4595	4595
Mathematics	7	Paper	Asian	MIN	0.42	0.06
Mathematics	7	Paper	Asian	MAX	2.90	3.45
Mathematics	7	Paper	Asian	MEAN	0.99	0.97
Mathematics	7	Paper	Asian	STD	0.22	0.26
Mathematics	8	Paper	Hawaiian/Pacific Islander	N	85	85
Mathematics	8	Paper	Hawaiian/Pacific Islander	MIN	0.69	0.62
Mathematics	8	Paper	Hawaiian/Pacific Islander	MAX	1.81	2.27
Mathematics	8	Paper	Hawaiian/Pacific Islander	MEAN	1.00	0.99
Mathematics	8	Paper	Hawaiian/Pacific Islander	STD	0.19	0.18
Mathematics	8	Online	American Indian/Alaskan	N	3	3
Mathematics	8	Online	American Indian/Alaskan	MIN	*	*
Mathematics	8	Online	American Indian/Alaskan	MAX	*	*
Mathematics	8	Online	American Indian/Alaskan	MEAN	*	*
Mathematics	8	Online	American Indian/Alaskan	STD	*	*
Mathematics	8	Online	Black/African American	N	433	433
Mathematics	8	Online	Black/African American	MIN	0.64	0.08
Mathematics	8	Online	Black/African American	MAX	1.51	2.13
Mathematics	8	Online	Black/African American	MEAN	1.07	1.13
Mathematics	8	Online	Black/African American	STD	0.15	0.24
Mathematics	8	Online	Hispanic	N	243	243
Mathematics	8	Online	Hispanic	MIN	0.74	0.63
Mathematics	8	Online	Hispanic	MAX	1.59	1.96
Mathematics	8	Online	Hispanic	MEAN	1.03	1.07
Mathematics	8	Online	Hispanic	STD	0.15	0.22
Mathematics	8	Online	White/Caucasian	N	2754	2754
Mathematics	8	Online	White/Caucasian	MIN	0.43	0.06
Mathematics	8	Online	White/Caucasian	MAX	4.07	3.15
Mathematics	8	Online	White/Caucasian	MEAN	1.01	0.98
Mathematics	8	Online	White/Caucasian	STD	0.19	0.22
Mathematics	8	Online	Multiracial	N	78	78
Mathematics	8	Online	Multiracial	MIN	0.69	0.45
Mathematics	8	Online	Multiracial	MAX	1.78	2.01
Mathematics	8	Online	Multiracial	MEAN	1.03	1.05
Mathematics	8	Online	Multiracial	STD	0.18	0.28
Mathematics	8	Online	Asian	N	59	59
Mathematics	8	Online	Asian	MIN	0.47	0.53
Mathematics	8	Online	Asian	MAX	1.52	1.91
Mathematics	8	Online	Asian	MEAN	0.99	1.00

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Mathematics	8	Online	Asian	STD	0.20	0.26
Mathematics	8	Paper	American Indian/Alaskan	N	183	183
Mathematics	8	Paper	American Indian/Alaskan	MIN	0.58	0.25
Mathematics	8	Paper	American Indian/Alaskan	MAX	1.47	1.75
Mathematics	8	Paper	American Indian/Alaskan	MEAN	1.00	1.00
Mathematics	8	Paper	American Indian/Alaskan	STD	0.14	0.21
Mathematics	8	Paper	Black/African American	N	17292	17292
Mathematics	8	Paper	Black/African American	MIN	0.47	0.08
Mathematics	8	Paper	Black/African American	MAX	2.19	2.28
Mathematics	8	Paper	Black/African American	MEAN	1.03	1.07
Mathematics	8	Paper	Black/African American	STD	0.15	0.22
Mathematics	8	Paper	Hispanic	N	11719	11719
Mathematics	8	Paper	Hispanic	MIN	0.45	0.10
Mathematics	8	Paper	Hispanic	MAX	2.43	2.49
Mathematics	8	Paper	Hispanic	MEAN	1.02	1.05
Mathematics	8	Paper	Hispanic	STD	0.15	0.22
Mathematics	8	Paper	White/Caucasian	N	83040	83040
Mathematics	8	Paper	White/Caucasian	MIN	0.28	0.02
Mathematics	8	Paper	White/Caucasian	MAX	3.01	9.90
Mathematics	8	Paper	White/Caucasian	MEAN	0.99	0.97
Mathematics	8	Paper	White/Caucasian	STD	0.16	0.22
Mathematics	8	Paper	Multiracial	N	2804	2804
Mathematics	8	Paper	Multiracial	MIN	0.30	0.02
Mathematics	8	Paper	Multiracial	MAX	2.14	4.95
Mathematics	8	Paper	Multiracial	MEAN	1.00	1.01
Mathematics	8	Paper	Multiracial	STD	0.16	0.23
Mathematics	8	Paper	Asian	N	4474	4474
Mathematics	8	Paper	Asian	MIN	0.28	0.02
Mathematics	8	Paper	Asian	MAX	3.43	8.42
Mathematics	8	Paper	Asian	MEAN	0.98	0.93
Mathematics	8	Paper	Asian	STD	0.23	0.36
Science	4	Paper	Hawaiian/Pacific Islander	N	93	93
Science	4	Paper	Hawaiian/Pacific Islander	MIN	0.67	0.31
Science	4	Paper	Hawaiian/Pacific Islander	MAX	1.49	2.25
Science	4	Paper	Hawaiian/Pacific Islander	MEAN	0.99	1.00
Science	4	Paper	Hawaiian/Pacific Islander	STD	0.16	0.25
Science	4	Online	American Indian/Alaskan	N	1	1
Science	4	Online	American Indian/Alaskan	MIN	*	*
Science	4	Online	American Indian/Alaskan	MAX	*	*

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Science	4	Online	American Indian/Alaskan	MEAN	*	*
Science	4	Online	American Indian/Alaskan	STD	*	*
Science	4	Online	Black/African American	N	330	330
Science	4	Online	Black/African American	MIN	0.71	0.51
Science	4	Online	Black/African American	MAX	1.38	1.92
Science	4	Online	Black/African American	MEAN	1.02	1.02
Science	4	Online	Black/African American	STD	0.12	0.19
Science	4	Online	Hispanic	N	201	201
Science	4	Online	Hispanic	MIN	0.74	0.52
Science	4	Online	Hispanic	MAX	1.33	1.56
Science	4	Online	Hispanic	MEAN	1.00	0.98
Science	4	Online	Hispanic	STD	0.11	0.18
Science	4	Online	White/Caucasian	N	1636	1636
Science	4	Online	White/Caucasian	MIN	0.70	0.27
Science	4	Online	White/Caucasian	MAX	1.54	2.87
Science	4	Online	White/Caucasian	MEAN	1.00	0.94
Science	4	Online	White/Caucasian	STD	0.12	0.23
Science	4	Online	Multiracial	N	55	55
Science	4	Online	Multiracial	MIN	0.71	0.35
Science	4	Online	Multiracial	MAX	1.26	1.56
Science	4	Online	Multiracial	MEAN	0.99	0.95
Science	4	Online	Multiracial	STD	0.11	0.21
Science	4	Online	Asian	N	36	36
Science	4	Online	Asian	MIN	0.77	0.60
Science	4	Online	Asian	MAX	1.23	1.67
Science	4	Online	Asian	MEAN	0.98	0.96
Science	4	Online	Asian	STD	0.11	0.21
Science	4	Online	Hawaiian/Pacific Islander	N	3	3
Science	4	Online	Hawaiian/Pacific Islander	MIN	*	*
Science	4	Online	Hawaiian/Pacific Islander	MAX	*	*
Science	4	Online	Hawaiian/Pacific Islander	MEAN	*	*
Science	4	Online	Hawaiian/Pacific Islander	STD	*	*
Science	4	Paper	American Indian/Alaskan	N	172	172
Science	4	Paper	American Indian/Alaskan	MIN	0.73	0.50
Science	4	Paper	American Indian/Alaskan	MAX	1.33	2.50
Science	4	Paper	American Indian/Alaskan	MEAN	1.00	0.98
Science	4	Paper	American Indian/Alaskan	STD	0.12	0.23
Science	4	Paper	Black/African American	N	17697	17697
Science	4	Paper	Black/African American	MIN	0.65	0.28

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Science	4	Paper	Black/African American	MAX	2.10	3.14
Science	4	Paper	Black/African American	MEAN	1.03	1.04
Science	4	Paper	Black/African American	STD	0.13	0.20
Science	4	Paper	Hispanic	N	13265	13265
Science	4	Paper	Hispanic	MIN	0.65	0.26
Science	4	Paper	Hispanic	MAX	1.76	2.47
Science	4	Paper	Hispanic	MEAN	1.01	1.01
Science	4	Paper	Hispanic	STD	0.13	0.20
Science	4	Paper	White/Caucasian	N	80832	80832
Science	4	Paper	White/Caucasian	MIN	0.63	0.26
Science	4	Paper	White/Caucasian	MAX	2.10	6.15
Science	4	Paper	White/Caucasian	MEAN	1.00	0.95
Science	4	Paper	White/Caucasian	STD	0.13	0.25
Science	4	Paper	Multiracial	N	4875	4875
Science	4	Paper	Multiracial	MIN	0.67	0.26
Science	4	Paper	Multiracial	MAX	1.91	5.75
Science	4	Paper	Multiracial	MEAN	1.01	0.98
Science	4	Paper	Multiracial	STD	0.13	0.23
Science	4	Paper	Asian	N	4608	4608
Science	4	Paper	Asian	MIN	0.72	0.26
Science	4	Paper	Asian	MAX	1.91	3.18
Science	4	Paper	Asian	MEAN	1.00	0.95
Science	4	Paper	Asian	STD	0.12	0.26
Science	4	Paper	Hawaiian/Pacific Islander	N	107	107
Science	4	Paper	Hawaiian/Pacific Islander	MIN	0.73	0.27
Science	4	Paper	Hawaiian/Pacific Islander	MAX	1.38	1.75
Science	4	Paper	Hawaiian/Pacific Islander	MEAN	1.00	0.95
Science	4	Paper	Hawaiian/Pacific Islander	STD	0.12	0.26
Science	8	Online	American Indian/Alaskan	N	6	6
Science	8	Online	American Indian/Alaskan	MIN	*	*
Science	8	Online	American Indian/Alaskan	MAX	*	*
Science	8	Online	American Indian/Alaskan	MEAN	*	*
Science	8	Online	American Indian/Alaskan	STD	*	*
Science	8	Online	Black/African American	N	453	453
Science	8	Online	Black/African American	MIN	0.77	0.64
Science	8	Online	Black/African American	MAX	1.35	1.56
Science	8	Online	Black/African American	MEAN	1.03	1.03
Science	8	Online	Black/African American	STD	0.09	0.11
Science	8	Online	Hispanic	N	331	331

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Science	8	Online	Hispanic	MIN	0.76	0.66
Science	8	Online	Hispanic	MAX	1.37	1.81
Science	8	Online	Hispanic	MEAN	1.02	1.02
Science	8	Online	Hispanic	STD	0.10	0.12
Science	8	Online	White/Caucasian	N	3589	3589
Science	8	Online	White/Caucasian	MIN	0.52	0.12
Science	8	Online	White/Caucasian	MAX	1.80	2.87
Science	8	Online	White/Caucasian	MEAN	1.02	0.99
Science	8	Online	White/Caucasian	STD	0.13	0.18
Science	8	Online	Multiracial	N	95	95
Science	8	Online	Multiracial	MIN	0.77	0.63
Science	8	Online	Multiracial	MAX	1.41	1.29
Science	8	Online	Multiracial	MEAN	1.00	1.00
Science	8	Online	Multiracial	STD	0.10	0.13
Science	8	Online	Asian	N	78	78
Science	8	Online	Asian	MIN	0.81	0.61
Science	8	Online	Asian	MAX	1.47	1.58
Science	8	Online	Asian	MEAN	1.05	1.03
Science	8	Online	Asian	STD	0.14	0.18
Science	8	Online	Hawaiian/Pacific Islander	N	1	1
Science	8	Online	Hawaiian/Pacific Islander	MIN	*	*
Science	8	Online	Hawaiian/Pacific Islander	MAX	*	*
Science	8	Online	Hawaiian/Pacific Islander	MEAN	*	*
Science	8	Online	Hawaiian/Pacific Islander	STD	*	*
Science	8	Paper	American Indian/Alaskan	N	180	180
Science	8	Paper	American Indian/Alaskan	MIN	0.67	0.07
Science	8	Paper	American Indian/Alaskan	MAX	1.35	1.88
Science	8	Paper	American Indian/Alaskan	MEAN	1.01	0.99
Science	8	Paper	American Indian/Alaskan	STD	0.12	0.17
Science	8	Paper	Black/African American	N	17264	17264
Science	8	Paper	Black/African American	MIN	0.51	0.07
Science	8	Paper	Black/African American	MAX	1.87	2.57
Science	8	Paper	Black/African American	MEAN	1.03	1.03
Science	8	Paper	Black/African American	STD	0.10	0.12
Science	8	Paper	Hispanic	N	11607	11607
Science	8	Paper	Hispanic	MIN	0.52	0.12
Science	8	Paper	Hispanic	MAX	1.73	2.66
Science	8	Paper	Hispanic	MEAN	1.02	1.02
Science	8	Paper	Hispanic	STD	0.11	0.13

Content	Grade	Mode	Ethnicity	Statistic	Infit	Outfit
Science	8	Paper	White/Caucasian	N	82030	82030
Science	8	Paper	White/Caucasian	MIN	0.51	0.07
Science	8	Paper	White/Caucasian	MAX	2.17	6.57
Science	8	Paper	White/Caucasian	MEAN	1.00	0.98
Science	8	Paper	White/Caucasian	STD	0.13	0.18
Science	8	Paper	Multiracial	N	2777	2777
Science	8	Paper	Multiracial	MIN	0.57	0.17
Science	8	Paper	Multiracial	MAX	1.90	2.14
Science	8	Paper	Multiracial	MEAN	1.01	1.00
Science	8	Paper	Multiracial	STD	0.12	0.16
Science	8	Paper	Asian	N	4453	4453
Science	8	Paper	Asian	MIN	0.52	0.07
Science	8	Paper	Asian	MAX	1.90	3.67
Science	8	Paper	Asian	MEAN	1.01	0.99
Science	8	Paper	Asian	STD	0.15	0.23
Science	8	Paper	Hawaiian/Pacific Islander	N	91	91
Science	8	Paper	Hawaiian/Pacific Islander	MIN	0.68	0.18
Science	8	Paper	Hawaiian/Pacific Islander	MAX	1.71	1.40
Science	8	Paper	Hawaiian/Pacific Islander	MEAN	0.99	0.97
Science	8	Paper	Hawaiian/Pacific Islander	STD	0.15	0.16

*Results not shown due to small sample size N<10.

Table 4 Summary of Infit and Outfit by Mode and Gender

Content	Grade	Mode	Gender	Statistic	Infit	Outfit
ELA	3	Online	Female	N	416	416
ELA	3	Online	Female	MIN	0.52	0.22
ELA	3	Online	Female	MAX	2.15	2.47
ELA	3	Online	Female	MEAN	1.02	1.00
ELA	3	Online	Female	STD	0.24	0.29
ELA	3	Online	Male	N	517	517
ELA	3	Online	Male	MIN	0.51	0.26
ELA	3	Online	Male	MAX	1.68	2.75
ELA	3	Online	Male	MEAN	1.03	1.06
ELA	3	Online	Male	STD	0.22	0.32
ELA	3	Paper	Female	N	60966	60966
ELA	3	Paper	Female	MIN	0.25	0.08
ELA	3	Paper	Female	MAX	3.54	5.32
ELA	3	Paper	Female	MEAN	1.04	0.98
ELA	3	Paper	Female	STD	0.28	0.30
ELA	3	Paper	Male	N	63385	63385
ELA	3	Paper	Male	MIN	0.25	0.08
ELA	3	Paper	Male	MAX	3.31	7.80
ELA	3	Paper	Male	MEAN	1.01	0.98
ELA	3	Paper	Male	STD	0.24	0.30
ELA	4	Online	Female	N	469	469
ELA	4	Online	Female	MIN	0.38	0.27
ELA	4	Online	Female	MAX	3.57	4.51
ELA	4	Online	Female	MEAN	0.99	1.03
ELA	4	Online	Female	STD	0.32	0.36
ELA	4	Online	Male	N	612	612
ELA	4	Online	Male	MIN	0.37	0.27
ELA	4	Online	Male	MAX	2.52	3.00
ELA	4	Online	Male	MEAN	1.03	1.08
ELA	4	Online	Male	STD	0.28	0.35
ELA	4	Paper	Female	N	60103	60103
ELA	4	Paper	Female	MIN	0.18	0.03
ELA	4	Paper	Female	MAX	4.91	9.90
ELA	4	Paper	Female	MEAN	1.00	1.04
ELA	4	Paper	Female	STD	0.36	0.52
ELA	4	Paper	Male	N	62413	62413
ELA	4	Paper	Male	MIN	0.18	0.03
ELA	4	Paper	Male	MAX	4.35	9.90

Content	Grade	Mode	Gender	Statistic	Infit	Outfit
ELA	4	Paper	Male	MEAN	0.97	1.01
ELA	4	Paper	Male	STD	0.29	0.39
ELA	5	Online	Female	N	723	723
ELA	5	Online	Female	MIN	0.16	0.04
ELA	5	Online	Female	MAX	3.20	5.87
ELA	5	Online	Female	MEAN	1.00	1.02
ELA	5	Online	Female	STD	0.28	0.38
ELA	5	Online	Male	N	834	834
ELA	5	Online	Male	MIN	0.30	0.15
ELA	5	Online	Male	MAX	3.36	3.76
ELA	5	Online	Male	MEAN	1.05	1.09
ELA	5	Online	Male	STD	0.32	0.38
ELA	5	Paper	Female	N	59402	59402
ELA	5	Paper	Female	MIN	0.16	0.04
ELA	5	Paper	Female	MAX	4.47	9.90
ELA	5	Paper	Female	MEAN	1.01	1.01
ELA	5	Paper	Female	STD	0.33	0.39
ELA	5	Paper	Male	N	61909	61909
ELA	5	Paper	Male	MIN	0.16	0.04
ELA	5	Paper	Male	MAX	4.82	9.90
ELA	5	Paper	Male	MEAN	1.00	1.01
ELA	5	Paper	Male	STD	0.29	0.35
ELA	6	Online	Female	N	1294	1294
ELA	6	Online	Female	MIN	0.43	0.30
ELA	6	Online	Female	MAX	3.28	9.90
ELA	6	Online	Female	MEAN	0.99	1.00
ELA	6	Online	Female	STD	0.31	0.38
ELA	6	Online	Male	N	1515	1515
ELA	6	Online	Male	MIN	0.44	0.32
ELA	6	Online	Male	MAX	3.37	4.89
ELA	6	Online	Male	MEAN	1.01	1.04
ELA	6	Online	Male	STD	0.30	0.34
ELA	6	Paper	Female	N	59899	59899
ELA	6	Paper	Female	MIN	0.12	0.05
ELA	6	Paper	Female	MAX	4.44	9.90
ELA	6	Paper	Female	MEAN	1.01	1.02
ELA	6	Paper	Female	STD	0.35	0.46
ELA	6	Paper	Male	N	62555	62555
ELA	6	Paper	Male	MIN	0.12	0.05

Content	Grade	Mode	Gender	Statistic	Infit	Outfit
ELA	6	Paper	Male	MAX	4.25	9.90
ELA	6	Paper	Male	MEAN	0.97	1.00
ELA	6	Paper	Male	STD	0.28	0.34
ELA	7	Online	Female	N	1487	1487
ELA	7	Online	Female	MIN	0.28	0.09
ELA	7	Online	Female	MAX	3.35	8.69
ELA	7	Online	Female	MEAN	0.96	0.97
ELA	7	Online	Female	STD	0.30	0.37
ELA	7	Online	Male	N	1679	1679
ELA	7	Online	Male	MIN	0.44	0.37
ELA	7	Online	Male	MAX	2.58	3.99
ELA	7	Online	Male	MEAN	0.99	1.03
ELA	7	Online	Male	STD	0.26	0.36
ELA	7	Paper	Female	N	59860	59860
ELA	7	Paper	Female	MIN	0.15	0.06
ELA	7	Paper	Female	MAX	4.15	9.90
ELA	7	Paper	Female	MEAN	1.00	1.01
ELA	7	Paper	Female	STD	0.34	0.42
ELA	7	Paper	Male	N	61935	61935
ELA	7	Paper	Male	MIN	0.15	0.06
ELA	7	Paper	Male	MAX	4.12	9.90
ELA	7	Paper	Male	MEAN	0.99	1.02
ELA	7	Paper	Male	STD	0.28	0.38
ELA	8	Online	Female	N	1655	1655
ELA	8	Online	Female	MIN	0.26	0.10
ELA	8	Online	Female	MAX	3.17	9.90
ELA	8	Online	Female	MEAN	0.99	1.03
ELA	8	Online	Female	STD	0.32	0.43
ELA	8	Online	Male	N	1991	1991
ELA	8	Online	Male	MIN	0.29	0.10
ELA	8	Online	Male	MAX	3.15	4.08
ELA	8	Online	Male	MEAN	0.99	1.05
ELA	8	Online	Male	STD	0.29	0.36
ELA	8	Paper	Female	N	58159	58159
ELA	8	Paper	Female	MIN	0.18	0.07
ELA	8	Paper	Female	MAX	4.18	9.90
ELA	8	Paper	Female	MEAN	0.99	1.06
ELA	8	Paper	Female	STD	0.34	0.54
ELA	8	Paper	Male	N	61470	61470

Content	Grade	Mode	Gender	Statistic	Infit	Outfit
ELA	8	Paper	Male	MIN	0.18	0.07
ELA	8	Paper	Male	MAX	3.63	9.90
ELA	8	Paper	Male	MEAN	0.97	1.03
ELA	8	Paper	Male	STD	0.29	0.40
Mathematics	3	Online	Female	N	423	423
Mathematics	3	Online	Female	MIN	0.40	0.25
Mathematics	3	Online	Female	MAX	1.75	2.16
Mathematics	3	Online	Female	MEAN	1.03	1.04
Mathematics	3	Online	Female	STD	0.18	0.25
Mathematics	3	Online	Male	N	547	547
Mathematics	3	Online	Male	MIN	0.55	0.17
Mathematics	3	Online	Male	MAX	1.58	5.66
Mathematics	3	Online	Male	MEAN	1.04	1.07
Mathematics	3	Online	Male	STD	0.17	0.35
Mathematics	3	Paper	Female	N	61007	61007
Mathematics	3	Paper	Female	MIN	0.29	0.05
Mathematics	3	Paper	Female	MAX	3.09	9.90
Mathematics	3	Paper	Female	MEAN	1.00	0.97
Mathematics	3	Paper	Female	STD	0.20	0.30
Mathematics	3	Paper	Male	N	63443	63443
Mathematics	3	Paper	Male	MIN	0.29	0.05
Mathematics	3	Paper	Male	MAX	4.02	9.90
Mathematics	3	Paper	Male	MEAN	0.99	0.98
Mathematics	3	Paper	Male	STD	0.21	0.34
Mathematics	4	Online	Female	N	483	483
Mathematics	4	Online	Female	MIN	0.60	0.18
Mathematics	4	Online	Female	MAX	2.04	2.18
Mathematics	4	Online	Female	MEAN	0.99	1.00
Mathematics	4	Online	Female	STD	0.17	0.24
Mathematics	4	Online	Male	N	628	628
Mathematics	4	Online	Male	MIN	0.64	0.20
Mathematics	4	Online	Male	MAX	2.09	2.65
Mathematics	4	Online	Male	MEAN	1.00	1.04
Mathematics	4	Online	Male	STD	0.17	0.26
Mathematics	4	Paper	Female	N	60221	60221
Mathematics	4	Paper	Female	MIN	0.52	0.06
Mathematics	4	Paper	Female	MAX	4.26	8.12
Mathematics	4	Paper	Female	MEAN	1.00	0.98
Mathematics	4	Paper	Female	STD	0.23	0.25

Content	Grade	Mode	Gender	Statistic	Infit	Outfit
Mathematics	4	Paper	Male	N	62608	62608
Mathematics	4	Paper	Male	MIN	0.52	0.06
Mathematics	4	Paper	Male	MAX	4.26	8.12
Mathematics	4	Paper	Male	MEAN	1.02	1.01
Mathematics	4	Paper	Male	STD	0.24	0.28
Mathematics	5	Online	Female	N	733	733
Mathematics	5	Online	Female	MIN	0.47	0.07
Mathematics	5	Online	Female	MAX	1.60	3.07
Mathematics	5	Online	Female	MEAN	1.02	1.04
Mathematics	5	Online	Female	STD	0.14	0.21
Mathematics	5	Online	Male	N	846	846
Mathematics	5	Online	Male	MIN	0.47	0.07
Mathematics	5	Online	Male	MAX	1.90	1.70
Mathematics	5	Online	Male	MEAN	1.02	1.04
Mathematics	5	Online	Male	STD	0.15	0.20
Mathematics	5	Paper	Female	N	59418	59418
Mathematics	5	Paper	Female	MIN	0.47	0.06
Mathematics	5	Paper	Female	MAX	3.12	4.24
Mathematics	5	Paper	Female	MEAN	1.01	0.99
Mathematics	5	Paper	Female	STD	0.17	0.18
Mathematics	5	Paper	Male	N	61986	61986
Mathematics	5	Paper	Male	MIN	0.47	0.06
Mathematics	5	Paper	Male	MAX	3.09	4.99
Mathematics	5	Paper	Male	MEAN	1.01	1.00
Mathematics	5	Paper	Male	STD	0.17	0.20
Mathematics	6	Online	Female	N	1289	1289
Mathematics	6	Online	Female	MIN	0.48	0.03
Mathematics	6	Online	Female	MAX	3.49	4.99
Mathematics	6	Online	Female	MEAN	1.02	1.00
Mathematics	6	Online	Female	STD	0.22	0.28
Mathematics	6	Online	Male	N	1486	1486
Mathematics	6	Online	Male	MIN	0.38	0.07
Mathematics	6	Online	Male	MAX	2.96	4.52
Mathematics	6	Online	Male	MEAN	1.02	1.01
Mathematics	6	Online	Male	STD	0.20	0.24
Mathematics	6	Paper	Female	N	59912	59912
Mathematics	6	Paper	Female	MIN	0.36	0.03
Mathematics	6	Paper	Female	MAX	4.21	7.83
Mathematics	6	Paper	Female	MEAN	1.01	0.99

Content	Grade	Mode	Gender	Statistic	Infit	Outfit
Mathematics	6	Paper	Female	STD	0.22	0.26
Mathematics	6	Paper	Male	N	62618	62618
Mathematics	6	Paper	Male	MIN	0.36	0.03
Mathematics	6	Paper	Male	MAX	4.21	9.90
Mathematics	6	Paper	Male	MEAN	1.01	1.00
Mathematics	6	Paper	Male	STD	0.21	0.26
Mathematics	7	Online	Female	N	1637	1637
Mathematics	7	Online	Female	MIN	0.47	0.06
Mathematics	7	Online	Female	MAX	1.80	2.08
Mathematics	7	Online	Female	MEAN	0.98	0.99
Mathematics	7	Online	Female	STD	0.14	0.16
Mathematics	7	Online	Male	N	1832	1832
Mathematics	7	Online	Male	MIN	0.47	0.06
Mathematics	7	Online	Male	MAX	2.40	2.65
Mathematics	7	Online	Male	MEAN	0.98	1.00
Mathematics	7	Online	Male	STD	0.14	0.17
Mathematics	7	Paper	Female	N	59657	59657
Mathematics	7	Paper	Female	MIN	0.42	0.06
Mathematics	7	Paper	Female	MAX	3.28	5.35
Mathematics	7	Paper	Female	MEAN	0.99	0.99
Mathematics	7	Paper	Female	STD	0.16	0.16
Mathematics	7	Paper	Male	N	61833	61833
Mathematics	7	Paper	Male	MIN	0.42	0.06
Mathematics	7	Paper	Male	MAX	3.29	3.29
Mathematics	7	Paper	Male	MEAN	0.99	1.00
Mathematics	7	Paper	Male	STD	0.15	0.17
Mathematics	8	Online	Female	N	1645	1645
Mathematics	8	Online	Female	MIN	0.43	0.08
Mathematics	8	Online	Female	MAX	4.07	3.15
Mathematics	8	Online	Female	MEAN	1.01	1.00
Mathematics	8	Online	Female	STD	0.19	0.23
Mathematics	8	Online	Male	N	1925	1925
Mathematics	8	Online	Male	MIN	0.52	0.06
Mathematics	8	Online	Male	MAX	2.21	3.09
Mathematics	8	Online	Male	MEAN	1.02	1.02
Mathematics	8	Online	Male	STD	0.17	0.23
Mathematics	8	Paper	Female	N	58069	58069
Mathematics	8	Paper	Female	MIN	0.28	0.02
Mathematics	8	Paper	Female	MAX	3.01	9.90

Content	Grade	Mode	Gender	Statistic	Infit	Outfit
Mathematics	8	Paper	Female	MEAN	0.99	0.98
Mathematics	8	Paper	Female	STD	0.16	0.22
Mathematics	8	Paper	Male	N	61536	61536
Mathematics	8	Paper	Male	MIN	0.28	0.02
Mathematics	8	Paper	Male	MAX	3.43	7.94
Mathematics	8	Paper	Male	MEAN	1.00	1.00
Mathematics	8	Paper	Male	STD	0.16	0.24
Science	4	Online	Female	N	1018	1018
Science	4	Online	Female	MIN	0.70	0.28
Science	4	Online	Female	MAX	1.47	2.87
Science	4	Online	Female	MEAN	0.99	0.95
Science	4	Online	Female	STD	0.12	0.22
Science	4	Online	Male	N	1244	1244
Science	4	Online	Male	MIN	0.71	0.27
Science	4	Online	Male	MAX	1.54	2.68
Science	4	Online	Male	MEAN	1.00	0.96
Science	4	Online	Male	STD	0.12	0.23
Science	4	Paper	Female	N	59635	59635
Science	4	Paper	Female	MIN	0.63	0.26
Science	4	Paper	Female	MAX	2.10	6.15
Science	4	Paper	Female	MEAN	1.00	0.96
Science	4	Paper	Female	STD	0.12	0.23
Science	4	Paper	Male	N	61921	61921
Science	4	Paper	Male	MIN	0.66	0.26
Science	4	Paper	Male	MAX	2.10	6.15
Science	4	Paper	Male	MEAN	1.02	0.99
Science	4	Paper	Male	STD	0.13	0.25
Science	8	Online	Female	N	2094	2094
Science	8	Online	Female	MIN	0.52	0.12
Science	8	Online	Female	MAX	1.59	2.29
Science	8	Online	Female	MEAN	1.03	1.01
Science	8	Online	Female	STD	0.13	0.16
Science	8	Online	Male	N	2459	2459
Science	8	Online	Male	MIN	0.52	0.12
Science	8	Online	Male	MAX	1.80	2.87
Science	8	Online	Male	MEAN	1.01	0.99
Science	8	Online	Male	STD	0.13	0.18
Science	8	Paper	Female	N	57488	57488
Science	8	Paper	Female	MIN	0.51	0.07

Content	Grade	Mode	Gender	Statistic	Infit	Outfit
Science	8	Paper	Female	MAX	2.17	4.12
Science	8	Paper	Female	MEAN	1.01	1.00
Science	8	Paper	Female	STD	0.13	0.17
Science	8	Paper	Male	N	60914	60914
Science	8	Paper	Male	MIN	0.51	0.07
Science	8	Paper	Male	MAX	2.01	6.57
Science	8	Paper	Male	MEAN	1.00	0.98
Science	8	Paper	Male	STD	0.13	0.18

Table 5 Summary of Infit and Outfit by Mode and ELL

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
ELA	3	Online	No	N	915	915
ELA	3	Online	No	MIN	0.51	0.22
ELA	3	Online	No	MAX	2.15	2.75
ELA	3	Online	No	MEAN	1.02	1.03
ELA	3	Online	No	STD	0.23	0.31
ELA	3	Online	Yes	N	18	18
ELA	3	Online	Yes	MIN	0.80	0.70
ELA	3	Online	Yes	MAX	1.55	1.96
ELA	3	Online	Yes	MEAN	1.08	1.16
ELA	3	Online	Yes	STD	0.20	0.31
ELA	3	Paper	No	N	119839	119839
ELA	3	Paper	No	MIN	0.25	0.08
ELA	3	Paper	No	MAX	3.54	7.80
ELA	3	Paper	No	MEAN	1.02	0.98
ELA	3	Paper	No	STD	0.26	0.30
ELA	3	Paper	Yes	N	4512	4512
ELA	3	Paper	Yes	MIN	0.54	0.38
ELA	3	Paper	Yes	MAX	2.47	3.01
ELA	3	Paper	Yes	MEAN	1.09	1.15
ELA	3	Paper	Yes	STD	0.23	0.30
ELA	4	Online	No	N	1067	1067
ELA	4	Online	No	MIN	0.37	0.27
ELA	4	Online	No	MAX	3.57	4.51
ELA	4	Online	No	MEAN	1.01	1.06
ELA	4	Online	No	STD	0.30	0.36
ELA	4	Online	Yes	N	14	14
ELA	4	Online	Yes	MIN	0.78	0.84
ELA	4	Online	Yes	MAX	1.31	1.52
ELA	4	Online	Yes	MEAN	0.99	1.07
ELA	4	Online	Yes	STD	0.16	0.19
ELA	4	Paper	No	N	118834	118834
ELA	4	Paper	No	MIN	0.18	0.03
ELA	4	Paper	No	MAX	4.91	9.90
ELA	4	Paper	No	MEAN	0.98	1.02
ELA	4	Paper	No	STD	0.33	0.46
ELA	4	Paper	Yes	N	3682	3682
ELA	4	Paper	Yes	MIN	0.54	0.48
ELA	4	Paper	Yes	MAX	3.57	3.26

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
ELA	4	Paper	Yes	MEAN	1.01	1.11
ELA	4	Paper	Yes	STD	0.24	0.30
ELA	5	Online	No	N	1543	1543
ELA	5	Online	No	MIN	0.16	0.04
ELA	5	Online	No	MAX	3.36	5.87
ELA	5	Online	No	MEAN	1.02	1.06
ELA	5	Online	No	STD	0.30	0.38
ELA	5	Online	Yes	N	14	14
ELA	5	Online	Yes	MIN	0.73	0.86
ELA	5	Online	Yes	MAX	1.96	2.46
ELA	5	Online	Yes	MEAN	1.23	1.33
ELA	5	Online	Yes	STD	0.36	0.46
ELA	5	Paper	No	N	118270	118270
ELA	5	Paper	No	MIN	0.16	0.04
ELA	5	Paper	No	MAX	4.82	9.90
ELA	5	Paper	No	MEAN	1.00	1.01
ELA	5	Paper	No	STD	0.31	0.37
ELA	5	Paper	Yes	N	3041	3041
ELA	5	Paper	Yes	MIN	0.49	0.49
ELA	5	Paper	Yes	MAX	3.37	3.58
ELA	5	Paper	Yes	MEAN	1.08	1.22
ELA	5	Paper	Yes	STD	0.31	0.43
ELA	6	Online	No	N	2759	2759
ELA	6	Online	No	MIN	0.43	0.30
ELA	6	Online	No	MAX	3.37	9.90
ELA	6	Online	No	MEAN	1.00	1.02
ELA	6	Online	No	STD	0.30	0.36
ELA	6	Online	Yes	N	50	50
ELA	6	Online	Yes	MIN	0.66	0.72
ELA	6	Online	Yes	MAX	2.29	1.86
ELA	6	Online	Yes	MEAN	1.07	1.14
ELA	6	Online	Yes	STD	0.32	0.29
ELA	6	Paper	No	N	119690	119690
ELA	6	Paper	No	MIN	0.12	0.05
ELA	6	Paper	No	MAX	4.44	9.90
ELA	6	Paper	No	MEAN	0.99	1.00
ELA	6	Paper	No	STD	0.32	0.40
ELA	6	Paper	Yes	N	2764	2764
ELA	6	Paper	Yes	MIN	0.51	0.56

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
ELA	6	Paper	Yes	MAX	2.81	3.40
ELA	6	Paper	Yes	MEAN	1.07	1.19
ELA	6	Paper	Yes	STD	0.32	0.39
ELA	7	Online	No	N	3119	3119
ELA	7	Online	No	MIN	0.28	0.09
ELA	7	Online	No	MAX	3.35	8.69
ELA	7	Online	No	MEAN	0.98	1.00
ELA	7	Online	No	STD	0.28	0.36
ELA	7	Online	Yes	N	47	47
ELA	7	Online	Yes	MIN	0.66	0.70
ELA	7	Online	Yes	MAX	1.94	3.27
ELA	7	Online	Yes	MEAN	1.14	1.39
ELA	7	Online	Yes	STD	0.31	0.65
ELA	7	Paper	No	N	119013	119013
ELA	7	Paper	No	MIN	0.15	0.06
ELA	7	Paper	No	MAX	4.15	9.90
ELA	7	Paper	No	MEAN	0.99	1.01
ELA	7	Paper	No	STD	0.31	0.40
ELA	7	Paper	Yes	N	2782	2782
ELA	7	Paper	Yes	MIN	0.46	0.42
ELA	7	Paper	Yes	MAX	2.68	5.43
ELA	7	Paper	Yes	MEAN	1.13	1.31
ELA	7	Paper	Yes	STD	0.32	0.54
ELA	8	Online	No	N	3607	3607
ELA	8	Online	No	MIN	0.26	0.10
ELA	8	Online	No	MAX	3.17	9.90
ELA	8	Online	No	MEAN	0.99	1.04
ELA	8	Online	No	STD	0.30	0.39
ELA	8	Online	Yes	N	39	39
ELA	8	Online	Yes	MIN	0.76	0.74
ELA	8	Online	Yes	MAX	1.62	2.48
ELA	8	Online	Yes	MEAN	1.16	1.40
ELA	8	Online	Yes	STD	0.25	0.46
ELA	8	Paper	No	N	116817	116817
ELA	8	Paper	No	MIN	0.18	0.07
ELA	8	Paper	No	MAX	4.18	9.90
ELA	8	Paper	No	MEAN	0.98	1.04
ELA	8	Paper	No	STD	0.32	0.48
ELA	8	Paper	Yes	N	2812	2812

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
ELA	8	Paper	Yes	MIN	0.54	0.59
ELA	8	Paper	Yes	MAX	2.57	4.02
ELA	8	Paper	Yes	MEAN	1.08	1.23
ELA	8	Paper	Yes	STD	0.30	0.42
Mathematics	3	Online	No	N	954	954
Mathematics	3	Online	No	MIN	0.40	0.17
Mathematics	3	Online	No	MAX	1.75	5.66
Mathematics	3	Online	No	MEAN	1.04	1.05
Mathematics	3	Online	No	STD	0.18	0.31
Mathematics	3	Online	Yes	N	16	16
Mathematics	3	Online	Yes	MIN	0.83	0.77
Mathematics	3	Online	Yes	MAX	1.50	1.84
Mathematics	3	Online	Yes	MEAN	1.07	1.10
Mathematics	3	Online	Yes	STD	0.20	0.26
Mathematics	3	Paper	No	N	119916	119916
Mathematics	3	Paper	No	MIN	0.29	0.05
Mathematics	3	Paper	No	MAX	4.02	9.90
Mathematics	3	Paper	No	MEAN	1.00	0.97
Mathematics	3	Paper	No	STD	0.21	0.32
Mathematics	3	Paper	Yes	N	4534	4534
Mathematics	3	Paper	Yes	MIN	0.42	0.15
Mathematics	3	Paper	Yes	MAX	2.79	2.76
Mathematics	3	Paper	Yes	MEAN	1.03	1.06
Mathematics	3	Paper	Yes	STD	0.17	0.25
Mathematics	4	Online	No	N	1100	1100
Mathematics	4	Online	No	MIN	0.60	0.18
Mathematics	4	Online	No	MAX	2.09	2.65
Mathematics	4	Online	No	MEAN	1.00	1.03
Mathematics	4	Online	No	STD	0.17	0.25
Mathematics	4	Online	Yes	N	11	11
Mathematics	4	Online	Yes	MIN	0.88	0.83
Mathematics	4	Online	Yes	MAX	1.25	1.64
Mathematics	4	Online	Yes	MEAN	1.07	1.13
Mathematics	4	Online	Yes	STD	0.11	0.23
Mathematics	4	Paper	No	N	119121	119121
Mathematics	4	Paper	No	MIN	0.52	0.06
Mathematics	4	Paper	No	MAX	4.26	8.12
Mathematics	4	Paper	No	MEAN	1.01	0.99
Mathematics	4	Paper	No	STD	0.24	0.27

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
Mathematics	4	Paper	Yes	N	3708	3708
Mathematics	4	Paper	Yes	MIN	0.65	0.19
Mathematics	4	Paper	Yes	MAX	2.19	2.53
Mathematics	4	Paper	Yes	MEAN	1.03	1.09
Mathematics	4	Paper	Yes	STD	0.15	0.23
Mathematics	5	Online	No	N	1567	1567
Mathematics	5	Online	No	MIN	0.47	0.07
Mathematics	5	Online	No	MAX	1.90	3.07
Mathematics	5	Online	No	MEAN	1.02	1.04
Mathematics	5	Online	No	STD	0.15	0.21
Mathematics	5	Online	Yes	N	12	12
Mathematics	5	Online	Yes	MIN	0.89	0.88
Mathematics	5	Online	Yes	MAX	1.19	1.43
Mathematics	5	Online	Yes	MEAN	1.03	1.15
Mathematics	5	Online	Yes	STD	0.09	0.17
Mathematics	5	Paper	No	N	118339	118339
Mathematics	5	Paper	No	MIN	0.47	0.06
Mathematics	5	Paper	No	MAX	3.12	4.99
Mathematics	5	Paper	No	MEAN	1.01	0.99
Mathematics	5	Paper	No	STD	0.17	0.19
Mathematics	5	Paper	Yes	N	3065	3065
Mathematics	5	Paper	Yes	MIN	0.47	0.07
Mathematics	5	Paper	Yes	MAX	1.81	1.79
Mathematics	5	Paper	Yes	MEAN	1.04	1.10
Mathematics	5	Paper	Yes	STD	0.10	0.16
Mathematics	6	Online	No	N	2727	2727
Mathematics	6	Online	No	MIN	0.38	0.03
Mathematics	6	Online	No	MAX	3.49	4.99
Mathematics	6	Online	No	MEAN	1.02	1.00
Mathematics	6	Online	No	STD	0.21	0.26
Mathematics	6	Online	Yes	N	48	48
Mathematics	6	Online	Yes	MIN	0.63	0.69
Mathematics	6	Online	Yes	MAX	1.24	1.38
Mathematics	6	Online	Yes	MEAN	0.99	1.01
Mathematics	6	Online	Yes	STD	0.11	0.15
Mathematics	6	Paper	No	N	119747	119747
Mathematics	6	Paper	No	MIN	0.36	0.03
Mathematics	6	Paper	No	MAX	4.21	9.90
Mathematics	6	Paper	No	MEAN	1.01	0.99

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
Mathematics	6	Paper	No	STD	0.22	0.26
Mathematics	6	Paper	Yes	N	2783	2783
Mathematics	6	Paper	Yes	MIN	0.67	0.51
Mathematics	6	Paper	Yes	MAX	1.86	1.91
Mathematics	6	Paper	Yes	MEAN	1.03	1.07
Mathematics	6	Paper	Yes	STD	0.12	0.17
Mathematics	7	Online	No	N	3417	3417
Mathematics	7	Online	No	MIN	0.47	0.06
Mathematics	7	Online	No	MAX	2.40	2.65
Mathematics	7	Online	No	MEAN	0.98	0.99
Mathematics	7	Online	No	STD	0.14	0.16
Mathematics	7	Online	Yes	N	52	52
Mathematics	7	Online	Yes	MIN	0.79	0.83
Mathematics	7	Online	Yes	MAX	1.30	1.54
Mathematics	7	Online	Yes	MEAN	1.05	1.12
Mathematics	7	Online	Yes	STD	0.11	0.15
Mathematics	7	Paper	No	N	118699	118699
Mathematics	7	Paper	No	MIN	0.42	0.06
Mathematics	7	Paper	No	MAX	3.29	5.35
Mathematics	7	Paper	No	MEAN	0.99	0.99
Mathematics	7	Paper	No	STD	0.16	0.16
Mathematics	7	Paper	Yes	N	2791	2791
Mathematics	7	Paper	Yes	MIN	0.68	0.57
Mathematics	7	Paper	Yes	MAX	1.81	2.15
Mathematics	7	Paper	Yes	MEAN	1.04	1.10
Mathematics	7	Paper	Yes	STD	0.10	0.14
Mathematics	8	Online	No	N	3529	3529
Mathematics	8	Online	No	MIN	0.43	0.06
Mathematics	8	Online	No	MAX	4.07	3.15
Mathematics	8	Online	No	MEAN	1.01	1.01
Mathematics	8	Online	No	STD	0.18	0.23
Mathematics	8	Online	Yes	N	41	41
Mathematics	8	Online	Yes	MIN	0.78	0.79
Mathematics	8	Online	Yes	MAX	1.40	1.69
Mathematics	8	Online	Yes	MEAN	1.07	1.12
Mathematics	8	Online	Yes	STD	0.15	0.22
Mathematics	8	Paper	No	N	116787	116787
Mathematics	8	Paper	No	MIN	0.28	0.02
Mathematics	8	Paper	No	MAX	3.43	9.90

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
Mathematics	8	Paper	No	MEAN	0.99	0.99
Mathematics	8	Paper	No	STD	0.16	0.23
Mathematics	8	Paper	Yes	N	2818	2818
Mathematics	8	Paper	Yes	MIN	0.70	0.10
Mathematics	8	Paper	Yes	MAX	1.72	2.32
Mathematics	8	Paper	Yes	MEAN	1.07	1.14
Mathematics	8	Paper	Yes	STD	0.14	0.23
Science	4	Online	No	N	2197	2197
Science	4	Online	No	MIN	0.70	0.27
Science	4	Online	No	MAX	1.54	2.87
Science	4	Online	No	MEAN	1.00	0.95
Science	4	Online	No	STD	0.12	0.22
Science	4	Online	Yes	N	65	65
Science	4	Online	Yes	MIN	0.77	0.70
Science	4	Online	Yes	MAX	1.27	1.49
Science	4	Online	Yes	MEAN	1.02	1.04
Science	4	Online	Yes	STD	0.11	0.15
Science	4	Paper	No	N	117907	117907
Science	4	Paper	No	MIN	0.63	0.26
Science	4	Paper	No	MAX	2.10	6.15
Science	4	Paper	No	MEAN	1.01	0.97
Science	4	Paper	No	STD	0.13	0.24
Science	4	Paper	Yes	N	3649	3649
Science	4	Paper	Yes	MIN	0.72	0.28
Science	4	Paper	Yes	MAX	1.58	2.14
Science	4	Paper	Yes	MEAN	1.04	1.07
Science	4	Paper	Yes	STD	0.13	0.19
Science	8	Online	No	N	4489	4489
Science	8	Online	No	MIN	0.52	0.12
Science	8	Online	No	MAX	1.80	2.87
Science	8	Online	No	MEAN	1.02	1.00
Science	8	Online	No	STD	0.13	0.17
Science	8	Online	Yes	N	64	64
Science	8	Online	Yes	MIN	0.82	0.83
Science	8	Online	Yes	MAX	1.19	1.32
Science	8	Online	Yes	MEAN	1.04	1.06
Science	8	Online	Yes	STD	0.08	0.10
Science	8	Paper	No	N	115614	115614
Science	8	Paper	No	MIN	0.51	0.07

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
Science	8	Paper	No	MAX	2.17	6.57
Science	8	Paper	No	MEAN	1.01	0.99
Science	8	Paper	No	STD	0.13	0.17
Science	8	Paper	Yes	N	2788	2788
Science	8	Paper	Yes	MIN	0.78	0.70
Science	8	Paper	Yes	MAX	1.39	1.78
Science	8	Paper	Yes	MEAN	1.04	1.06
Science	8	Paper	Yes	STD	0.08	0.10

Table 6 Summary of Infit and Outfit by Mode and IEP

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
ELA	3	Online	No	N	693	693
ELA	3	Online	No	MIN	0.51	0.22
ELA	3	Online	No	MAX	2.15	2.47
ELA	3	Online	No	MEAN	1.00	0.97
ELA	3	Online	No	STD	0.23	0.27
ELA	3	Online	Yes	N	240	240
ELA	3	Online	Yes	MIN	0.60	0.50
ELA	3	Online	Yes	MAX	1.75	2.75
ELA	3	Online	Yes	MEAN	1.11	1.21
ELA	3	Online	Yes	STD	0.21	0.33
ELA	3	Paper	No	N	105031	105031
ELA	3	Paper	No	MIN	0.25	0.08
ELA	3	Paper	No	MAX	3.54	7.80
ELA	3	Paper	No	MEAN	1.02	0.96
ELA	3	Paper	No	STD	0.26	0.29
ELA	3	Paper	Yes	N	19320	19320
ELA	3	Paper	Yes	MIN	0.25	0.08
ELA	3	Paper	Yes	MAX	3.28	3.59
ELA	3	Paper	Yes	MEAN	1.07	1.12
ELA	3	Paper	Yes	STD	0.23	0.32
ELA	4	Online	No	N	737	737
ELA	4	Online	No	MIN	0.37	0.27
ELA	4	Online	No	MAX	3.57	4.51
ELA	4	Online	No	MEAN	0.98	1.00
ELA	4	Online	No	STD	0.30	0.33
ELA	4	Online	Yes	N	344	344
ELA	4	Online	Yes	MIN	0.45	0.27
ELA	4	Online	Yes	MAX	2.01	2.44
ELA	4	Online	Yes	MEAN	1.09	1.19
ELA	4	Online	Yes	STD	0.28	0.36
ELA	4	Paper	No	N	102515	102515
ELA	4	Paper	No	MIN	0.18	0.03
ELA	4	Paper	No	MAX	4.91	9.90
ELA	4	Paper	No	MEAN	0.98	1.01
ELA	4	Paper	No	STD	0.34	0.48
ELA	4	Paper	Yes	N	20001	20001
ELA	4	Paper	Yes	MIN	0.18	0.03
ELA	4	Paper	Yes	MAX	4.34	8.24

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
ELA	4	Paper	Yes	MEAN	1.01	1.09
ELA	4	Paper	Yes	STD	0.25	0.32
ELA	5	Online	No	N	1023	1023
ELA	5	Online	No	MIN	0.16	0.04
ELA	5	Online	No	MAX	3.36	5.87
ELA	5	Online	No	MEAN	0.98	0.98
ELA	5	Online	No	STD	0.29	0.34
ELA	5	Online	Yes	N	534	534
ELA	5	Online	Yes	MIN	0.57	0.44
ELA	5	Online	Yes	MAX	3.03	3.76
ELA	5	Online	Yes	MEAN	1.10	1.22
ELA	5	Online	Yes	STD	0.31	0.42
ELA	5	Paper	No	N	101510	101510
ELA	5	Paper	No	MIN	0.16	0.04
ELA	5	Paper	No	MAX	4.82	9.90
ELA	5	Paper	No	MEAN	1.00	0.99
ELA	5	Paper	No	STD	0.32	0.37
ELA	5	Paper	Yes	N	19801	19801
ELA	5	Paper	Yes	MIN	0.30	0.13
ELA	5	Paper	Yes	MAX	3.75	7.30
ELA	5	Paper	Yes	MEAN	1.04	1.12
ELA	5	Paper	Yes	STD	0.28	0.37
ELA	6	Online	No	N	2002	2002
ELA	6	Online	No	MIN	0.43	0.30
ELA	6	Online	No	MAX	3.37	9.90
ELA	6	Online	No	MEAN	0.98	0.97
ELA	6	Online	No	STD	0.30	0.35
ELA	6	Online	Yes	N	807	807
ELA	6	Online	Yes	MIN	0.60	0.56
ELA	6	Online	Yes	MAX	2.66	3.02
ELA	6	Online	Yes	MEAN	1.06	1.14
ELA	6	Online	Yes	STD	0.31	0.36
ELA	6	Paper	No	N	103118	103118
ELA	6	Paper	No	MIN	0.12	0.05
ELA	6	Paper	No	MAX	4.44	9.90
ELA	6	Paper	No	MEAN	0.98	0.99
ELA	6	Paper	No	STD	0.33	0.41
ELA	6	Paper	Yes	N	19336	19336
ELA	6	Paper	Yes	MIN	0.12	0.05

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
ELA	6	Paper	Yes	MAX	3.64	7.95
ELA	6	Paper	Yes	MEAN	1.03	1.11
ELA	6	Paper	Yes	STD	0.28	0.34
ELA	7	Online	No	N	2317	2317
ELA	7	Online	No	MIN	0.28	0.09
ELA	7	Online	No	MAX	3.35	8.69
ELA	7	Online	No	MEAN	0.94	0.94
ELA	7	Online	No	STD	0.28	0.33
ELA	7	Online	Yes	N	849	849
ELA	7	Online	Yes	MIN	0.52	0.25
ELA	7	Online	Yes	MAX	2.50	3.99
ELA	7	Online	Yes	MEAN	1.07	1.18
ELA	7	Online	Yes	STD	0.28	0.40
ELA	7	Paper	No	N	103220	103220
ELA	7	Paper	No	MIN	0.15	0.06
ELA	7	Paper	No	MAX	4.15	9.90
ELA	7	Paper	No	MEAN	0.98	0.99
ELA	7	Paper	No	STD	0.31	0.39
ELA	7	Paper	Yes	N	18575	18575
ELA	7	Paper	Yes	MIN	0.29	0.18
ELA	7	Paper	Yes	MAX	3.16	9.90
ELA	7	Paper	Yes	MEAN	1.06	1.17
ELA	7	Paper	Yes	STD	0.29	0.43
ELA	8	Online	No	N	2752	2752
ELA	8	Online	No	MIN	0.26	0.10
ELA	8	Online	No	MAX	3.17	9.90
ELA	8	Online	No	MEAN	0.97	1.00
ELA	8	Online	No	STD	0.31	0.39
ELA	8	Online	Yes	N	894	894
ELA	8	Online	Yes	MIN	0.40	0.33
ELA	8	Online	Yes	MAX	2.16	3.40
ELA	8	Online	Yes	MEAN	1.03	1.15
ELA	8	Online	Yes	STD	0.28	0.37
ELA	8	Paper	No	N	101626	101626
ELA	8	Paper	No	MIN	0.18	0.07
ELA	8	Paper	No	MAX	4.18	9.90
ELA	8	Paper	No	MEAN	0.97	1.03
ELA	8	Paper	No	STD	0.32	0.49
ELA	8	Paper	Yes	N	18003	18003

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
ELA	8	Paper	Yes	MIN	0.29	0.21
ELA	8	Paper	Yes	MAX	2.99	9.79
ELA	8	Paper	Yes	MEAN	1.02	1.12
ELA	8	Paper	Yes	STD	0.27	0.36
Mathematics	3	Online	No	N	681	681
Mathematics	3	Online	No	MIN	0.40	0.17
Mathematics	3	Online	No	MAX	1.75	5.66
Mathematics	3	Online	No	MEAN	1.02	1.01
Mathematics	3	Online	No	STD	0.18	0.32
Mathematics	3	Online	Yes	N	289	289
Mathematics	3	Online	Yes	MIN	0.61	0.58
Mathematics	3	Online	Yes	MAX	1.58	1.91
Mathematics	3	Online	Yes	MEAN	1.09	1.16
Mathematics	3	Online	Yes	STD	0.16	0.27
Mathematics	3	Paper	No	N	105129	105129
Mathematics	3	Paper	No	MIN	0.29	0.05
Mathematics	3	Paper	No	MAX	4.02	9.90
Mathematics	3	Paper	No	MEAN	0.99	0.96
Mathematics	3	Paper	No	STD	0.21	0.32
Mathematics	3	Paper	Yes	N	19321	19321
Mathematics	3	Paper	Yes	MIN	0.29	0.05
Mathematics	3	Paper	Yes	MAX	2.38	6.84
Mathematics	3	Paper	Yes	MEAN	1.04	1.07
Mathematics	3	Paper	Yes	STD	0.18	0.29
Mathematics	4	Online	No	N	717	717
Mathematics	4	Online	No	MIN	0.60	0.18
Mathematics	4	Online	No	MAX	2.09	2.65
Mathematics	4	Online	No	MEAN	0.97	0.96
Mathematics	4	Online	No	STD	0.18	0.22
Mathematics	4	Online	Yes	N	394	394
Mathematics	4	Online	Yes	MIN	0.71	0.36
Mathematics	4	Online	Yes	MAX	1.83	2.18
Mathematics	4	Online	Yes	MEAN	1.05	1.15
Mathematics	4	Online	Yes	STD	0.15	0.25
Mathematics	4	Paper	No	N	102787	102787
Mathematics	4	Paper	No	MIN	0.52	0.06
Mathematics	4	Paper	No	MAX	4.26	8.12
Mathematics	4	Paper	No	MEAN	1.01	0.98
Mathematics	4	Paper	No	STD	0.24	0.27

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
Mathematics	4	Paper	Yes	N	20042	20042
Mathematics	4	Paper	Yes	MIN	0.54	0.06
Mathematics	4	Paper	Yes	MAX	4.26	3.20
Mathematics	4	Paper	Yes	MEAN	1.04	1.09
Mathematics	4	Paper	Yes	STD	0.19	0.26
Mathematics	5	Online	No	N	998	998
Mathematics	5	Online	No	MIN	0.47	0.07
Mathematics	5	Online	No	MAX	1.90	3.07
Mathematics	5	Online	No	MEAN	1.00	0.99
Mathematics	5	Online	No	STD	0.16	0.20
Mathematics	5	Online	Yes	N	581	581
Mathematics	5	Online	Yes	MIN	0.66	0.55
Mathematics	5	Online	Yes	MAX	1.66	1.83
Mathematics	5	Online	Yes	MEAN	1.04	1.12
Mathematics	5	Online	Yes	STD	0.11	0.18
Mathematics	5	Paper	No	N	101631	101631
Mathematics	5	Paper	No	MIN	0.47	0.06
Mathematics	5	Paper	No	MAX	3.12	4.99
Mathematics	5	Paper	No	MEAN	1.00	0.98
Mathematics	5	Paper	No	STD	0.18	0.19
Mathematics	5	Paper	Yes	N	19773	19773
Mathematics	5	Paper	Yes	MIN	0.47	0.06
Mathematics	5	Paper	Yes	MAX	2.15	2.47
Mathematics	5	Paper	Yes	MEAN	1.03	1.07
Mathematics	5	Paper	Yes	STD	0.13	0.17
Mathematics	6	Online	No	N	1938	1938
Mathematics	6	Online	No	MIN	0.38	0.03
Mathematics	6	Online	No	MAX	3.49	4.99
Mathematics	6	Online	No	MEAN	1.01	0.98
Mathematics	6	Online	No	STD	0.23	0.28
Mathematics	6	Online	Yes	N	837	837
Mathematics	6	Online	Yes	MIN	0.61	0.08
Mathematics	6	Online	Yes	MAX	1.85	2.04
Mathematics	6	Online	Yes	MEAN	1.03	1.06
Mathematics	6	Online	Yes	STD	0.14	0.19
Mathematics	6	Paper	No	N	103201	103201
Mathematics	6	Paper	No	MIN	0.36	0.03
Mathematics	6	Paper	No	MAX	4.21	9.16
Mathematics	6	Paper	No	MEAN	1.01	0.98

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
Mathematics	6	Paper	No	STD	0.23	0.27
Mathematics	6	Paper	Yes	N	19329	19329
Mathematics	6	Paper	Yes	MIN	0.36	0.03
Mathematics	6	Paper	Yes	MAX	2.68	9.90
Mathematics	6	Paper	Yes	MEAN	1.03	1.06
Mathematics	6	Paper	Yes	STD	0.14	0.21
Mathematics	7	Online	No	N	2587	2587
Mathematics	7	Online	No	MIN	0.47	0.06
Mathematics	7	Online	No	MAX	2.40	2.65
Mathematics	7	Online	No	MEAN	0.97	0.96
Mathematics	7	Online	No	STD	0.15	0.16
Mathematics	7	Online	Yes	N	882	882
Mathematics	7	Online	Yes	MIN	0.66	0.15
Mathematics	7	Online	Yes	MAX	1.64	1.76
Mathematics	7	Online	Yes	MEAN	1.03	1.08
Mathematics	7	Online	Yes	STD	0.11	0.15
Mathematics	7	Paper	No	N	102937	102937
Mathematics	7	Paper	No	MIN	0.42	0.06
Mathematics	7	Paper	No	MAX	3.29	5.35
Mathematics	7	Paper	No	MEAN	0.99	0.98
Mathematics	7	Paper	No	STD	0.17	0.16
Mathematics	7	Paper	Yes	N	18553	18553
Mathematics	7	Paper	Yes	MIN	0.55	0.12
Mathematics	7	Paper	Yes	MAX	2.51	2.22
Mathematics	7	Paper	Yes	MEAN	1.03	1.08
Mathematics	7	Paper	Yes	STD	0.11	0.15
Mathematics	8	Online	No	N	2636	2636
Mathematics	8	Online	No	MIN	0.43	0.06
Mathematics	8	Online	No	MAX	4.07	3.15
Mathematics	8	Online	No	MEAN	1.00	0.96
Mathematics	8	Online	No	STD	0.19	0.21
Mathematics	8	Online	Yes	N	934	934
Mathematics	8	Online	Yes	MIN	0.72	0.60
Mathematics	8	Online	Yes	MAX	1.51	2.03
Mathematics	8	Online	Yes	MEAN	1.06	1.13
Mathematics	8	Online	Yes	STD	0.15	0.24
Mathematics	8	Paper	No	N	101649	101649
Mathematics	8	Paper	No	MIN	0.28	0.02
Mathematics	8	Paper	No	MAX	3.43	9.90

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
Mathematics	8	Paper	No	MEAN	0.98	0.96
Mathematics	8	Paper	No	STD	0.16	0.22
Mathematics	8	Paper	Yes	N	17956	17956
Mathematics	8	Paper	Yes	MIN	0.28	0.02
Mathematics	8	Paper	Yes	MAX	1.92	5.05
Mathematics	8	Paper	Yes	MEAN	1.06	1.13
Mathematics	8	Paper	Yes	STD	0.15	0.24
Science	4	Online	No	N	1703	1703
Science	4	Online	No	MIN	0.70	0.28
Science	4	Online	No	MAX	1.54	2.87
Science	4	Online	No	MEAN	0.99	0.93
Science	4	Online	No	STD	0.12	0.22
Science	4	Online	Yes	N	559	559
Science	4	Online	Yes	MIN	0.71	0.27
Science	4	Online	Yes	MAX	1.44	1.89
Science	4	Online	Yes	MEAN	1.02	1.03
Science	4	Online	Yes	STD	0.12	0.20
Science	4	Paper	No	N	101731	101731
Science	4	Paper	No	MIN	0.63	0.26
Science	4	Paper	No	MAX	2.10	6.15
Science	4	Paper	No	MEAN	1.00	0.96
Science	4	Paper	No	STD	0.13	0.24
Science	4	Paper	Yes	N	19825	19825
Science	4	Paper	Yes	MIN	0.67	0.26
Science	4	Paper	Yes	MAX	1.83	3.10
Science	4	Paper	Yes	MEAN	1.03	1.04
Science	4	Paper	Yes	STD	0.13	0.21
Science	8	Online	No	N	3513	3513
Science	8	Online	No	MIN	0.52	0.12
Science	8	Online	No	MAX	1.80	2.87
Science	8	Online	No	MEAN	1.02	0.99
Science	8	Online	No	STD	0.14	0.18
Science	8	Online	Yes	N	1040	1040
Science	8	Online	Yes	MIN	0.52	0.12
Science	8	Online	Yes	MAX	1.35	2.16
Science	8	Online	Yes	MEAN	1.02	1.03
Science	8	Online	Yes	STD	0.09	0.12
Science	8	Paper	No	N	100622	100622
Science	8	Paper	No	MIN	0.51	0.07

Content	Grade	Mode	ELL	Statistic	Infit	Outfit
Science	8	Paper	No	MAX	2.17	6.57
Science	8	Paper	No	MEAN	1.00	0.98
Science	8	Paper	No	STD	0.13	0.18
Science	8	Paper	Yes	N	17780	17780
Science	8	Paper	Yes	MIN	0.55	0.07
Science	8	Paper	Yes	MAX	1.97	3.22
Science	8	Paper	Yes	MEAN	1.03	1.03
Science	8	Paper	Yes	STD	0.10	0.13

Table 7 Summary of Infit and Outfit by Device Type

Content	Grade	Device	Statistic	Infit	Outfit
ELA	3	Chromebook	N	255	255
ELA	3	Chromebook	MIN	0.54	0.26
ELA	3	Chromebook	MAX	1.68	2.62
ELA	3	Chromebook	MEAN	1.01	1.01
ELA	3	Chromebook	STD	0.22	0.31
ELA	3	iPad	N	4	4
ELA	3	iPad	MIN	*	*
ELA	3	iPad	MAX	*	*
ELA	3	iPad	MEAN	*	*
ELA	3	iPad	STD	*	*
ELA	3	Mac	N	140	140
ELA	3	Mac	MIN	0.51	0.22
ELA	3	Mac	MAX	2.04	2.75
ELA	3	Mac	MEAN	1.06	1.03
ELA	3	Mac	STD	0.29	0.37
ELA	3	Windows	N	534	534
ELA	3	Windows	MIN	0.52	0.26
ELA	3	Windows	MAX	2.15	2.47
ELA	3	Windows	MEAN	1.02	1.04
ELA	3	Windows	STD	0.21	0.29
ELA	4	Chromebook	N	252	252
ELA	4	Chromebook	MIN	0.51	0.39
ELA	4	Chromebook	MAX	3.57	4.51
ELA	4	Chromebook	MEAN	1.04	1.08
ELA	4	Chromebook	STD	0.37	0.42
ELA	4	Mac	N	49	49
ELA	4	Mac	MIN	0.45	0.27
ELA	4	Mac	MAX	1.65	2.82
ELA	4	Mac	MEAN	1.00	1.09
ELA	4	Mac	STD	0.28	0.41
ELA	4	Windows	N	780	780
ELA	4	Windows	MIN	0.37	0.27
ELA	4	Windows	MAX	2.52	3.00
ELA	4	Windows	MEAN	1.01	1.05
ELA	4	Windows	STD	0.27	0.33
ELA	5	Chromebook	N	200	200
ELA	5	Chromebook	MIN	0.41	0.48
ELA	5	Chromebook	MAX	2.82	5.87

Content	Grade	Device	Statistic	Infit	Outfit
ELA	5	Chromebook	MEAN	1.07	1.16
ELA	5	Chromebook	STD	0.34	0.56
ELA	5	iPad	N	4	4
ELA	5	iPad	MIN	*	*
ELA	5	iPad	MAX	*	*
ELA	5	iPad	MEAN	*	*
ELA	5	iPad	STD	*	*
ELA	5	Mac	N	78	78
ELA	5	Mac	MIN	0.57	0.56
ELA	5	Mac	MAX	2.11	3.76
ELA	5	Mac	MEAN	1.07	1.14
ELA	5	Mac	STD	0.31	0.51
ELA	5	Windows	N	1275	1275
ELA	5	Windows	MIN	0.16	0.04
ELA	5	Windows	MAX	3.36	3.18
ELA	5	Windows	MEAN	1.01	1.04
ELA	5	Windows	STD	0.30	0.34
ELA	6	Chromebook	N	611	611
ELA	6	Chromebook	MIN	0.51	0.32
ELA	6	Chromebook	MAX	2.96	4.89
ELA	6	Chromebook	MEAN	1.02	1.03
ELA	6	Chromebook	STD	0.33	0.33
ELA	6	iPad	N	21	21
ELA	6	iPad	MIN	0.64	0.58
ELA	6	iPad	MAX	2.28	1.95
ELA	6	iPad	MEAN	1.08	1.01
ELA	6	iPad	STD	0.38	0.26
ELA	6	Mac	N	588	588
ELA	6	Mac	MIN	0.46	0.30
ELA	6	Mac	MAX	3.37	3.32
ELA	6	Mac	MEAN	0.98	0.99
ELA	6	Mac	STD	0.32	0.30
ELA	6	Windows	N	1589	1589
ELA	6	Windows	MIN	0.43	0.45
ELA	6	Windows	MAX	2.53	9.90
ELA	6	Windows	MEAN	1.00	1.03
ELA	6	Windows	STD	0.29	0.39
ELA	7	Chromebook	N	543	543
ELA	7	Chromebook	MIN	0.45	0.49

Content	Grade	Device	Statistic	Infit	Outfit
ELA	7	Chromebook	MAX	2.46	3.27
ELA	7	Chromebook	MEAN	1.01	1.04
ELA	7	Chromebook	STD	0.27	0.35
ELA	7	iPad	N	29	29
ELA	7	iPad	MIN	0.65	0.68
ELA	7	iPad	MAX	1.25	1.34
ELA	7	iPad	MEAN	0.92	0.95
ELA	7	iPad	STD	0.16	0.19
ELA	7	Mac	N	680	680
ELA	7	Mac	MIN	0.28	0.09
ELA	7	Mac	MAX	3.09	3.36
ELA	7	Mac	MEAN	0.97	0.98
ELA	7	Mac	STD	0.32	0.34
ELA	7	Windows	N	1914	1914
ELA	7	Windows	MIN	0.31	0.32
ELA	7	Windows	MAX	3.35	8.69
ELA	7	Windows	MEAN	0.97	1.00
ELA	7	Windows	STD	0.27	0.38
ELA	8	Chromebook	N	594	594
ELA	8	Chromebook	MIN	0.51	0.29
ELA	8	Chromebook	MAX	2.86	9.90
ELA	8	Chromebook	MEAN	0.99	1.04
ELA	8	Chromebook	STD	0.29	0.51
ELA	8	iPad	N	6	6
ELA	8	iPad	MIN	*	*
ELA	8	iPad	MAX	*	*
ELA	8	iPad	MEAN	*	*
ELA	8	iPad	STD	*	*
ELA	8	Mac	N	780	780
ELA	8	Mac	MIN	0.29	0.10
ELA	8	Mac	MAX	2.61	3.42
ELA	8	Mac	MEAN	0.97	1.00
ELA	8	Mac	STD	0.31	0.34
ELA	8	Windows	N	2266	2266
ELA	8	Windows	MIN	0.26	0.10
ELA	8	Windows	MAX	3.17	4.58
ELA	8	Windows	MEAN	1.00	1.05
ELA	8	Windows	STD	0.31	0.37
Mathematics	3	Chromebook	N	255	255

Content	Grade	Device	Statistic	Infit	Outfit
Mathematics	3	Chromebook	MIN	0.63	0.37
Mathematics	3	Chromebook	MAX	1.58	2.28
Mathematics	3	Chromebook	MEAN	1.06	1.08
Mathematics	3	Chromebook	STD	0.18	0.27
Mathematics	3	iPad	N	3	3
Mathematics	3	iPad	MIN	*	*
Mathematics	3	iPad	MAX	*	*
Mathematics	3	iPad	MEAN	*	*
Mathematics	3	iPad	STD	*	*
Mathematics	3	Mac	N	165	165
Mathematics	3	Mac	MIN	0.55	0.30
Mathematics	3	Mac	MAX	1.56	2.16
Mathematics	3	Mac	MEAN	1.03	1.04
Mathematics	3	Mac	STD	0.18	0.29
Mathematics	3	Windows	N	547	547
Mathematics	3	Windows	MIN	0.40	0.17
Mathematics	3	Windows	MAX	1.75	5.66
Mathematics	3	Windows	MEAN	1.03	1.05
Mathematics	3	Windows	STD	0.17	0.34
Mathematics	4	Chromebook	N	248	248
Mathematics	4	Chromebook	MIN	0.69	0.35
Mathematics	4	Chromebook	MAX	1.83	2.18
Mathematics	4	Chromebook	MEAN	1.00	1.05
Mathematics	4	Chromebook	STD	0.17	0.28
Mathematics	4	iPad	N	1	1
Mathematics	4	iPad	MIN	*	*
Mathematics	4	iPad	MAX	*	*
Mathematics	4	iPad	MEAN	*	*
Mathematics	4	iPad	STD	*	*
Mathematics	4	Mac	N	96	96
Mathematics	4	Mac	MIN	0.60	0.18
Mathematics	4	Mac	MAX	1.80	1.67
Mathematics	4	Mac	MEAN	1.04	1.05
Mathematics	4	Mac	STD	0.18	0.31
Mathematics	4	Windows	N	766	766
Mathematics	4	Windows	MIN	0.63	0.20
Mathematics	4	Windows	MAX	2.09	2.65
Mathematics	4	Windows	MEAN	0.99	1.01
Mathematics	4	Windows	STD	0.17	0.24

Content	Grade	Device	Statistic	Infit	Outfit
Mathematics	5	Chromebook	N	188	188
Mathematics	5	Chromebook	MIN	0.63	0.11
Mathematics	5	Chromebook	MAX	1.63	3.07
Mathematics	5	Chromebook	MEAN	1.04	1.10
Mathematics	5	Chromebook	STD	0.14	0.28
Mathematics	5	iPad	N	6	6
Mathematics	5	iPad	MIN	*	*
Mathematics	5	iPad	MAX	*	*
Mathematics	5	iPad	MEAN	*	*
Mathematics	5	iPad	STD	*	*
Mathematics	5	Mac	N	106	106
Mathematics	5	Mac	MIN	0.74	0.65
Mathematics	5	Mac	MAX	1.40	1.58
Mathematics	5	Mac	MEAN	1.01	1.03
Mathematics	5	Mac	STD	0.13	0.18
Mathematics	5	Windows	N	1279	1279
Mathematics	5	Windows	MIN	0.47	0.07
Mathematics	5	Windows	MAX	1.90	2.03
Mathematics	5	Windows	MEAN	1.01	1.03
Mathematics	5	Windows	STD	0.15	0.19
Mathematics	6	Chromebook	N	597	597
Mathematics	6	Chromebook	MIN	0.38	0.07
Mathematics	6	Chromebook	MAX	2.96	3.63
Mathematics	6	Chromebook	MEAN	1.02	1.01
Mathematics	6	Chromebook	STD	0.21	0.27
Mathematics	6	iPad	N	20	20
Mathematics	6	iPad	MIN	0.73	0.38
Mathematics	6	iPad	MAX	1.21	3.52
Mathematics	6	iPad	MEAN	0.93	1.01
Mathematics	6	iPad	STD	0.14	0.62
Mathematics	6	Mac	N	604	604
Mathematics	6	Mac	MIN	0.52	0.07
Mathematics	6	Mac	MAX	2.69	2.82
Mathematics	6	Mac	MEAN	1.04	1.01
Mathematics	6	Mac	STD	0.25	0.26
Mathematics	6	Windows	N	1554	1554
Mathematics	6	Windows	MIN	0.48	0.03
Mathematics	6	Windows	MAX	3.49	4.99
Mathematics	6	Windows	MEAN	1.01	1.00

Content	Grade	Device	Statistic	Infit	Outfit
Mathematics	6	Windows	STD	0.19	0.25
Mathematics	7	Chromebook	N	879	879
Mathematics	7	Chromebook	MIN	0.62	0.08
Mathematics	7	Chromebook	MAX	1.67	2.27
Mathematics	7	Chromebook	MEAN	0.98	0.99
Mathematics	7	Chromebook	STD	0.15	0.18
Mathematics	7	iPad	N	29	29
Mathematics	7	iPad	MIN	0.75	0.66
Mathematics	7	iPad	MAX	1.21	1.36
Mathematics	7	iPad	MEAN	0.97	0.98
Mathematics	7	iPad	STD	0.12	0.15
Mathematics	7	Mac	N	661	661
Mathematics	7	Mac	MIN	0.47	0.06
Mathematics	7	Mac	MAX	1.70	2.65
Mathematics	7	Mac	MEAN	0.98	0.99
Mathematics	7	Mac	STD	0.15	0.17
Mathematics	7	Windows	N	1900	1900
Mathematics	7	Windows	MIN	0.47	0.06
Mathematics	7	Windows	MAX	2.40	2.02
Mathematics	7	Windows	MEAN	0.98	1.00
Mathematics	7	Windows	STD	0.14	0.16
Mathematics	8	Chromebook	N	504	504
Mathematics	8	Chromebook	MIN	0.63	0.29
Mathematics	8	Chromebook	MAX	1.77	1.97
Mathematics	8	Chromebook	MEAN	1.03	1.06
Mathematics	8	Chromebook	STD	0.16	0.24
Mathematics	8	iPad	N	3	3
Mathematics	8	iPad	MIN	*	*
Mathematics	8	iPad	MAX	*	*
Mathematics	8	iPad	MEAN	*	*
Mathematics	8	iPad	STD	*	*
Mathematics	8	Mac	N	804	804
Mathematics	8	Mac	MIN	0.47	0.06
Mathematics	8	Mac	MAX	4.07	2.17
Mathematics	8	Mac	MEAN	1.01	0.98
Mathematics	8	Mac	STD	0.21	0.22
Mathematics	8	Windows	N	2259	2259
Mathematics	8	Windows	MIN	0.43	0.08
Mathematics	8	Windows	MAX	2.22	3.15

Content	Grade	Device	Statistic	Infit	Outfit
Mathematics	8	Windows	MEAN	1.01	1.01
Mathematics	8	Windows	STD	0.17	0.23
Science	4	Chromebook	N	710	710
Science	4	Chromebook	MIN	0.74	0.28
Science	4	Chromebook	MAX	1.46	2.22
Science	4	Chromebook	MEAN	1.00	0.96
Science	4	Chromebook	STD	0.12	0.22
Science	4	Mac	N	411	411
Science	4	Mac	MIN	0.74	0.27
Science	4	Mac	MAX	1.54	2.68
Science	4	Mac	MEAN	0.99	0.91
Science	4	Mac	STD	0.12	0.23
Science	4	Windows	N	1141	1141
Science	4	Windows	MIN	0.70	0.28
Science	4	Windows	MAX	1.52	2.87
Science	4	Windows	MEAN	1.00	0.97
Science	4	Windows	STD	0.12	0.22
Science	8	Chromebook	N	1035	1035
Science	8	Chromebook	MIN	0.52	0.12
Science	8	Chromebook	MAX	1.41	2.87
Science	8	Chromebook	MEAN	1.02	1.00
Science	8	Chromebook	STD	0.12	0.17
Science	8	iPad	N	22	22
Science	8	iPad	MIN	0.70	0.45
Science	8	iPad	MAX	1.21	1.16
Science	8	iPad	MEAN	0.98	0.90
Science	8	iPad	STD	0.15	0.18
Science	8	Mac	N	1025	1025
Science	8	Mac	MIN	0.61	0.19
Science	8	Mac	MAX	1.54	2.14
Science	8	Mac	MEAN	1.01	0.99
Science	8	Mac	STD	0.13	0.18
Science	8	Windows	N	2471	2471
Science	8	Windows	MIN	0.52	0.12
Science	8	Windows	MAX	1.80	2.29
Science	8	Windows	MEAN	1.02	1.00
Science	8	Windows	STD	0.13	0.17

*Results not shown due to small sample size N<10

SUMMARY OF FIXED EFFECTS BY MODE, MODE AND SUBGROUP, AND DEVICE TYPE

Examination of the main effects for mode and device across all subjects and grades shows either no significant mode effects or negligible effects. For all significant results, the mode effect is at $\eta^2 < 0.01$. Likewise, interaction effects between mode and each subgroup of students (and mode and each item ²) follows the same pattern across all tests, providing some initial evidence that measurement invariance across the two modes appears to hold for each of the defined conditions (mode and device) subgroup interactions (mode by subgroup). There is, however, some consistency to the pattern of statistical significance for interactions in that the IEP group is more often than not showing a significant (even if negligible) interaction with mode. This is particularly true for the ELA tests and may warrant closer attention in future studies should the pattern yield increased effect sizes as the online testing population increases. The IEP group tends to have larger misfit than non IEP, but again, with extremely small effect sizes where significant.

Although this exploration does not indicate that measurement invariance is violated across modes, an incidental finding is that the main effects for ELL, IEP, Black, and Hispanic show small to moderate effect sizes for some tests, including three with values greater than 0.02 for IEP—ELA grade 3, and Mathematics grades 7 and 8.

Refer to Tables 8 and 9 for the condition, group, and condition-by-group interaction effects.

Table 8 Main and Interaction Effects by Mode and Subgroup

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
ELA	3	Infit	Model	0.01			0.00
ELA	3	Infit	MODE	0.00	0.00	0.05	0.82
ELA	3	Infit	GENDER	0.00	18.28	275.79	0.00
ELA	3	Infit	ELL	0.00	21.58	325.54	0.00
ELA	3	Infit	IEP	0.01	48.34	729.18	0.00
ELA	3	Infit	Black	0.00	22.16	334.23	0.00
ELA	3	Infit	Hispanic	0.00	2.79	42.09	0.00
ELA	3	Infit	White	0.00	3.40	51.31	0.00
ELA	3	Infit	MODE*GENDER	0.00	0.35	5.28	0.02
ELA	3	Infit	MODE*ELL	0.00	0.01	0.12	0.73
ELA	3	Infit	MODE*IEP	0.00	0.72	10.93	0.00
ELA	3	Infit	MODE*Black	0.00	0.22	3.29	0.07
ELA	3	Infit	MODE*Hispanic	0.00	0.08	1.25	0.26
ELA	3	Infit	MODE*White	0.00	0.03	0.50	0.48
ELA	3	Outfit	Model	0.07			0.00
ELA	3	Outfit	MODE	0.00	2.22	26.60	0.00
ELA	3	Outfit	GENDER	0.00	0.02	0.21	0.65
ELA	3	Outfit	ELL	0.01	128.82	1545.49	0.00
ELA	3	Outfit	IEP	0.04	428.74	5143.67	0.00
ELA	3	Outfit	Black	0.02	184.62	2214.85	0.00
ELA	3	Outfit	Hispanic	0.00	55.25	662.79	0.00
ELA	3	Outfit	White	0.00	7.97	95.56	0.00
ELA	3	Outfit	MODE*GENDER	0.00	0.60	7.15	0.01

² Item level tables are not provided in this report as all effect sizes for all operational items on all tests were below 0.00.

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
ELA	3	Outfit	MODE*ELL	0.00	0.05	0.62	0.43
ELA	3	Outfit	MODE*IEP	0.00	1.71	20.49	0.00
ELA	3	Outfit	MODE*Black	0.00	0.02	0.24	0.63
ELA	3	Outfit	MODE*Hispanic	0.00	0.16	1.96	0.16
ELA	3	Outfit	MODE*White	0.00	0.09	1.09	0.30
ELA	4	Infit	Model	0.00			0.00
ELA	4	Infit	MODE	0.00	0.88	8.45	0.00
ELA	4	Infit	GENDER	0.00	17.76	170.18	0.00
ELA	4	Infit	ELL	0.00	2.35	22.56	0.00
ELA	4	Infit	IEP	0.00	18.01	172.50	0.00
ELA	4	Infit	Black	0.00	5.36	51.32	0.00
ELA	4	Infit	Hispanic	0.00	0.12	1.17	0.28
ELA	4	Infit	White	0.00	0.65	6.23	0.01
ELA	4	Infit	MODE*GENDER	0.00	0.85	8.11	0.00
ELA	4	Infit	MODE*ELL	0.00	0.03	0.29	0.59
ELA	4	Infit	MODE*IEP	0.00	1.28	12.25	0.00
ELA	4	Infit	MODE*Black	0.00	0.01	0.11	0.74
ELA	4	Infit	MODE*Hispanic	0.00	0.00	0.02	0.89
ELA	4	Infit	MODE*White	0.00	0.38	3.63	0.06
ELA	4	Outfit	Model	0.01			0.00
ELA	4	Outfit	MODE	0.00	1.28	6.15	0.01
ELA	4	Outfit	GENDER	0.00	16.80	80.71	0.00
ELA	4	Outfit	ELL	0.00	25.47	122.36	0.00
ELA	4	Outfit	IEP	0.01	132.97	638.67	0.00
ELA	4	Outfit	Black	0.00	15.94	76.58	0.00
ELA	4	Outfit	Hispanic	0.00	0.16	0.78	0.38
ELA	4	Outfit	White	0.00	6.85	32.91	0.00
ELA	4	Outfit	MODE*GENDER	0.00	1.24	5.97	0.01
ELA	4	Outfit	MODE*ELL	0.00	0.06	0.29	0.59
ELA	4	Outfit	MODE*IEP	0.00	2.65	12.72	0.00
ELA	4	Outfit	MODE*Black	0.00	0.01	0.04	0.84
ELA	4	Outfit	MODE*Hispanic	0.00	0.01	0.05	0.82
ELA	4	Outfit	MODE*White	0.00	0.49	2.33	0.13
ELA	5	Infit	Model	0.01			0.00
ELA	5	Infit	MODE	0.00	0.65	6.81	0.01
ELA	5	Infit	GENDER	0.00	4.55	47.47	0.00
ELA	5	Infit	ELL	0.00	20.00	208.54	0.00
ELA	5	Infit	IEP	0.00	28.86	300.91	0.00
ELA	5	Infit	Black	0.00	10.24	106.79	0.00

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
ELA	5	Infit	Hispanic	0.00	0.60	6.22	0.01
ELA	5	Infit	White	0.00	9.78	102.04	0.00
ELA	5	Infit	MODE*GENDER	0.00	1.29	13.41	0.00
ELA	5	Infit	MODE*ELL	0.00	0.20	2.11	0.15
ELA	5	Infit	MODE*IEP	0.00	1.41	14.73	0.00
ELA	5	Infit	MODE*Black	0.00	0.41	4.23	0.04
ELA	5	Infit	MODE*Hispanic	0.00	0.01	0.06	0.81
ELA	5	Infit	MODE*White	0.00	0.00	0.01	0.93
ELA	5	Outfit	Model	0.03			0.00
ELA	5	Outfit	MODE	0.00	3.35	24.65	0.00
ELA	5	Outfit	GENDER	0.00	0.24	1.75	0.19
ELA	5	Outfit	ELL	0.01	130.23	957.31	0.00
ELA	5	Outfit	IEP	0.02	289.97	2131.52	0.00
ELA	5	Outfit	Black	0.01	101.61	746.90	0.00
ELA	5	Outfit	Hispanic	0.00	14.63	107.54	0.00
ELA	5	Outfit	White	0.00	25.83	189.84	0.00
ELA	5	Outfit	MODE*GENDER	0.00	0.97	7.12	0.01
ELA	5	Outfit	MODE*ELL	0.00	0.05	0.40	0.53
ELA	5	Outfit	MODE*IEP	0.00	3.80	27.96	0.00
ELA	5	Outfit	MODE*Black	0.00	2.14	15.73	0.00
ELA	5	Outfit	MODE*Hispanic	0.00	0.00	0.00	0.98
ELA	5	Outfit	MODE*White	0.00	0.06	0.43	0.51
ELA	6	Infit	Model	0.01			0.00
ELA	6	Infit	MODE	0.00	0.36	3.55	0.06
ELA	6	Infit	GENDER	0.00	33.99	333.78	0.00
ELA	6	Infit	ELL	0.00	20.90	205.24	0.00
ELA	6	Infit	IEP	0.00	40.10	393.77	0.00
ELA	6	Infit	Black	0.00	2.18	21.42	0.00
ELA	6	Infit	Hispanic	0.00	0.09	0.89	0.34
ELA	6	Infit	White	0.00	11.73	115.23	0.00
ELA	6	Infit	MODE*GENDER	0.00	1.49	14.61	0.00
ELA	6	Infit	MODE*ELL	0.00	0.02	0.16	0.69
ELA	6	Infit	MODE*IEP	0.00	0.56	5.51	0.02
ELA	6	Infit	MODE*Black	0.00	0.37	3.62	0.06
ELA	6	Infit	MODE*Hispanic	0.00	0.05	0.51	0.48
ELA	6	Infit	MODE*White	0.00	0.10	1.00	0.32
ELA	6	Outfit	Model	0.02			0.00
ELA	6	Outfit	MODE	0.00	0.32	2.04	0.15
ELA	6	Outfit	GENDER	0.00	17.38	109.76	0.00

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
ELA	6	Outfit	ELL	0.00	93.16	588.43	0.00
ELA	6	Outfit	IEP	0.01	238.36	1505.55	0.00
ELA	6	Outfit	Black	0.00	21.56	136.19	0.00
ELA	6	Outfit	Hispanic	0.00	2.36	14.90	0.00
ELA	6	Outfit	White	0.00	28.23	178.29	0.00
ELA	6	Outfit	MODE*GENDER	0.00	2.70	17.03	0.00
ELA	6	Outfit	MODE*ELL	0.00	0.15	0.94	0.33
ELA	6	Outfit	MODE*IEP	0.00	1.18	7.48	0.01
ELA	6	Outfit	MODE*Black	0.00	1.71	10.79	0.00
ELA	6	Outfit	MODE*Hispanic	0.00	0.03	0.17	0.68
ELA	6	Outfit	MODE*White	0.00	0.03	0.19	0.67
ELA	7	Infit	Model	0.01			0.00
ELA	7	Infit	MODE	0.00	0.98	10.41	0.00
ELA	7	Infit	GENDER	0.00	1.17	12.44	0.00
ELA	7	Infit	ELL	0.00	49.77	527.16	0.00
ELA	7	Infit	IEP	0.01	92.48	979.58	0.00
ELA	7	Infit	Black	0.00	3.45	36.58	0.00
ELA	7	Infit	Hispanic	0.00	0.45	4.72	0.03
ELA	7	Infit	White	0.00	8.98	95.11	0.00
ELA	7	Infit	MODE*GENDER	0.00	0.71	7.54	0.01
ELA	7	Infit	MODE*ELL	0.00	0.01	0.12	0.73
ELA	7	Infit	MODE*IEP	0.00	1.13	11.97	0.00
ELA	7	Infit	MODE*Black	0.00	0.16	1.68	0.19
ELA	7	Infit	MODE*Hispanic	0.00	0.18	1.94	0.16
ELA	7	Infit	MODE*White	0.00	0.05	0.49	0.48
ELA	7	Outfit	Model	0.04			0.00
ELA	7	Outfit	MODE	0.00	0.44	2.88	0.09
ELA	7	Outfit	GENDER	0.00	5.76	37.42	0.00
ELA	7	Outfit	ELL	0.01	255.97	1661.87	0.00
ELA	7	Outfit	IEP	0.03	503.88	3271.38	0.00
ELA	7	Outfit	Black	0.00	57.73	374.80	0.00
ELA	7	Outfit	Hispanic	0.00	5.36	34.79	0.00
ELA	7	Outfit	White	0.00	20.80	135.04	0.00
ELA	7	Outfit	MODE*GENDER	0.00	1.10	7.15	0.01
ELA	7	Outfit	MODE*ELL	0.00	0.07	0.48	0.49
ELA	7	Outfit	MODE*IEP	0.00	1.72	11.14	0.00
ELA	7	Outfit	MODE*Black	0.00	0.67	4.34	0.04
ELA	7	Outfit	MODE*Hispanic	0.00	0.02	0.13	0.72
ELA	7	Outfit	MODE*White	0.00	0.30	1.95	0.16

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
ELA	8	Infit	Model	0.01			0.00
ELA	8	Infit	MODE	0.00	0.25	2.51	0.11
ELA	8	Infit	GENDER	0.00	10.28	104.09	0.00
ELA	8	Infit	ELL	0.00	27.32	276.55	0.00
ELA	8	Infit	IEP	0.00	39.77	402.61	0.00
ELA	8	Infit	Black	0.00	0.58	5.92	0.01
ELA	8	Infit	Hispanic	0.00	0.00	0.04	0.84
ELA	8	Infit	White	0.00	8.91	90.17	0.00
ELA	8	Infit	MODE*GENDER	0.00	0.47	4.75	0.03
ELA	8	Infit	MODE*ELL	0.00	0.18	1.78	0.18
ELA	8	Infit	MODE*IEP	0.00	0.04	0.42	0.52
ELA	8	Infit	MODE*Black	0.00	0.31	3.19	0.07
ELA	8	Infit	MODE*Hispanic	0.00	0.01	0.14	0.71
ELA	8	Infit	MODE*White	0.00	0.01	0.12	0.73
ELA	8	Outfit	Model	0.01			0.00
ELA	8	Outfit	MODE	0.00	0.07	0.32	0.57
ELA	8	Outfit	GENDER	0.00	25.77	115.98	0.00
ELA	8	Outfit	ELL	0.00	102.93	463.29	0.00
ELA	8	Outfit	IEP	0.00	134.37	604.79	0.00
ELA	8	Outfit	Black	0.00	0.15	0.69	0.41
ELA	8	Outfit	Hispanic	0.00	1.65	7.43	0.01
ELA	8	Outfit	White	0.00	41.50	186.81	0.00
ELA	8	Outfit	MODE*GENDER	0.00	2.06	9.27	0.00
ELA	8	Outfit	MODE*ELL	0.00	1.04	4.67	0.03
ELA	8	Outfit	MODE*IEP	0.00	1.49	6.69	0.01
ELA	8	Outfit	MODE*Black	0.00	0.77	3.47	0.06
ELA	8	Outfit	MODE*Hispanic	0.00	0.15	0.69	0.41
ELA	8	Outfit	MODE*White	0.00	0.00	0.01	0.94
Mathematics	3	Infit	Model	0.01			0.00
Mathematics	3	Infit	MODE	0.00	1.64	39.08	0.00
Mathematics	3	Infit	GENDER	0.00	0.88	20.93	0.00
Mathematics	3	Infit	ELL	0.00	4.56	108.93	0.00
Mathematics	3	Infit	IEP	0.01	40.10	957.56	0.00
Mathematics	3	Infit	Black	0.00	11.23	268.06	0.00
Mathematics	3	Infit	Hispanic	0.00	0.99	23.63	0.00
Mathematics	3	Infit	White	0.00	0.26	6.16	0.01
Mathematics	3	Infit	MODE*GENDER	0.00	0.02	0.37	0.54
Mathematics	3	Infit	MODE*ELL	0.00	0.00	0.00	0.96
Mathematics	3	Infit	MODE*IEP	0.00	0.16	3.78	0.05

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
Mathematics	3	Infit	MODE*Black	0.00	0.03	0.71	0.40
Mathematics	3	Infit	MODE*Hispanic	0.00	0.07	1.65	0.20
Mathematics	3	Infit	MODE*White	0.00	0.00	0.01	0.93
Mathematics	3	Outfit	Model	0.03			0.00
Mathematics	3	Outfit	MODE	0.00	5.86	58.73	0.00
Mathematics	3	Outfit	GENDER	0.00	2.14	21.46	0.00
Mathematics	3	Outfit	ELL	0.00	29.31	293.86	0.00
Mathematics	3	Outfit	IEP	0.01	200.58	2011.03	0.00
Mathematics	3	Outfit	Black	0.00	97.35	976.07	0.00
Mathematics	3	Outfit	Hispanic	0.00	21.45	215.01	0.00
Mathematics	3	Outfit	White	0.00	1.58	15.87	0.00
Mathematics	3	Outfit	MODE*GENDER	0.00	0.08	0.80	0.37
Mathematics	3	Outfit	MODE*ELL	0.00	0.03	0.29	0.59
Mathematics	3	Outfit	MODE*IEP	0.00	0.53	5.36	0.02
Mathematics	3	Outfit	MODE*Black	0.00	0.00	0.00	0.95
Mathematics	3	Outfit	MODE*Hispanic	0.00	0.03	0.32	0.57
Mathematics	3	Outfit	MODE*White	0.00	0.01	0.06	0.81
Mathematics	4	Infit	Model	0.00			0.00
Mathematics	4	Infit	MODE	0.00	0.29	5.30	0.02
Mathematics	4	Infit	GENDER	0.00	13.65	252.00	0.00
Mathematics	4	Infit	ELL	0.00	0.47	8.74	0.00
Mathematics	4	Infit	IEP	0.00	15.04	277.74	0.00
Mathematics	4	Infit	Black	0.00	0.22	4.03	0.04
Mathematics	4	Infit	Hispanic	0.00	0.42	7.70	0.01
Mathematics	4	Infit	White	0.00	0.03	0.62	0.43
Mathematics	4	Infit	MODE*GENDER	0.00	0.04	0.83	0.36
Mathematics	4	Infit	MODE*ELL	0.00	0.05	0.93	0.34
Mathematics	4	Infit	MODE*IEP	0.00	0.75	13.86	0.00
Mathematics	4	Infit	MODE*Black	0.00	0.11	2.12	0.15
Mathematics	4	Infit	MODE*Hispanic	0.00	0.02	0.31	0.58
Mathematics	4	Infit	MODE*White	0.00	0.01	0.22	0.64
Mathematics	4	Outfit	Model	0.04			0.00
Mathematics	4	Outfit	MODE	0.00	1.04	15.04	0.00
Mathematics	4	Outfit	GENDER	0.00	24.71	355.82	0.00
Mathematics	4	Outfit	ELL	0.00	34.61	498.38	0.00
Mathematics	4	Outfit	IEP	0.02	209.41	3015.13	0.00
Mathematics	4	Outfit	Black	0.01	90.73	1306.33	0.00
Mathematics	4	Outfit	Hispanic	0.00	12.13	174.66	0.00
Mathematics	4	Outfit	White	0.00	0.43	6.23	0.01

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
Mathematics	4	Outfit	MODE*GENDER	0.00	0.02	0.29	0.59
Mathematics	4	Outfit	MODE*ELL	0.00	0.02	0.27	0.61
Mathematics	4	Outfit	MODE*IEP	0.00	2.22	32.02	0.00
Mathematics	4	Outfit	MODE*Black	0.00	0.19	2.80	0.09
Mathematics	4	Outfit	MODE*Hispanic	0.00	0.04	0.54	0.46
Mathematics	4	Outfit	MODE*White	0.00	0.01	0.16	0.69
Mathematics	5	Infit	Model	0.01			0.00
Mathematics	5	Infit	MODE	0.00	0.10	3.66	0.06
Mathematics	5	Infit	GENDER	0.00	0.00	0.02	0.90
Mathematics	5	Infit	ELL	0.00	2.67	94.85	0.00
Mathematics	5	Infit	IEP	0.00	13.04	463.34	0.00
Mathematics	5	Infit	Black	0.00	5.28	187.41	0.00
Mathematics	5	Infit	Hispanic	0.00	0.21	7.58	0.01
Mathematics	5	Infit	White	0.00	0.78	27.61	0.00
Mathematics	5	Infit	MODE*GENDER	0.00	0.02	0.81	0.37
Mathematics	5	Infit	MODE*ELL	0.00	0.00	0.13	0.71
Mathematics	5	Infit	MODE*IEP	0.00	0.03	1.21	0.27
Mathematics	5	Infit	MODE*Black	0.00	0.01	0.40	0.53
Mathematics	5	Infit	MODE*Hispanic	0.00	0.01	0.45	0.50
Mathematics	5	Infit	MODE*White	0.00	0.00	0.01	0.94
Mathematics	5	Outfit	Model	0.07			0.00
Mathematics	5	Outfit	MODE	0.00	3.46	103.68	0.00
Mathematics	5	Outfit	GENDER	0.00	1.19	35.53	0.00
Mathematics	5	Outfit	ELL	0.01	35.18	1054.27	0.00
Mathematics	5	Outfit	IEP	0.03	152.74	4577.77	0.00
Mathematics	5	Outfit	Black	0.02	93.12	2790.94	0.00
Mathematics	5	Outfit	Hispanic	0.00	18.84	564.59	0.00
Mathematics	5	Outfit	White	0.00	0.26	7.79	0.01
Mathematics	5	Outfit	MODE*GENDER	0.00	0.17	5.23	0.02
Mathematics	5	Outfit	MODE*ELL	0.00	0.00	0.00	0.94
Mathematics	5	Outfit	MODE*IEP	0.00	0.44	13.17	0.00
Mathematics	5	Outfit	MODE*Black	0.00	0.05	1.39	0.24
Mathematics	5	Outfit	MODE*Hispanic	0.00	0.06	1.66	0.20
Mathematics	5	Outfit	MODE*White	0.00	0.17	5.24	0.02
Mathematics	6	Infit	Model	0.00			0.00
Mathematics	6	Infit	MODE	0.00	0.16	3.31	0.07
Mathematics	6	Infit	GENDER	0.00	0.16	3.51	0.06
Mathematics	6	Infit	ELL	0.00	1.25	26.59	0.00
Mathematics	6	Infit	IEP	0.00	12.23	260.16	0.00

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
Mathematics	6	Infit	Black	0.00	1.33	28.24	0.00
Mathematics	6	Infit	Hispanic	0.00	0.00	0.00	0.99
Mathematics	6	Infit	White	0.00	0.05	0.99	0.32
Mathematics	6	Infit	MODE*GENDER	0.00	0.00	0.00	0.96
Mathematics	6	Infit	MODE*ELL	0.00	0.13	2.69	0.10
Mathematics	6	Infit	MODE*IEP	0.00	0.01	0.18	0.67
Mathematics	6	Infit	MODE*Black	0.00	0.00	0.05	0.82
Mathematics	6	Infit	MODE*Hispanic	0.00	0.00	0.10	0.75
Mathematics	6	Infit	MODE*White	0.00	0.00	0.06	0.81
Mathematics	6	Outfit	Model	0.02			0.00
Mathematics	6	Outfit	MODE	0.00	0.34	5.05	0.02
Mathematics	6	Outfit	GENDER	0.00	6.48	96.57	0.00
Mathematics	6	Outfit	ELL	0.00	17.39	259.23	0.00
Mathematics	6	Outfit	IEP	0.01	112.48	1677.06	0.00
Mathematics	6	Outfit	Black	0.00	30.26	451.19	0.00
Mathematics	6	Outfit	Hispanic	0.00	4.59	68.37	0.00
Mathematics	6	Outfit	White	0.00	0.18	2.64	0.10
Mathematics	6	Outfit	MODE*GENDER	0.00	0.05	0.81	0.37
Mathematics	6	Outfit	MODE*ELL	0.00	0.24	3.63	0.06
Mathematics	6	Outfit	MODE*IEP	0.00	0.00	0.02	0.88
Mathematics	6	Outfit	MODE*Black	0.00	0.08	1.24	0.27
Mathematics	6	Outfit	MODE*Hispanic	0.00	0.11	1.64	0.20
Mathematics	6	Outfit	MODE*White	0.00	0.04	0.64	0.42
Mathematics	7	Infit	Model	0.01			0.00
Mathematics	7	Infit	MODE	0.00	0.98	10.41	0.00
Mathematics	7	Infit	GENDER	0.00	1.17	12.44	0.00
Mathematics	7	Infit	ELL	0.00	49.77	527.16	0.00
Mathematics	7	Infit	IEP	0.01	92.48	979.58	0.00
Mathematics	7	Infit	Black	0.00	3.45	36.58	0.00
Mathematics	7	Infit	Hispanic	0.00	0.45	4.72	0.03
Mathematics	7	Infit	White	0.00	8.98	95.11	0.00
Mathematics	7	Infit	MODE*GENDER	0.00	0.71	7.54	0.01
Mathematics	7	Infit	MODE*ELL	0.00	0.01	0.12	0.73
Mathematics	7	Infit	MODE*IEP	0.00	1.13	11.97	0.00
Mathematics	7	Infit	MODE*Black	0.00	0.16	1.68	0.19
Mathematics	7	Infit	MODE*Hispanic	0.00	0.18	1.94	0.16
Mathematics	7	Infit	MODE*White	0.00	0.05	0.49	0.48
Mathematics	7	Outfit	Model	0.07			0.00
Mathematics	7	Outfit	MODE	0.00	0.44	2.88	0.09

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
Mathematics	7	Outfit	GENDER	0.00	5.76	37.42	0.00
Mathematics	7	Outfit	ELL	0.01	255.97	1661.87	0.00
Mathematics	7	Outfit	IEP	0.04	503.88	3271.38	0.00
Mathematics	7	Outfit	Black	0.01	57.73	374.80	0.00
Mathematics	7	Outfit	Hispanic	0.00	5.36	34.79	0.00
Mathematics	7	Outfit	White	0.00	20.80	135.04	0.00
Mathematics	7	Outfit	MODE*GENDER	0.00	1.10	7.15	0.01
Mathematics	7	Outfit	MODE*ELL	0.00	0.07	0.48	0.49
Mathematics	7	Outfit	MODE*IEP	0.00	1.72	11.14	0.00
Mathematics	7	Outfit	MODE*Black	0.00	0.67	4.34	0.04
Mathematics	7	Outfit	MODE*Hispanic	0.00	0.02	0.13	0.72
Mathematics	7	Outfit	MODE*White	0.00	0.30	1.95	0.16
Mathematics	8	Infit	Model	0.04			0.00
Mathematics	8	Infit	MODE	0.00	1.29	49.72	0.00
Mathematics	8	Infit	GENDER	0.00	0.41	15.67	0.00
Mathematics	8	Infit	ELL	0.00	16.20	625.45	0.00
Mathematics	8	Infit	IEP	0.03	92.83	3584.59	0.00
Mathematics	8	Infit	Black	0.01	21.23	819.67	0.00
Mathematics	8	Infit	Hispanic	0.00	4.56	176.10	0.00
Mathematics	8	Infit	White	0.00	0.31	12.00	0.00
Mathematics	8	Infit	MODE*GENDER	0.00	0.04	1.46	0.23
Mathematics	8	Infit	MODE*ELL	0.00	0.05	1.92	0.17
Mathematics	8	Infit	MODE*IEP	0.00	0.09	3.58	0.06
Mathematics	8	Infit	MODE*Black	0.00	0.09	3.31	0.07
Mathematics	8	Infit	MODE*Hispanic	0.00	0.00	0.00	0.96
Mathematics	8	Infit	MODE*White	0.00	0.00	0.00	0.99
Mathematics	8	Outfit	Model	0.10			0.00
Mathematics	8	Outfit	MODE	0.00	1.23	25.33	0.00
Mathematics	8	Outfit	GENDER	0.00	6.53	134.08	0.00
Mathematics	8	Outfit	ELL	0.01	68.13	1398.79	0.00
Mathematics	8	Outfit	IEP	0.06	404.49	8304.13	0.00
Mathematics	8	Outfit	Black	0.02	118.17	2426.01	0.00
Mathematics	8	Outfit	Hispanic	0.01	34.07	699.39	0.00
Mathematics	8	Outfit	White	0.00	0.01	0.11	0.74
Mathematics	8	Outfit	MODE*GENDER	0.00	0.05	0.98	0.32
Mathematics	8	Outfit	MODE*ELL	0.00	0.15	3.16	0.08
Mathematics	8	Outfit	MODE*IEP	0.00	0.05	1.01	0.32
Mathematics	8	Outfit	MODE*Black	0.00	0.42	8.59	0.00
Mathematics	8	Outfit	MODE*Hispanic	0.00	0.01	0.24	0.62

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
Mathematics	8	Outfit	MODE*White	0.00	0.30	6.19	0.01
Science	4	Infit	Model	0.02			0.00
Science	4	Infit	MODE	0.00	0.13	8.31	0.00
Science	4	Infit	GENDER	0.00	9.95	625.07	0.00
Science	4	Infit	ELL	0.00	3.56	223.33	0.00
Science	4	Infit	IEP	0.01	14.01	879.77	0.00
Science	4	Infit	Black	0.00	9.13	573.51	0.00
Science	4	Infit	Hispanic	0.00	0.29	18.26	0.00
Science	4	Infit	White	0.00	0.03	1.58	0.21
Science	4	Infit	MODE*GENDER	0.00	0.04	2.62	0.11
Science	4	Infit	MODE*ELL	0.00	0.00	0.04	0.83
Science	4	Infit	MODE*IEP	0.00	0.00	0.26	0.61
Science	4	Infit	MODE*Black	0.00	0.01	0.39	0.53
Science	4	Infit	MODE*Hispanic	0.00	0.02	1.04	0.31
Science	4	Infit	MODE*White	0.00	0.02	1.27	0.26
Science	4	Outfit	Model	0.04			0.00
Science	4	Outfit	MODE	0.00	0.95	17.45	0.00
Science	4	Outfit	GENDER	0.00	19.55	360.01	0.00
Science	4	Outfit	ELL	0.00	33.69	620.49	0.00
Science	4	Outfit	IEP	0.02	104.74	1928.85	0.00
Science	4	Outfit	Black	0.01	89.96	1656.63	0.00
Science	4	Outfit	Hispanic	0.00	14.99	276.11	0.00
Science	4	Outfit	White	0.00	1.26	23.18	0.00
Science	4	Outfit	MODE*GENDER	0.00	0.18	3.25	0.07
Science	4	Outfit	MODE*ELL	0.00	0.00	0.00	0.99
Science	4	Outfit	MODE*IEP	0.00	0.30	5.60	0.02
Science	4	Outfit	MODE*Black	0.00	0.00	0.00	1.00
Science	4	Outfit	MODE*Hispanic	0.00	0.09	1.61	0.20
Science	4	Outfit	MODE*White	0.00	0.00	0.01	0.94
Science	8	Infit	Model	0.01			0.00
Science	8	Infit	MODE	0.00	0.67	42.48	0.00
Science	8	Infit	GENDER	0.00	3.87	245.30	0.00
Science	8	Infit	ELL	0.00	4.07	258.28	0.00
Science	8	Infit	IEP	0.00	9.27	587.97	0.00
Science	8	Infit	Black	0.00	7.94	503.84	0.00
Science	8	Infit	Hispanic	0.00	1.56	99.12	0.00
Science	8	Infit	White	0.00	0.21	13.24	0.00
Science	8	Infit	MODE*GENDER	0.00	0.04	2.67	0.10
Science	8	Infit	MODE*ELL	0.00	0.03	1.67	0.20

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
Science	8	Infit	MODE*IEP	0.00	0.23	14.81	0.00
Science	8	Infit	MODE*Black	0.00	0.07	4.14	0.04
Science	8	Infit	MODE*Hispanic	0.00	0.06	3.95	0.05
Science	8	Infit	MODE*White	0.00	0.00	0.03	0.87
Science	8	Outfit	Model	0.03			0.00
Science	8	Outfit	MODE	0.00	0.36	12.57	0.00
Science	8	Outfit	GENDER	0.00	12.25	428.89	0.00
Science	8	Outfit	ELL	0.00	15.13	529.66	0.00
Science	8	Outfit	IEP	0.01	38.40	1344.37	0.00
Science	8	Outfit	Black	0.01	27.64	967.45	0.00
Science	8	Outfit	Hispanic	0.00	6.56	229.51	0.00
Science	8	Outfit	White	0.00	1.01	35.42	0.00
Science	8	Outfit	MODE*GENDER	0.00	0.03	0.90	0.34
Science	8	Outfit	MODE*ELL	0.00	0.03	0.94	0.33
Science	8	Outfit	MODE*IEP	0.00	0.11	3.93	0.05
Science	8	Outfit	MODE*Black	0.00	0.06	1.97	0.16
Science	8	Outfit	MODE*Hispanic	0.00	0.04	1.45	0.23
Science	8	Outfit	MODE*White	0.00	0.01	0.20	0.65

Table 9

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
ELA	3	Infit	MODEL	0.00			0.38
ELA	3	Infit	CHROME	0.00	0.04	0.54	0.46
ELA	3	Infit	MAC	0.00	0.17	2.49	0.11
ELA	3	Infit	WINDOWS	0.00	0.00	0.06	0.81
ELA	3	Outfit	MODEL	0.00			0.00
ELA	3	Outfit	CHROME	0.00	0.14	1.57	0.21
ELA	3	Outfit	MAC	0.00	0.27	2.99	0.08
ELA	3	Outfit	WINDOWS	0.00	1.87	20.85	0.00
ELA	4	Infit	MODEL	0.00			0.01
ELA	4	Infit	CHROME	0.00	0.81	7.73	0.01
ELA	4	Infit	MAC	0.00	0.01	0.07	0.79
ELA	4	Infit	WINDOWS	0.00	0.33	3.13	0.08
ELA	4	Outfit	MODEL	0.00			0.06
ELA	4	Outfit	CHROME	0.00	0.82	3.91	0.05
ELA	4	Outfit	MAC	0.00	0.20	0.97	0.32
ELA	4	Outfit	WINDOWS	0.00	0.50	2.37	0.12
ELA	5	Infit	MODEL	0.00			0.00
ELA	5	Infit	CHROME	0.00	0.96	9.91	0.00

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
ELA	5	Infit	MAC	0.00	0.33	3.37	0.07
ELA	5	Infit	WINDOWS	0.00	0.13	1.37	0.24
ELA	5	Outfit	MODEL	0.00			0.00
ELA	5	Outfit	CHROME	0.00	4.02	28.57	0.00
ELA	5	Outfit	MAC	0.00	1.33	9.48	0.00
ELA	5	Outfit	WINDOWS	0.00	0.86	6.09	0.01
ELA	6	Infit	MODEL	0.00			0.07
ELA	6	Infit	CHROME	0.00	0.57	5.53	0.02
ELA	6	Infit	MAC	0.00	0.02	0.23	0.63
ELA	6	Infit	WINDOWS	0.00	0.14	1.41	0.24
ELA	6	Outfit	MODEL	0.00			0.09
ELA	6	Outfit	CHROME	0.00	0.29	1.81	0.18
ELA	6	Outfit	MAC	0.00	0.23	1.44	0.23
ELA	6	Outfit	WINDOWS	0.00	0.51	3.15	0.08
ELA	7	Infit	MODEL	0.00			0.00
ELA	7	Infit	CHROME	0.00	0.06	0.66	0.42
ELA	7	Infit	MAC	0.00	0.34	3.54	0.06
ELA	7	Infit	WINDOWS	0.00	1.01	10.57	0.00
ELA	7	Outfit	MODEL	0.00			0.04
ELA	7	Outfit	CHROME	0.00	0.25	1.54	0.21
ELA	7	Outfit	MAC	0.00	0.87	5.39	0.02
ELA	7	Outfit	WINDOWS	0.00	0.27	1.67	0.20
ELA	8	Infit	MODEL	0.00			0.14
ELA	8	Infit	CHROME	0.00	0.02	0.21	0.65
ELA	8	Infit	MAC	0.00	0.05	0.48	0.49
ELA	8	Infit	WINDOWS	0.00	0.48	4.84	0.03
ELA	8	Outfit	MODEL	0.00			0.05
ELA	8	Outfit	CHROME	0.00	0.00	0.00	0.98
ELA	8	Outfit	MAC	0.00	1.61	7.15	0.01
ELA	8	Outfit	WINDOWS	0.00	0.17	0.77	0.38
Mathematics	3	Infit	MODEL	0.00			0.00
Mathematics	3	Infit	CHROME	0.00	0.87	20.55	0.00
Mathematics	3	Infit	MAC	0.00	0.15	3.60	0.06
Mathematics	3	Infit	WINDOWS	0.00	0.69	16.26	0.00
Mathematics	3	Outfit	MODEL	0.00			0.00
Mathematics	3	Outfit	CHROME	0.00	2.55	24.90	0.00
Mathematics	3	Outfit	MAC	0.00	0.65	6.29	0.01
Mathematics	3	Outfit	WINDOWS	0.00	2.71	26.46	0.00
Mathematics	4	Infit	MODEL	0.00			0.04

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
Mathematics	4	Infit	CHROME	0.00	0.07	1.20	0.27
Mathematics	4	Infit	MAC	0.00	0.05	0.98	0.32
Mathematics	4	Infit	WINDOWS	0.00	0.35	6.41	0.01
Mathematics	4	Outfit	MODEL	0.00			0.00
Mathematics	4	Outfit	CHROME	0.00	0.77	10.63	0.00
Mathematics	4	Outfit	MAC	0.00	0.29	3.98	0.05
Mathematics	4	Outfit	WINDOWS	0.00	0.27	3.78	0.05
Mathematics	5	Infit	MODEL	0.00			0.03
Mathematics	5	Infit	CHROME	0.00	0.21	7.43	0.01
Mathematics	5	Infit	MAC	0.00	0.00	0.01	0.91
Mathematics	5	Infit	WINDOWS	0.00	0.04	1.29	0.26
Mathematics	5	Outfit	MODEL	0.00			0.00
Mathematics	5	Outfit	CHROME	0.00	2.37	66.09	0.00
Mathematics	5	Outfit	MAC	0.00	0.16	4.41	0.04
Mathematics	5	Outfit	WINDOWS	0.00	1.83	51.09	0.00
Mathematics	6	Infit	MODEL	0.00			0.00
Mathematics	6	Infit	CHROME	0.00	0.09	1.91	0.17
Mathematics	6	Infit	MAC	0.00	0.52	10.96	0.00
Mathematics	6	Infit	WINDOWS	0.00	0.00	0.08	0.78
Mathematics	6	Outfit	MODEL	0.00			0.12
Mathematics	6	Outfit	CHROME	0.00	0.22	3.29	0.07
Mathematics	6	Outfit	MAC	0.00	0.12	1.80	0.18
Mathematics	6	Outfit	WINDOWS	0.00	0.07	0.99	0.32
Mathematics	7	Infit	MODEL	0.00			0.01
Mathematics	7	Infit	CHROME	0.00	0.06	0.66	0.42
Mathematics	7	Infit	MAC	0.00	0.34	3.54	0.06
Mathematics	7	Infit	WINDOWS	0.00	1.01	10.57	0.00
Mathematics	7	Outfit	MODEL	0.00			0.64
Mathematics	7	Outfit	CHROME	0.00	0.25	1.54	0.21
Mathematics	7	Outfit	MAC	0.00	0.87	5.39	0.02
Mathematics	7	Outfit	WINDOWS	0.00	0.27	1.67	0.20
Mathematics	8	Infit	MODEL	0.00			0.00
Mathematics	8	Infit	CHROME	0.00	0.68	25.09	0.00
Mathematics	8	Infit	MAC	0.00	0.18	6.81	0.01
Mathematics	8	Infit	WINDOWS	0.00	0.61	22.67	0.00
Mathematics	8	Outfit	MODEL	0.00			0.00
Mathematics	8	Outfit	CHROME	0.00	2.32	43.19	0.00
Mathematics	8	Outfit	MAC	0.00	0.02	0.34	0.56
Mathematics	8	Outfit	WINDOWS	0.00	0.57	10.60	0.00

Content	Grade	Fit Statistic	Effect Name	η^2	SS	F	PROB
Science	4	Infit	MODEL	0.00			0.01
Science	4	Infit	CHROME	0.00	0.01	0.62	0.43
Science	4	Infit	MAC	0.00	0.11	6.61	0.01
Science	4	Infit	WINDOWS	0.00	0.06	3.45	0.06
Science	4	Outfit	MODEL	0.00			0.00
Science	4	Outfit	CHROME	0.00	0.23	4.06	0.04
Science	4	Outfit	MAC	0.00	1.57	27.78	0.00
Science	4	Outfit	WINDOWS	0.00	0.06	1.06	0.30
Science	8	Infit	MODEL	0.00			0.00
Science	8	Infit	CHROME	0.00	0.11	6.90	0.01
Science	8	Infit	MAC	0.00	0.02	1.47	0.22
Science	8	Infit	WINDOWS	0.00	0.65	40.88	0.00
Science	8	Outfit	MODEL	0.00			0.00
Science	8	Outfit	CHROME	0.00	0.05	1.72	0.19
Science	8	Outfit	MAC	0.00	0.01	0.18	0.67
Science	8	Outfit	WINDOWS	0.00	0.43	14.77	0.00

SUMMARY OF PREDICTED CELL MEANS

For reference, predicted cell means are provided for all cells in the analysis of variance tables to assist with an interpretation of the direction of mean differences for any given condition or subgroup.

Table 10

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	3	Infit	ONLINE							1.09	0.04
ELA	3	Infit	PAPER							1.08	0.00
ELA	3	Outfit	ONLINE							1.21	0.05
ELA	3	Outfit	PAPER							1.16	0.00
ELA	3	Infit		FEMALE						1.09	0.02
ELA	3	Infit		MALE						1.08	0.02
ELA	3	Outfit		FEMALE						1.18	0.02
ELA	3	Outfit		MALE						1.19	0.02
ELA	3	Infit			NO					1.07	0.01
ELA	3	Infit			YES					1.11	0.03
ELA	3	Outfit			NO					1.13	0.02
ELA	3	Outfit			YES					1.24	0.04
ELA	3	Infit				NO				1.05	0.02
ELA	3	Infit				YES				1.13	0.02
ELA	3	Outfit				NO				1.08	0.02
ELA	3	Outfit				YES				1.29	0.02
ELA	3	Infit					NO			1.08	0.02
ELA	3	Infit					YES			1.10	0.03
ELA	3	Outfit					NO			1.13	0.02
ELA	3	Outfit					YES			1.24	0.03
ELA	3	Infit						NO		1.07	0.02
ELA	3	Infit						YES		1.10	0.03
ELA	3	Outfit						NO		1.14	0.02
ELA	3	Outfit						YES		1.23	0.03
ELA	3	Infit							NO	1.09	0.02
ELA	3	Infit							YES	1.08	0.03
ELA	3	Outfit							NO	1.19	0.02
ELA	3	Outfit							YES	1.18	0.03
ELA	3	Infit	ONLINE	FEMALE						1.09	0.04
ELA	3	Infit	ONLINE	MALE						1.09	0.04
ELA	3	Infit	PAPER	FEMALE						1.10	0.00
ELA	3	Infit	PAPER	MALE						1.07	0.00
ELA	3	Outfit	ONLINE	FEMALE						1.20	0.05
ELA	3	Outfit	ONLINE	MALE						1.22	0.05
ELA	3	Outfit	PAPER	FEMALE						1.16	0.00
ELA	3	Outfit	PAPER	MALE						1.15	0.00
ELA	3	Infit	ONLINE		NO					1.08	0.03

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	3	Infit	ONLINE		YES					1.10	0.07
ELA	3	Infit	PAPER		NO					1.05	0.00
ELA	3	Infit	PAPER		YES					1.11	0.00
ELA	3	Outfit	ONLINE		NO					1.18	0.03
ELA	3	Outfit	ONLINE		YES					1.25	0.08
ELA	3	Outfit	PAPER		NO					1.09	0.00
ELA	3	Outfit	PAPER		YES					1.23	0.00
ELA	3	Infit	ONLINE			NO				1.04	0.04
ELA	3	Infit	ONLINE			YES				1.15	0.04
ELA	3	Infit	PAPER			NO				1.06	0.00
ELA	3	Infit	PAPER			YES				1.11	0.00
ELA	3	Outfit	ONLINE			NO				1.08	0.05
ELA	3	Outfit	ONLINE			YES				1.34	0.05
ELA	3	Outfit	PAPER			NO				1.08	0.00
ELA	3	Outfit	PAPER			YES				1.24	0.00
ELA	3	Infit	ONLINE				NO			1.08	0.03
ELA	3	Infit	ONLINE				YES			1.10	0.06
ELA	3	Infit	PAPER				NO			1.07	0.00
ELA	3	Infit	PAPER				YES			1.09	0.00
ELA	3	Outfit	ONLINE				NO			1.14	0.04
ELA	3	Outfit	ONLINE				YES			1.29	0.06
ELA	3	Outfit	PAPER				NO			1.11	0.00
ELA	3	Outfit	PAPER				YES			1.20	0.00
ELA	3	Infit	ONLINE					NO		1.06	0.03
ELA	3	Infit	ONLINE					YES		1.12	0.06
ELA	3	Infit	PAPER					NO		1.08	0.00
ELA	3	Infit	PAPER					YES		1.08	0.00
ELA	3	Outfit	ONLINE					NO		1.14	0.04
ELA	3	Outfit	ONLINE					YES		1.28	0.07
ELA	3	Outfit	PAPER					NO		1.13	0.00
ELA	3	Outfit	PAPER					YES		1.18	0.00
ELA	3	Infit	ONLINE						NO	1.09	0.03
ELA	3	Infit	ONLINE						YES	1.10	0.06
ELA	3	Infit	PAPER						NO	1.09	0.00
ELA	3	Infit	PAPER						YES	1.07	0.00
ELA	3	Outfit	ONLINE						NO	1.20	0.04
ELA	3	Outfit	ONLINE						YES	1.22	0.06
ELA	3	Outfit	PAPER						NO	1.17	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	3	Outfit	PAPER						YES	1.14	0.00
ELA	4	Infit	ONLINE							1.08	0.06
ELA	4	Infit	PAPER							1.01	0.00
ELA	4	Outfit	ONLINE							1.17	0.08
ELA	4	Outfit	PAPER							1.09	0.01
ELA	4	Infit		FEMALE						1.05	0.03
ELA	4	Infit		MALE						1.04	0.03
ELA	4	Outfit		FEMALE						1.13	0.04
ELA	4	Outfit		MALE						1.13	0.04
ELA	4	Infit			NO					1.04	0.02
ELA	4	Infit			YES					1.05	0.05
ELA	4	Outfit			NO					1.10	0.02
ELA	4	Outfit			YES					1.16	0.07
ELA	4	Infit				NO				1.01	0.03
ELA	4	Infit				YES				1.08	0.03
ELA	4	Outfit				NO				1.06	0.04
ELA	4	Outfit				YES				1.20	0.04
ELA	4	Infit					NO			1.02	0.02
ELA	4	Infit					YES			1.07	0.04
ELA	4	Outfit					NO			1.10	0.03
ELA	4	Outfit					YES			1.16	0.05
ELA	4	Infit						NO		1.03	0.02
ELA	4	Infit						YES		1.07	0.04
ELA	4	Outfit						NO		1.11	0.03
ELA	4	Outfit						YES		1.15	0.06
ELA	4	Infit							NO	1.03	0.02
ELA	4	Infit							YES	1.07	0.04
ELA	4	Outfit							NO	1.12	0.03
ELA	4	Outfit							YES	1.14	0.05
ELA	4	Infit	ONLINE	FEMALE						1.08	0.06
ELA	4	Infit	ONLINE	MALE						1.09	0.06
ELA	4	Infit	PAPER	FEMALE						1.02	0.00
ELA	4	Infit	PAPER	MALE						1.00	0.00
ELA	4	Outfit	ONLINE	FEMALE						1.16	0.08
ELA	4	Outfit	ONLINE	MALE						1.18	0.08
ELA	4	Outfit	PAPER	FEMALE						1.10	0.01
ELA	4	Outfit	PAPER	MALE						1.07	0.01
ELA	4	Infit	ONLINE		NO					1.08	0.04

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	4	Infit	ONLINE		YES					1.08	0.10
ELA	4	Infit	PAPER		NO					1.00	0.00
ELA	4	Infit	PAPER		YES					1.02	0.01
ELA	4	Outfit	ONLINE		NO					1.15	0.05
ELA	4	Outfit	ONLINE		YES					1.19	0.14
ELA	4	Outfit	PAPER		NO					1.05	0.00
ELA	4	Outfit	PAPER		YES					1.13	0.01
ELA	4	Infit	ONLINE			NO				1.03	0.06
ELA	4	Infit	ONLINE			YES				1.14	0.06
ELA	4	Infit	PAPER			NO				0.99	0.00
ELA	4	Infit	PAPER			YES				1.03	0.00
ELA	4	Outfit	ONLINE			NO				1.07	0.08
ELA	4	Outfit	ONLINE			YES				1.27	0.08
ELA	4	Outfit	PAPER			NO				1.04	0.01
ELA	4	Outfit	PAPER			YES				1.13	0.01
ELA	4	Infit	ONLINE				NO			1.03	0.05
ELA	4	Infit	ONLINE				YES			1.13	0.08
ELA	4	Infit	PAPER				NO			1.01	0.00
ELA	4	Infit	PAPER				YES			1.02	0.01
ELA	4	Outfit	ONLINE				NO			1.11	0.06
ELA	4	Outfit	ONLINE				YES			1.23	0.11
ELA	4	Outfit	PAPER				NO			1.08	0.00
ELA	4	Outfit	PAPER				YES			1.09	0.01
ELA	4	Infit	ONLINE					NO		1.04	0.05
ELA	4	Infit	ONLINE					YES		1.13	0.08
ELA	4	Infit	PAPER					NO		1.01	0.00
ELA	4	Infit	PAPER					YES		1.01	0.01
ELA	4	Outfit	ONLINE					NO		1.12	0.07
ELA	4	Outfit	ONLINE					YES		1.22	0.11
ELA	4	Outfit	PAPER					NO		1.10	0.00
ELA	4	Outfit	PAPER					YES		1.08	0.01
ELA	4	Infit	ONLINE						NO	1.04	0.05
ELA	4	Infit	ONLINE						YES	1.13	0.08
ELA	4	Infit	PAPER						NO	1.02	0.00
ELA	4	Infit	PAPER						YES	1.01	0.00
ELA	4	Outfit	ONLINE						NO	1.13	0.07
ELA	4	Outfit	ONLINE						YES	1.21	0.11
ELA	4	Outfit	PAPER						NO	1.10	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	4	Outfit	PAPER						YES	1.07	0.01
ELA	5	Infit	ONLINE							1.14	0.05
ELA	5	Infit	PAPER							1.04	0.00
ELA	5	Outfit	ONLINE							1.28	0.06
ELA	5	Outfit	PAPER							1.16	0.00
ELA	5	Infit		FEMALE						1.09	0.02
ELA	5	Infit		MALE						1.10	0.02
ELA	5	Outfit		FEMALE						1.22	0.03
ELA	5	Outfit		MALE						1.22	0.03
ELA	5	Infit			NO					1.03	0.01
ELA	5	Infit			YES					1.16	0.04
ELA	5	Outfit			NO					1.12	0.02
ELA	5	Outfit			YES					1.32	0.05
ELA	5	Infit				NO				1.06	0.02
ELA	5	Infit				YES				1.13	0.02
ELA	5	Outfit				NO				1.13	0.03
ELA	5	Outfit				YES				1.31	0.03
ELA	5	Infit					NO			1.08	0.02
ELA	5	Infit					YES			1.10	0.03
ELA	5	Outfit					NO			1.17	0.03
ELA	5	Outfit					YES			1.27	0.04
ELA	5	Infit						NO		1.11	0.02
ELA	5	Infit						YES		1.08	0.03
ELA	5	Outfit						NO		1.22	0.03
ELA	5	Outfit						YES		1.22	0.04
ELA	5	Infit							NO	1.11	0.02
ELA	5	Infit							YES	1.07	0.03
ELA	5	Outfit							NO	1.24	0.03
ELA	5	Outfit							YES	1.20	0.04
ELA	5	Infit	ONLINE	FEMALE						1.13	0.05
ELA	5	Infit	ONLINE	MALE						1.15	0.05
ELA	5	Infit	PAPER	FEMALE						1.05	0.00
ELA	5	Infit	PAPER	MALE						1.04	0.00
ELA	5	Outfit	ONLINE	FEMALE						1.27	0.06
ELA	5	Outfit	ONLINE	MALE						1.29	0.06
ELA	5	Outfit	PAPER	FEMALE						1.16	0.00
ELA	5	Outfit	PAPER	MALE						1.15	0.00
ELA	5	Infit	ONLINE		NO					1.05	0.03

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	5	Infit	ONLINE		YES					1.24	0.09
ELA	5	Infit	PAPER		NO					1.01	0.00
ELA	5	Infit	PAPER		YES					1.08	0.01
ELA	5	Outfit	ONLINE		NO					1.17	0.03
ELA	5	Outfit	ONLINE		YES					1.40	0.10
ELA	5	Outfit	PAPER		NO					1.07	0.00
ELA	5	Outfit	PAPER		YES					1.24	0.01
ELA	5	Infit	ONLINE			NO				1.09	0.05
ELA	5	Infit	ONLINE			YES				1.19	0.05
ELA	5	Infit	PAPER			NO				1.02	0.00
ELA	5	Infit	PAPER			YES				1.06	0.00
ELA	5	Outfit	ONLINE			NO				1.16	0.06
ELA	5	Outfit	ONLINE			YES				1.40	0.06
ELA	5	Outfit	PAPER			NO				1.09	0.00
ELA	5	Outfit	PAPER			YES				1.22	0.00
ELA	5	Infit	ONLINE				NO			1.12	0.04
ELA	5	Infit	ONLINE				YES			1.16	0.06
ELA	5	Infit	PAPER				NO			1.05	0.00
ELA	5	Infit	PAPER				YES			1.04	0.01
ELA	5	Outfit	ONLINE				NO			1.20	0.05
ELA	5	Outfit	ONLINE				YES			1.37	0.07
ELA	5	Outfit	PAPER				NO			1.14	0.00
ELA	5	Outfit	PAPER				YES			1.17	0.01
ELA	5	Infit	ONLINE					NO		1.16	0.04
ELA	5	Infit	ONLINE					YES		1.12	0.06
ELA	5	Infit	PAPER					NO		1.06	0.00
ELA	5	Infit	PAPER					YES		1.03	0.01
ELA	5	Outfit	ONLINE					NO		1.27	0.05
ELA	5	Outfit	ONLINE					YES		1.29	0.07
ELA	5	Outfit	PAPER					NO		1.16	0.00
ELA	5	Outfit	PAPER					YES		1.15	0.01
ELA	5	Infit	ONLINE						NO	1.16	0.04
ELA	5	Infit	ONLINE						YES	1.12	0.06
ELA	5	Infit	PAPER						NO	1.06	0.00
ELA	5	Infit	PAPER						YES	1.03	0.00
ELA	5	Outfit	ONLINE						NO	1.30	0.05
ELA	5	Outfit	ONLINE						YES	1.27	0.07
ELA	5	Outfit	PAPER						NO	1.18	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	5	Outfit	PAPER						YES	1.13	0.01
ELA	6	Infit	ONLINE							1.03	0.03
ELA	6	Infit	PAPER							1.03	0.00
ELA	6	Outfit	ONLINE							1.11	0.04
ELA	6	Outfit	PAPER							1.11	0.00
ELA	6	Infit		FEMALE						1.04	0.02
ELA	6	Infit		MALE						1.02	0.02
ELA	6	Outfit		FEMALE						1.12	0.02
ELA	6	Outfit		MALE						1.11	0.02
ELA	6	Infit			NO					1.00	0.01
ELA	6	Infit			YES					1.06	0.03
ELA	6	Outfit			NO					1.05	0.01
ELA	6	Outfit			YES					1.17	0.03
ELA	6	Infit				NO				1.00	0.02
ELA	6	Infit				YES				1.06	0.02
ELA	6	Outfit				NO				1.04	0.02
ELA	6	Outfit				YES				1.18	0.02
ELA	6	Infit					NO			1.04	0.01
ELA	6	Infit					YES			1.02	0.02
ELA	6	Outfit					NO			1.11	0.01
ELA	6	Outfit					YES			1.12	0.03
ELA	6	Infit						NO		1.05	0.01
ELA	6	Infit						YES		1.01	0.02
ELA	6	Outfit						NO		1.13	0.02
ELA	6	Outfit						YES		1.09	0.03
ELA	6	Infit							NO	1.06	0.01
ELA	6	Infit							YES	1.00	0.02
ELA	6	Outfit							NO	1.15	0.02
ELA	6	Outfit							YES	1.08	0.03
ELA	6	Infit	ONLINE	FEMALE						1.03	0.03
ELA	6	Infit	ONLINE	MALE						1.03	0.03
ELA	6	Infit	PAPER	FEMALE						1.05	0.00
ELA	6	Infit	PAPER	MALE						1.01	0.00
ELA	6	Outfit	ONLINE	FEMALE						1.10	0.04
ELA	6	Outfit	ONLINE	MALE						1.12	0.04
ELA	6	Outfit	PAPER	FEMALE						1.13	0.01
ELA	6	Outfit	PAPER	MALE						1.10	0.00
ELA	6	Infit	ONLINE		NO					1.01	0.02

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	6	Infit	ONLINE		YES					1.05	0.05
ELA	6	Infit	PAPER		NO					0.99	0.00
ELA	6	Infit	PAPER		YES					1.07	0.01
ELA	6	Outfit	ONLINE		NO					1.07	0.03
ELA	6	Outfit	ONLINE		YES					1.16	0.06
ELA	6	Outfit	PAPER		NO					1.04	0.00
ELA	6	Outfit	PAPER		YES					1.19	0.01
ELA	6	Infit	ONLINE			NO				0.99	0.03
ELA	6	Infit	ONLINE			YES				1.07	0.03
ELA	6	Infit	PAPER			NO				1.00	0.00
ELA	6	Infit	PAPER			YES				1.05	0.00
ELA	6	Outfit	ONLINE			NO				1.03	0.04
ELA	6	Outfit	ONLINE			YES				1.19	0.04
ELA	6	Outfit	PAPER			NO				1.06	0.00
ELA	6	Outfit	PAPER			YES				1.17	0.01
ELA	6	Infit	ONLINE				NO			1.04	0.02
ELA	6	Infit	ONLINE				YES			1.02	0.04
ELA	6	Infit	PAPER				NO			1.04	0.00
ELA	6	Infit	PAPER				YES			1.02	0.01
ELA	6	Outfit	ONLINE				NO			1.09	0.03
ELA	6	Outfit	ONLINE				YES			1.14	0.05
ELA	6	Outfit	PAPER				NO			1.12	0.00
ELA	6	Outfit	PAPER				YES			1.11	0.01
ELA	6	Infit	ONLINE					NO		1.05	0.02
ELA	6	Infit	ONLINE					YES		1.01	0.04
ELA	6	Infit	PAPER					NO		1.04	0.00
ELA	6	Infit	PAPER					YES		1.01	0.01
ELA	6	Outfit	ONLINE					NO		1.13	0.03
ELA	6	Outfit	ONLINE					YES		1.09	0.05
ELA	6	Outfit	PAPER					NO		1.13	0.00
ELA	6	Outfit	PAPER					YES		1.10	0.01
ELA	6	Infit	ONLINE						NO	1.06	0.02
ELA	6	Infit	ONLINE						YES	1.00	0.04
ELA	6	Infit	PAPER						NO	1.05	0.00
ELA	6	Infit	PAPER						YES	1.01	0.01
ELA	6	Outfit	ONLINE						NO	1.15	0.03
ELA	6	Outfit	ONLINE						YES	1.08	0.05
ELA	6	Outfit	PAPER						NO	1.14	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	6	Outfit	PAPER						YES	1.08	0.01
ELA	7	Infit	ONLINE							1.05	0.03
ELA	7	Infit	PAPER							1.07	0.00
ELA	7	Outfit	ONLINE							1.25	0.04
ELA	7	Outfit	PAPER							1.21	0.00
ELA	7	Infit		FEMALE						1.06	0.01
ELA	7	Infit		MALE						1.06	0.01
ELA	7	Outfit		FEMALE						1.22	0.02
ELA	7	Outfit		MALE						1.24	0.02
ELA	7	Infit			NO					1.00	0.01
ELA	7	Infit			YES					1.12	0.02
ELA	7	Outfit			NO					1.09	0.01
ELA	7	Outfit			YES					1.37	0.03
ELA	7	Infit				NO				1.01	0.01
ELA	7	Infit				YES				1.11	0.01
ELA	7	Outfit				NO				1.13	0.02
ELA	7	Outfit				YES				1.33	0.02
ELA	7	Infit					NO			1.07	0.01
ELA	7	Infit					YES			1.05	0.02
ELA	7	Outfit					NO			1.20	0.01
ELA	7	Outfit					YES			1.26	0.03
ELA	7	Infit						NO		1.08	0.01
ELA	7	Infit						YES		1.04	0.02
ELA	7	Outfit						NO		1.23	0.02
ELA	7	Outfit						YES		1.23	0.03
ELA	7	Infit							NO	1.08	0.01
ELA	7	Infit							YES	1.04	0.02
ELA	7	Outfit							NO	1.24	0.02
ELA	7	Outfit							YES	1.21	0.02
ELA	7	Infit	ONLINE	FEMALE						1.05	0.03
ELA	7	Infit	ONLINE	MALE						1.06	0.03
ELA	7	Infit	PAPER	FEMALE						1.07	0.00
ELA	7	Infit	PAPER	MALE						1.06	0.00
ELA	7	Outfit	ONLINE	FEMALE						1.24	0.04
ELA	7	Outfit	ONLINE	MALE						1.26	0.04
ELA	7	Outfit	PAPER	FEMALE						1.21	0.01
ELA	7	Outfit	PAPER	MALE						1.21	0.00
ELA	7	Infit	ONLINE		NO					1.00	0.02

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	7	Infit	ONLINE		YES					1.11	0.05
ELA	7	Infit	PAPER		NO					1.00	0.00
ELA	7	Infit	PAPER		YES					1.13	0.01
ELA	7	Outfit	ONLINE		NO					1.11	0.02
ELA	7	Outfit	ONLINE		YES					1.39	0.06
ELA	7	Outfit	PAPER		NO					1.07	0.00
ELA	7	Outfit	PAPER		YES					1.34	0.01
ELA	7	Infit	ONLINE			NO				1.00	0.03
ELA	7	Infit	ONLINE			YES				1.11	0.03
ELA	7	Infit	PAPER			NO				1.03	0.00
ELA	7	Infit	PAPER			YES				1.10	0.00
ELA	7	Outfit	ONLINE			NO				1.14	0.04
ELA	7	Outfit	ONLINE			YES				1.36	0.04
ELA	7	Outfit	PAPER			NO				1.12	0.00
ELA	7	Outfit	PAPER			YES				1.29	0.01
ELA	7	Infit	ONLINE				NO			1.06	0.02
ELA	7	Infit	ONLINE				YES			1.05	0.04
ELA	7	Infit	PAPER				NO			1.08	0.00
ELA	7	Infit	PAPER				YES			1.06	0.01
ELA	7	Outfit	ONLINE				NO			1.19	0.03
ELA	7	Outfit	ONLINE				YES			1.30	0.05
ELA	7	Outfit	PAPER				NO			1.20	0.00
ELA	7	Outfit	PAPER				YES			1.21	0.01
ELA	7	Infit	ONLINE					NO		1.07	0.03
ELA	7	Infit	ONLINE					YES		1.04	0.04
ELA	7	Infit	PAPER					NO		1.09	0.00
ELA	7	Infit	PAPER					YES		1.05	0.01
ELA	7	Outfit	ONLINE					NO		1.23	0.03
ELA	7	Outfit	ONLINE					YES		1.27	0.05
ELA	7	Outfit	PAPER					NO		1.22	0.00
ELA	7	Outfit	PAPER					YES		1.20	0.01
ELA	7	Infit	ONLINE						NO	1.08	0.02
ELA	7	Infit	ONLINE						YES	1.03	0.04
ELA	7	Infit	PAPER						NO	1.08	0.00
ELA	7	Infit	PAPER						YES	1.05	0.00
ELA	7	Outfit	ONLINE						NO	1.25	0.03
ELA	7	Outfit	ONLINE						YES	1.25	0.05
ELA	7	Outfit	PAPER						NO	1.23	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	7	Outfit	PAPER						YES	1.18	0.01
ELA	8	Infit	ONLINE							1.07	0.03
ELA	8	Infit	PAPER							1.03	0.00
ELA	8	Outfit	ONLINE							1.22	0.05
ELA	8	Outfit	PAPER							1.12	0.01
ELA	8	Infit		FEMALE						1.05	0.02
ELA	8	Infit		MALE						1.04	0.02
ELA	8	Outfit		FEMALE						1.18	0.02
ELA	8	Outfit		MALE						1.16	0.02
ELA	8	Infit			NO					0.99	0.01
ELA	8	Infit			YES					1.11	0.03
ELA	8	Outfit			NO					1.05	0.01
ELA	8	Outfit			YES					1.29	0.04
ELA	8	Infit				NO				1.02	0.02
ELA	8	Infit				YES				1.07	0.02
ELA	8	Outfit				NO				1.11	0.02
ELA	8	Outfit				YES				1.23	0.02
ELA	8	Infit					NO			1.06	0.01
ELA	8	Infit					YES			1.04	0.02
ELA	8	Outfit					NO			1.19	0.02
ELA	8	Outfit					YES			1.15	0.03
ELA	8	Infit						NO		1.07	0.01
ELA	8	Infit						YES		1.03	0.02
ELA	8	Outfit						NO		1.20	0.02
ELA	8	Outfit						YES		1.14	0.03
ELA	8	Infit							NO	1.07	0.01
ELA	8	Infit							YES	1.03	0.02
ELA	8	Outfit							NO	1.21	0.02
ELA	8	Outfit							YES	1.13	0.03
ELA	8	Infit	ONLINE	FEMALE						1.07	0.03
ELA	8	Infit	ONLINE	MALE						1.07	0.03
ELA	8	Infit	PAPER	FEMALE						1.04	0.00
ELA	8	Infit	PAPER	MALE						1.01	0.00
ELA	8	Outfit	ONLINE	FEMALE						1.22	0.05
ELA	8	Outfit	ONLINE	MALE						1.22	0.05
ELA	8	Outfit	PAPER	FEMALE						1.14	0.01
ELA	8	Outfit	PAPER	MALE						1.10	0.01
ELA	8	Infit	ONLINE		NO					0.99	0.02

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
ELA	8	Infit	ONLINE		YES					1.15	0.05
ELA	8	Infit	PAPER		NO					0.98	0.00
ELA	8	Infit	PAPER		YES					1.07	0.01
ELA	8	Outfit	ONLINE		NO					1.06	0.03
ELA	8	Outfit	ONLINE		YES					1.38	0.08
ELA	8	Outfit	PAPER		NO					1.03	0.00
ELA	8	Outfit	PAPER		YES					1.21	0.01
ELA	8	Infit	ONLINE			NO				1.04	0.03
ELA	8	Infit	ONLINE			YES				1.10	0.03
ELA	8	Infit	PAPER			NO				1.00	0.00
ELA	8	Infit	PAPER			YES				1.05	0.00
ELA	8	Outfit	ONLINE			NO				1.15	0.05
ELA	8	Outfit	ONLINE			YES				1.29	0.05
ELA	8	Outfit	PAPER			NO				1.07	0.01
ELA	8	Outfit	PAPER			YES				1.16	0.01
ELA	8	Infit	ONLINE				NO			1.07	0.03
ELA	8	Infit	ONLINE				YES			1.07	0.04
ELA	8	Infit	PAPER				NO			1.04	0.00
ELA	8	Infit	PAPER				YES			1.01	0.01
ELA	8	Outfit	ONLINE				NO			1.23	0.04
ELA	8	Outfit	ONLINE				YES			1.21	0.06
ELA	8	Outfit	PAPER				NO			1.15	0.00
ELA	8	Outfit	PAPER				YES			1.08	0.01
ELA	8	Infit	ONLINE					NO		1.09	0.03
ELA	8	Infit	ONLINE					YES		1.05	0.04
ELA	8	Infit	PAPER					NO		1.04	0.00
ELA	8	Infit	PAPER					YES		1.01	0.01
ELA	8	Outfit	ONLINE					NO		1.25	0.04
ELA	8	Outfit	ONLINE					YES		1.19	0.06
ELA	8	Outfit	PAPER					NO		1.16	0.01
ELA	8	Outfit	PAPER					YES		1.08	0.01
ELA	8	Infit	ONLINE						NO	1.09	0.03
ELA	8	Infit	ONLINE						YES	1.05	0.04
ELA	8	Infit	PAPER						NO	1.04	0.00
ELA	8	Infit	PAPER						YES	1.01	0.01
ELA	8	Outfit	ONLINE						NO	1.26	0.04
ELA	8	Outfit	ONLINE						YES	1.18	0.06
ELA	8	Outfit	PAPER						NO	1.16	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	3	Outfit	PAPER						YES	1.08	0.01
Mathematics	3	Infit	ONLINE							1.09	0.03
Mathematics	3	Infit	PAPER							1.04	0.00
Mathematics	3	Outfit	ONLINE							1.13	0.05
Mathematics	3	Outfit	PAPER							1.09	0.00
Mathematics	3	Infit		FEMALE						1.07	0.02
Mathematics	3	Infit		MALE						1.06	0.02
Mathematics	3	Outfit		FEMALE						1.11	0.03
Mathematics	3	Outfit		MALE						1.11	0.03
Mathematics	3	Infit			NO					1.05	0.01
Mathematics	3	Infit			YES					1.07	0.03
Mathematics	3	Outfit			NO					1.09	0.02
Mathematics	3	Outfit			YES					1.13	0.04
Mathematics	3	Infit				NO				1.03	0.02
Mathematics	3	Infit				YES				1.09	0.02
Mathematics	3	Outfit				NO				1.04	0.03
Mathematics	3	Outfit				YES				1.18	0.03
Mathematics	3	Infit					NO			1.05	0.01
Mathematics	3	Infit					YES			1.08	0.02
Mathematics	3	Outfit					NO			1.07	0.02
Mathematics	3	Outfit					YES			1.15	0.04
Mathematics	3	Infit						NO		1.05	0.01
Mathematics	3	Infit						YES		1.07	0.02
Mathematics	3	Outfit						NO		1.08	0.02
Mathematics	3	Outfit						YES		1.13	0.04
Mathematics	3	Infit							NO	1.06	0.01
Mathematics	3	Infit							YES	1.06	0.02
Mathematics	3	Outfit							NO	1.11	0.02
Mathematics	3	Outfit							YES	1.11	0.03
Mathematics	3	Infit	ONLINE	FEMALE						1.09	0.03
Mathematics	3	Infit	ONLINE	MALE						1.08	0.03
Mathematics	3	Infit	PAPER	FEMALE						1.04	0.00
Mathematics	3	Infit	PAPER	MALE						1.03	0.00
Mathematics	3	Outfit	ONLINE	FEMALE						1.13	0.05
Mathematics	3	Outfit	ONLINE	MALE						1.14	0.05
Mathematics	3	Outfit	PAPER	FEMALE						1.09	0.00
Mathematics	3	Outfit	PAPER	MALE						1.09	0.00
Mathematics	3	Infit	ONLINE		NO					1.08	0.02

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	3	Infit	ONLINE		YES					1.09	0.06
Mathematics	3	Infit	PAPER		NO					1.02	0.00
Mathematics	3	Infit	PAPER		YES					1.05	0.00
Mathematics	3	Outfit	ONLINE		NO					1.13	0.03
Mathematics	3	Outfit	ONLINE		YES					1.14	0.09
Mathematics	3	Outfit	PAPER		NO					1.05	0.00
Mathematics	3	Outfit	PAPER		YES					1.12	0.01
Mathematics	3	Infit	ONLINE			NO				1.05	0.03
Mathematics	3	Infit	ONLINE			YES				1.12	0.03
Mathematics	3	Infit	PAPER			NO				1.01	0.00
Mathematics	3	Infit	PAPER			YES				1.06	0.00
Mathematics	3	Outfit	ONLINE			NO				1.05	0.05
Mathematics	3	Outfit	ONLINE			YES				1.21	0.05
Mathematics	3	Outfit	PAPER			NO				1.03	0.00
Mathematics	3	Outfit	PAPER			YES				1.14	0.00
Mathematics	3	Infit	ONLINE				NO			1.06	0.03
Mathematics	3	Infit	ONLINE				YES			1.11	0.05
Mathematics	3	Infit	PAPER				NO			1.03	0.00
Mathematics	3	Infit	PAPER				YES			1.05	0.00
Mathematics	3	Outfit	ONLINE				NO			1.09	0.04
Mathematics	3	Outfit	ONLINE				YES			1.17	0.07
Mathematics	3	Outfit	PAPER				NO			1.05	0.00
Mathematics	3	Outfit	PAPER				YES			1.12	0.00
Mathematics	3	Infit	ONLINE					NO		1.06	0.03
Mathematics	3	Infit	ONLINE					YES		1.11	0.05
Mathematics	3	Infit	PAPER					NO		1.04	0.00
Mathematics	3	Infit	PAPER					YES		1.04	0.00
Mathematics	3	Outfit	ONLINE					NO		1.10	0.04
Mathematics	3	Outfit	ONLINE					YES		1.17	0.07
Mathematics	3	Outfit	PAPER					NO		1.07	0.00
Mathematics	3	Outfit	PAPER					YES		1.10	0.00
Mathematics	3	Infit	ONLINE						NO	1.09	0.03
Mathematics	3	Infit	ONLINE						YES	1.08	0.05
Mathematics	3	Infit	PAPER						NO	1.04	0.00
Mathematics	3	Infit	PAPER						YES	1.04	0.00
Mathematics	3	Outfit	ONLINE						NO	1.13	0.04
Mathematics	3	Outfit	ONLINE						YES	1.13	0.07
Mathematics	3	Outfit	PAPER						NO	1.09	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	3	Outfit	PAPER						YES	1.08	0.00
Mathematics	4	Infit	ONLINE							1.07	0.04
Mathematics	4	Infit	PAPER							1.03	0.00
Mathematics	4	Outfit	ONLINE							1.15	0.05
Mathematics	4	Outfit	PAPER							1.11	0.00
Mathematics	4	Infit		FEMALE						1.05	0.02
Mathematics	4	Infit		MALE						1.06	0.02
Mathematics	4	Outfit		FEMALE						1.12	0.03
Mathematics	4	Outfit		MALE						1.14	0.03
Mathematics	4	Infit			NO					1.03	0.01
Mathematics	4	Infit			YES					1.08	0.04
Mathematics	4	Outfit			NO					1.08	0.02
Mathematics	4	Outfit			YES					1.18	0.04
Mathematics	4	Infit				NO				1.02	0.02
Mathematics	4	Infit				YES				1.08	0.02
Mathematics	4	Outfit				NO				1.05	0.03
Mathematics	4	Outfit				YES				1.21	0.03
Mathematics	4	Infit					NO			1.04	0.02
Mathematics	4	Infit					YES			1.06	0.03
Mathematics	4	Outfit					NO			1.09	0.02
Mathematics	4	Outfit					YES			1.17	0.03
Mathematics	4	Infit						NO		1.05	0.02
Mathematics	4	Infit						YES		1.06	0.03
Mathematics	4	Outfit						NO		1.11	0.02
Mathematics	4	Outfit						YES		1.15	0.03
Mathematics	4	Infit							NO	1.05	0.02
Mathematics	4	Infit							YES	1.05	0.03
Mathematics	4	Outfit							NO	1.14	0.02
Mathematics	4	Outfit							YES	1.12	0.03
Mathematics	4	Infit	ONLINE	FEMALE						1.08	0.04
Mathematics	4	Infit	ONLINE	MALE						1.07	0.04
Mathematics	4	Infit	PAPER	FEMALE						1.02	0.00
Mathematics	4	Infit	PAPER	MALE						1.04	0.00
Mathematics	4	Outfit	ONLINE	FEMALE						1.15	0.05
Mathematics	4	Outfit	ONLINE	MALE						1.16	0.05
Mathematics	4	Outfit	PAPER	FEMALE						1.10	0.00
Mathematics	4	Outfit	PAPER	MALE						1.12	0.00
Mathematics	4	Infit	ONLINE		NO					1.03	0.03

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	4	Infit	ONLINE		YES					1.12	0.08
Mathematics	4	Infit	PAPER		NO					1.02	0.00
Mathematics	4	Infit	PAPER		YES					1.03	0.00
Mathematics	4	Outfit	ONLINE		NO					1.10	0.03
Mathematics	4	Outfit	ONLINE		YES					1.21	0.09
Mathematics	4	Outfit	PAPER		NO					1.07	0.00
Mathematics	4	Outfit	PAPER		YES					1.15	0.00
Mathematics	4	Infit	ONLINE			NO				1.03	0.04
Mathematics	4	Infit	ONLINE			YES				1.12	0.05
Mathematics	4	Infit	PAPER			NO				1.01	0.00
Mathematics	4	Infit	PAPER			YES				1.04	0.00
Mathematics	4	Outfit	ONLINE			NO				1.05	0.05
Mathematics	4	Outfit	ONLINE			YES				1.26	0.05
Mathematics	4	Outfit	PAPER			NO				1.05	0.00
Mathematics	4	Outfit	PAPER			YES				1.16	0.00
Mathematics	4	Infit	ONLINE				NO			1.05	0.04
Mathematics	4	Infit	ONLINE				YES			1.10	0.06
Mathematics	4	Infit	PAPER				NO			1.03	0.00
Mathematics	4	Infit	PAPER				YES			1.03	0.00
Mathematics	4	Outfit	ONLINE				NO			1.11	0.04
Mathematics	4	Outfit	ONLINE				YES			1.20	0.07
Mathematics	4	Outfit	PAPER				NO			1.07	0.00
Mathematics	4	Outfit	PAPER				YES			1.14	0.00
Mathematics	4	Infit	ONLINE					NO		1.06	0.04
Mathematics	4	Infit	ONLINE					YES		1.09	0.06
Mathematics	4	Infit	PAPER					NO		1.03	0.00
Mathematics	4	Infit	PAPER					YES		1.02	0.00
Mathematics	4	Outfit	ONLINE					NO		1.13	0.04
Mathematics	4	Outfit	ONLINE					YES		1.17	0.07
Mathematics	4	Outfit	PAPER					NO		1.09	0.00
Mathematics	4	Outfit	PAPER					YES		1.12	0.00
Mathematics	4	Infit	ONLINE						NO	1.07	0.04
Mathematics	4	Infit	ONLINE						YES	1.08	0.06
Mathematics	4	Infit	PAPER						NO	1.03	0.00
Mathematics	4	Infit	PAPER						YES	1.03	0.00
Mathematics	4	Outfit	ONLINE						NO	1.17	0.04
Mathematics	4	Outfit	ONLINE						YES	1.14	0.07
Mathematics	4	Outfit	PAPER						NO	1.11	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	4	Outfit	PAPER						YES	1.10	0.00
Mathematics	5	Infit	ONLINE							1.03	0.03
Mathematics	5	Infit	PAPER							1.03	0.00
Mathematics	5	Outfit	ONLINE							1.11	0.03
Mathematics	5	Outfit	PAPER							1.11	0.00
Mathematics	5	Infit		FEMALE						1.04	0.01
Mathematics	5	Infit		MALE						1.03	0.01
Mathematics	5	Outfit		FEMALE						1.11	0.02
Mathematics	5	Outfit		MALE						1.10	0.02
Mathematics	5	Infit			NO					1.03	0.01
Mathematics	5	Infit			YES					1.04	0.03
Mathematics	5	Outfit			NO					1.07	0.01
Mathematics	5	Outfit			YES					1.15	0.03
Mathematics	5	Infit				NO				1.02	0.01
Mathematics	5	Infit				YES				1.05	0.01
Mathematics	5	Outfit				NO				1.05	0.02
Mathematics	5	Outfit				YES				1.16	0.02
Mathematics	5	Infit					NO			1.03	0.01
Mathematics	5	Infit					YES			1.04	0.02
Mathematics	5	Outfit					NO			1.08	0.01
Mathematics	5	Outfit					YES			1.14	0.02
Mathematics	5	Infit						NO		1.03	0.01
Mathematics	5	Infit						YES		1.03	0.02
Mathematics	5	Outfit						NO		1.11	0.01
Mathematics	5	Outfit						YES		1.11	0.02
Mathematics	5	Infit							NO	1.04	0.01
Mathematics	5	Infit							YES	1.03	0.02
Mathematics	5	Outfit							NO	1.12	0.01
Mathematics	5	Outfit							YES	1.09	0.02
Mathematics	5	Infit	ONLINE	FEMALE						1.04	0.03
Mathematics	5	Infit	ONLINE	MALE						1.03	0.03
Mathematics	5	Infit	PAPER	FEMALE						1.04	0.00
Mathematics	5	Infit	PAPER	MALE						1.03	0.00
Mathematics	5	Outfit	ONLINE	FEMALE						1.12	0.03
Mathematics	5	Outfit	ONLINE	MALE						1.09	0.03
Mathematics	5	Outfit	PAPER	FEMALE						1.11	0.00
Mathematics	5	Outfit	PAPER	MALE						1.10	0.00
Mathematics	5	Infit	ONLINE		NO					1.03	0.01

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	5	Infit	ONLINE		YES					1.03	0.05
Mathematics	5	Infit	PAPER		NO					1.02	0.00
Mathematics	5	Infit	PAPER		YES					1.05	0.00
Mathematics	5	Outfit	ONLINE		NO					1.07	0.02
Mathematics	5	Outfit	ONLINE		YES					1.15	0.05
Mathematics	5	Outfit	PAPER		NO					1.07	0.00
Mathematics	5	Outfit	PAPER		YES					1.14	0.00
Mathematics	5	Infit	ONLINE			NO				1.01	0.03
Mathematics	5	Infit	ONLINE			YES				1.05	0.03
Mathematics	5	Infit	PAPER			NO				1.02	0.00
Mathematics	5	Infit	PAPER			YES				1.05	0.00
Mathematics	5	Outfit	ONLINE			NO				1.04	0.03
Mathematics	5	Outfit	ONLINE			YES				1.17	0.03
Mathematics	5	Outfit	PAPER			NO				1.06	0.00
Mathematics	5	Outfit	PAPER			YES				1.15	0.00
Mathematics	5	Infit	ONLINE				NO			1.02	0.02
Mathematics	5	Infit	ONLINE				YES			1.04	0.03
Mathematics	5	Infit	PAPER				NO			1.03	0.00
Mathematics	5	Infit	PAPER				YES			1.04	0.00
Mathematics	5	Outfit	ONLINE				NO			1.09	0.03
Mathematics	5	Outfit	ONLINE				YES			1.13	0.04
Mathematics	5	Outfit	PAPER				NO			1.07	0.00
Mathematics	5	Outfit	PAPER				YES			1.14	0.00
Mathematics	5	Infit	ONLINE					NO		1.03	0.03
Mathematics	5	Infit	ONLINE					YES		1.04	0.04
Mathematics	5	Infit	PAPER					NO		1.04	0.00
Mathematics	5	Infit	PAPER					YES		1.03	0.00
Mathematics	5	Outfit	ONLINE					NO		1.13	0.03
Mathematics	5	Outfit	ONLINE					YES		1.09	0.04
Mathematics	5	Outfit	PAPER					NO		1.09	0.00
Mathematics	5	Outfit	PAPER					YES		1.12	0.00
Mathematics	5	Infit	ONLINE						NO	1.04	0.02
Mathematics	5	Infit	ONLINE						YES	1.03	0.03
Mathematics	5	Infit	PAPER						NO	1.04	0.00
Mathematics	5	Infit	PAPER						YES	1.03	0.00
Mathematics	5	Outfit	ONLINE						NO	1.14	0.03
Mathematics	5	Outfit	ONLINE						YES	1.08	0.04
Mathematics	5	Outfit	PAPER						NO	1.11	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	5	Outfit	PAPER						YES	1.10	0.00
Mathematics	6	Infit	ONLINE							1.01	0.02
Mathematics	6	Infit	PAPER							1.03	0.00
Mathematics	6	Outfit	ONLINE							1.03	0.02
Mathematics	6	Outfit	PAPER							1.07	0.00
Mathematics	6	Infit		FEMALE						1.02	0.01
Mathematics	6	Infit		MALE						1.02	0.01
Mathematics	6	Outfit		FEMALE						1.05	0.01
Mathematics	6	Outfit		MALE						1.05	0.01
Mathematics	6	Infit			NO					1.02	0.01
Mathematics	6	Infit			YES					1.02	0.02
Mathematics	6	Outfit			NO					1.04	0.01
Mathematics	6	Outfit			YES					1.06	0.02
Mathematics	6	Infit				NO				1.01	0.01
Mathematics	6	Infit				YES				1.03	0.01
Mathematics	6	Outfit				NO				1.01	0.01
Mathematics	6	Outfit				YES				1.09	0.01
Mathematics	6	Infit					NO			1.02	0.01
Mathematics	6	Infit					YES			1.03	0.01
Mathematics	6	Outfit					NO			1.03	0.01
Mathematics	6	Outfit					YES			1.07	0.02
Mathematics	6	Infit						NO		1.02	0.01
Mathematics	6	Infit						YES		1.02	0.01
Mathematics	6	Outfit						NO		1.05	0.01
Mathematics	6	Outfit						YES		1.05	0.02
Mathematics	6	Infit							NO	1.02	0.01
Mathematics	6	Infit							YES	1.02	0.01
Mathematics	6	Outfit							NO	1.06	0.01
Mathematics	6	Outfit							YES	1.04	0.02
Mathematics	6	Infit	ONLINE	FEMALE						1.01	0.02
Mathematics	6	Infit	ONLINE	MALE						1.01	0.02
Mathematics	6	Infit	PAPER	FEMALE						1.03	0.00
Mathematics	6	Infit	PAPER	MALE						1.03	0.00
Mathematics	6	Outfit	ONLINE	FEMALE						1.03	0.03
Mathematics	6	Outfit	ONLINE	MALE						1.03	0.03
Mathematics	6	Outfit	PAPER	FEMALE						1.07	0.00
Mathematics	6	Outfit	PAPER	MALE						1.08	0.00
Mathematics	6	Infit	ONLINE		NO					1.02	0.01

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	6	Infit	ONLINE		YES					0.99	0.03
Mathematics	6	Infit	PAPER		NO					1.02	0.00
Mathematics	6	Infit	PAPER		YES					1.04	0.00
Mathematics	6	Outfit	ONLINE		NO					1.03	0.02
Mathematics	6	Outfit	ONLINE		YES					1.02	0.04
Mathematics	6	Outfit	PAPER		NO					1.04	0.00
Mathematics	6	Outfit	PAPER		YES					1.10	0.01
Mathematics	6	Infit	ONLINE			NO				1.00	0.02
Mathematics	6	Infit	ONLINE			YES				1.02	0.02
Mathematics	6	Infit	PAPER			NO				1.02	0.00
Mathematics	6	Infit	PAPER			YES				1.05	0.00
Mathematics	6	Outfit	ONLINE			NO				0.99	0.03
Mathematics	6	Outfit	ONLINE			YES				1.07	0.03
Mathematics	6	Outfit	PAPER			NO				1.03	0.00
Mathematics	6	Outfit	PAPER			YES				1.11	0.00
Mathematics	6	Infit	ONLINE				NO			1.00	0.02
Mathematics	6	Infit	ONLINE				YES			1.01	0.03
Mathematics	6	Infit	PAPER				NO			1.03	0.00
Mathematics	6	Infit	PAPER				YES			1.04	0.00
Mathematics	6	Outfit	ONLINE				NO			1.01	0.02
Mathematics	6	Outfit	ONLINE				YES			1.05	0.04
Mathematics	6	Outfit	PAPER				NO			1.05	0.00
Mathematics	6	Outfit	PAPER				YES			1.09	0.00
Mathematics	6	Infit	ONLINE					NO		1.01	0.02
Mathematics	6	Infit	ONLINE					YES		1.00	0.03
Mathematics	6	Infit	PAPER					NO		1.03	0.00
Mathematics	6	Infit	PAPER					YES		1.04	0.00
Mathematics	6	Outfit	ONLINE					NO		1.04	0.02
Mathematics	6	Outfit	ONLINE					YES		1.01	0.04
Mathematics	6	Outfit	PAPER					NO		1.06	0.00
Mathematics	6	Outfit	PAPER					YES		1.08	0.00
Mathematics	6	Infit	ONLINE						NO	1.01	0.02
Mathematics	6	Infit	ONLINE						YES	1.01	0.03
Mathematics	6	Infit	PAPER						NO	1.03	0.00
Mathematics	6	Infit	PAPER						YES	1.04	0.00
Mathematics	6	Outfit	ONLINE						NO	1.04	0.02
Mathematics	6	Outfit	ONLINE						YES	1.01	0.03
Mathematics	6	Outfit	PAPER						NO	1.07	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	6	Outfit	PAPER						YES	1.07	0.00
Mathematics	7	Infit	ONLINE							1.05	0.03
Mathematics	7	Infit	PAPER							1.07	0.00
Mathematics	7	Outfit	ONLINE							1.25	0.04
Mathematics	7	Outfit	PAPER							1.21	0.00
Mathematics	7	Infit		FEMALE						1.06	0.01
Mathematics	7	Infit		MALE						1.06	0.01
Mathematics	7	Outfit		FEMALE						1.22	0.02
Mathematics	7	Outfit		MALE						1.24	0.02
Mathematics	7	Infit			NO					1.00	0.01
Mathematics	7	Infit			YES					1.12	0.02
Mathematics	7	Outfit			NO					1.09	0.01
Mathematics	7	Outfit			YES					1.37	0.03
Mathematics	7	Infit				NO				1.01	0.01
Mathematics	7	Infit				YES				1.11	0.01
Mathematics	7	Outfit				NO				1.13	0.02
Mathematics	7	Outfit				YES				1.33	0.02
Mathematics	7	Infit					NO			1.07	0.01
Mathematics	7	Infit					YES			1.05	0.02
Mathematics	7	Outfit					NO			1.20	0.01
Mathematics	7	Outfit					YES			1.26	0.03
Mathematics	7	Infit						NO		1.08	0.01
Mathematics	7	Infit						YES		1.04	0.02
Mathematics	7	Outfit						NO		1.23	0.02
Mathematics	7	Outfit						YES		1.23	0.03
Mathematics	7	Infit							NO	1.08	0.01
Mathematics	7	Infit							YES	1.04	0.02
Mathematics	7	Outfit							NO	1.24	0.02
Mathematics	7	Outfit							YES	1.21	0.02
Mathematics	7	Infit	ONLINE	FEMALE						1.05	0.03
Mathematics	7	Infit	ONLINE	MALE						1.06	0.03
Mathematics	7	Infit	PAPER	FEMALE						1.07	0.00
Mathematics	7	Infit	PAPER	MALE						1.06	0.00
Mathematics	7	Outfit	ONLINE	FEMALE						1.24	0.04
Mathematics	7	Outfit	ONLINE	MALE						1.26	0.04
Mathematics	7	Outfit	PAPER	FEMALE						1.21	0.01
Mathematics	7	Outfit	PAPER	MALE						1.21	0.00
Mathematics	7	Infit	ONLINE		NO					1.00	0.02

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	7	Infit	ONLINE		YES					1.11	0.05
Mathematics	7	Infit	PAPER		NO					1.00	0.00
Mathematics	7	Infit	PAPER		YES					1.13	0.01
Mathematics	7	Outfit	ONLINE		NO					1.11	0.02
Mathematics	7	Outfit	ONLINE		YES					1.39	0.06
Mathematics	7	Outfit	PAPER		NO					1.07	0.00
Mathematics	7	Outfit	PAPER		YES					1.34	0.01
Mathematics	7	Infit	ONLINE			NO				1.00	0.03
Mathematics	7	Infit	ONLINE			YES				1.11	0.03
Mathematics	7	Infit	PAPER			NO				1.03	0.00
Mathematics	7	Infit	PAPER			YES				1.10	0.00
Mathematics	7	Outfit	ONLINE			NO				1.14	0.04
Mathematics	7	Outfit	ONLINE			YES				1.36	0.04
Mathematics	7	Outfit	PAPER			NO				1.12	0.00
Mathematics	7	Outfit	PAPER			YES				1.29	0.01
Mathematics	7	Infit	ONLINE				NO			1.06	0.02
Mathematics	7	Infit	ONLINE				YES			1.05	0.04
Mathematics	7	Infit	PAPER				NO			1.08	0.00
Mathematics	7	Infit	PAPER				YES			1.06	0.01
Mathematics	7	Outfit	ONLINE				NO			1.19	0.03
Mathematics	7	Outfit	ONLINE				YES			1.30	0.05
Mathematics	7	Outfit	PAPER				NO			1.20	0.00
Mathematics	7	Outfit	PAPER				YES			1.21	0.01
Mathematics	7	Infit	ONLINE					NO		1.07	0.03
Mathematics	7	Infit	ONLINE					YES		1.04	0.04
Mathematics	7	Infit	PAPER					NO		1.09	0.00
Mathematics	7	Infit	PAPER					YES		1.05	0.01
Mathematics	7	Outfit	ONLINE					NO		1.23	0.03
Mathematics	7	Outfit	ONLINE					YES		1.27	0.05
Mathematics	7	Outfit	PAPER					NO		1.22	0.00
Mathematics	7	Outfit	PAPER					YES		1.20	0.01
Mathematics	7	Infit	ONLINE						NO	1.08	0.02
Mathematics	7	Infit	ONLINE						YES	1.03	0.04
Mathematics	7	Infit	PAPER						NO	1.08	0.00
Mathematics	7	Infit	PAPER						YES	1.05	0.00
Mathematics	7	Outfit	ONLINE						NO	1.25	0.03
Mathematics	7	Outfit	ONLINE						YES	1.25	0.05
Mathematics	7	Outfit	PAPER						NO	1.23	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	7	Outfit	PAPER						YES	1.18	0.01
Mathematics	8	Infit	ONLINE							1.07	0.02
Mathematics	8	Infit	PAPER							1.07	0.00
Mathematics	8	Outfit	ONLINE							1.12	0.02
Mathematics	8	Outfit	PAPER							1.16	0.00
Mathematics	8	Infit		FEMALE						1.07	0.01
Mathematics	8	Infit		MALE						1.07	0.01
Mathematics	8	Outfit		FEMALE						1.14	0.01
Mathematics	8	Outfit		MALE						1.14	0.01
Mathematics	8	Infit			NO					1.05	0.00
Mathematics	8	Infit			YES					1.09	0.01
Mathematics	8	Outfit			NO					1.10	0.01
Mathematics	8	Outfit			YES					1.18	0.02
Mathematics	8	Infit				NO				1.03	0.01
Mathematics	8	Infit				YES				1.10	0.01
Mathematics	8	Outfit				NO				1.06	0.01
Mathematics	8	Outfit				YES				1.22	0.01
Mathematics	8	Infit					NO			1.05	0.01
Mathematics	8	Infit					YES			1.09	0.01
Mathematics	8	Outfit					NO			1.09	0.01
Mathematics	8	Outfit					YES			1.18	0.01
Mathematics	8	Infit						NO		1.06	0.01
Mathematics	8	Infit						YES		1.08	0.01
Mathematics	8	Outfit						NO		1.12	0.01
Mathematics	8	Outfit						YES		1.16	0.01
Mathematics	8	Infit							NO	1.07	0.01
Mathematics	8	Infit							YES	1.07	0.01
Mathematics	8	Outfit							NO	1.15	0.01
Mathematics	8	Outfit							YES	1.13	0.01
Mathematics	8	Infit	ONLINE	FEMALE						1.07	0.02
Mathematics	8	Infit	ONLINE	MALE						1.07	0.02
Mathematics	8	Infit	PAPER	FEMALE						1.07	0.00
Mathematics	8	Infit	PAPER	MALE						1.07	0.00
Mathematics	8	Outfit	ONLINE	FEMALE						1.12	0.02
Mathematics	8	Outfit	ONLINE	MALE						1.12	0.02
Mathematics	8	Outfit	PAPER	FEMALE						1.15	0.00
Mathematics	8	Outfit	PAPER	MALE						1.16	0.00
Mathematics	8	Infit	ONLINE		NO					1.06	0.01

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	8	Infit	ONLINE		YES					1.08	0.03
Mathematics	8	Infit	PAPER		NO					1.04	0.00
Mathematics	8	Infit	PAPER		YES					1.10	0.00
Mathematics	8	Outfit	ONLINE		NO					1.10	0.01
Mathematics	8	Outfit	ONLINE		YES					1.14	0.04
Mathematics	8	Outfit	PAPER		NO					1.10	0.00
Mathematics	8	Outfit	PAPER		YES					1.21	0.00
Mathematics	8	Infit	ONLINE			NO				1.04	0.02
Mathematics	8	Infit	ONLINE			YES				1.10	0.02
Mathematics	8	Infit	PAPER			NO				1.03	0.00
Mathematics	8	Infit	PAPER			YES				1.11	0.00
Mathematics	8	Outfit	ONLINE			NO				1.04	0.02
Mathematics	8	Outfit	ONLINE			YES				1.20	0.02
Mathematics	8	Outfit	PAPER			NO				1.08	0.00
Mathematics	8	Outfit	PAPER			YES				1.23	0.00
Mathematics	8	Infit	ONLINE				NO			1.04	0.01
Mathematics	8	Infit	ONLINE				YES			1.09	0.02
Mathematics	8	Infit	PAPER				NO			1.05	0.00
Mathematics	8	Infit	PAPER				YES			1.09	0.00
Mathematics	8	Outfit	ONLINE				NO			1.08	0.02
Mathematics	8	Outfit	ONLINE				YES			1.16	0.03
Mathematics	8	Outfit	PAPER				NO			1.11	0.00
Mathematics	8	Outfit	PAPER				YES			1.20	0.00
Mathematics	8	Infit	ONLINE					NO		1.06	0.01
Mathematics	8	Infit	ONLINE					YES		1.08	0.02
Mathematics	8	Infit	PAPER					NO		1.06	0.00
Mathematics	8	Infit	PAPER					YES		1.08	0.00
Mathematics	8	Outfit	ONLINE					NO		1.11	0.02
Mathematics	8	Outfit	ONLINE					YES		1.13	0.03
Mathematics	8	Outfit	PAPER					NO		1.12	0.00
Mathematics	8	Outfit	PAPER					YES		1.19	0.00
Mathematics	8	Infit	ONLINE						NO	1.07	0.01
Mathematics	8	Infit	ONLINE						YES	1.07	0.02
Mathematics	8	Infit	PAPER						NO	1.07	0.00
Mathematics	8	Infit	PAPER						YES	1.07	0.00
Mathematics	8	Outfit	ONLINE						NO	1.14	0.02
Mathematics	8	Outfit	ONLINE						YES	1.10	0.03
Mathematics	8	Outfit	PAPER						NO	1.15	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Mathematics	8	Outfit	PAPER						YES	1.16	0.00
Science	4	Infit	ONLINE							1.03	0.01
Science	4	Infit	PAPER							1.04	0.00
Science	4	Outfit	ONLINE							1.05	0.02
Science	4	Outfit	PAPER							1.07	0.00
Science	4	Infit		FEMALE						1.03	0.01
Science	4	Infit		MALE						1.04	0.01
Science	4	Outfit		FEMALE						1.06	0.01
Science	4	Outfit		MALE						1.07	0.01
Science	4	Infit			NO					1.02	0.00
Science	4	Infit			YES					1.05	0.01
Science	4	Outfit			NO					1.02	0.01
Science	4	Outfit			YES					1.11	0.02
Science	4	Infit				NO				1.02	0.01
Science	4	Infit				YES				1.05	0.01
Science	4	Outfit				NO				1.02	0.01
Science	4	Outfit				YES				1.11	0.01
Science	4	Infit					NO			1.02	0.00
Science	4	Infit					YES			1.05	0.01
Science	4	Outfit					NO			1.03	0.01
Science	4	Outfit					YES			1.10	0.02
Science	4	Infit						NO		1.03	0.00
Science	4	Infit						YES		1.04	0.01
Science	4	Outfit						NO		1.06	0.01
Science	4	Outfit						YES		1.07	0.02
Science	4	Infit							NO	1.03	0.00
Science	4	Infit							YES	1.04	0.01
Science	4	Outfit							NO	1.07	0.01
Science	4	Outfit							YES	1.06	0.02
Science	4	Infit	ONLINE	FEMALE						1.03	0.01
Science	4	Infit	ONLINE	MALE						1.04	0.01
Science	4	Infit	PAPER	FEMALE						1.03	0.00
Science	4	Infit	PAPER	MALE						1.05	0.00
Science	4	Outfit	ONLINE	FEMALE						1.05	0.02
Science	4	Outfit	ONLINE	MALE						1.05	0.02
Science	4	Outfit	PAPER	FEMALE						1.06	0.00
Science	4	Outfit	PAPER	MALE						1.08	0.00
Science	4	Infit	ONLINE		NO					1.02	0.01

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Science	4	Infit	ONLINE		YES					1.05	0.02
Science	4	Infit	PAPER		NO					1.03	0.00
Science	4	Infit	PAPER		YES					1.05	0.00
Science	4	Outfit	ONLINE		NO					1.01	0.02
Science	4	Outfit	ONLINE		YES					1.10	0.03
Science	4	Outfit	PAPER		NO					1.03	0.00
Science	4	Outfit	PAPER		YES					1.11	0.00
Science	4	Infit	ONLINE			NO				1.02	0.01
Science	4	Infit	ONLINE			YES				1.05	0.01
Science	4	Infit	PAPER			NO				1.03	0.00
Science	4	Infit	PAPER			YES				1.05	0.00
Science	4	Outfit	ONLINE			NO				1.00	0.02
Science	4	Outfit	ONLINE			YES				1.11	0.02
Science	4	Outfit	PAPER			NO				1.03	0.00
Science	4	Outfit	PAPER			YES				1.11	0.00
Science	4	Infit	ONLINE				NO			1.02	0.01
Science	4	Infit	ONLINE				YES			1.05	0.02
Science	4	Infit	PAPER				NO			1.03	0.00
Science	4	Infit	PAPER				YES			1.05	0.00
Science	4	Outfit	ONLINE				NO			1.02	0.02
Science	4	Outfit	ONLINE				YES			1.09	0.03
Science	4	Outfit	PAPER				NO			1.04	0.00
Science	4	Outfit	PAPER				YES			1.11	0.00
Science	4	Infit	ONLINE					NO		1.03	0.01
Science	4	Infit	ONLINE					YES		1.04	0.02
Science	4	Infit	PAPER					NO		1.04	0.00
Science	4	Infit	PAPER					YES		1.04	0.00
Science	4	Outfit	ONLINE					NO		1.05	0.02
Science	4	Outfit	ONLINE					YES		1.06	0.03
Science	4	Outfit	PAPER					NO		1.06	0.00
Science	4	Outfit	PAPER					YES		1.09	0.00
Science	4	Infit	ONLINE						NO	1.03	0.01
Science	4	Infit	ONLINE						YES	1.04	0.02
Science	4	Infit	PAPER						NO	1.04	0.00
Science	4	Infit	PAPER						YES	1.04	0.00
Science	4	Outfit	ONLINE						NO	1.06	0.02
Science	4	Outfit	ONLINE						YES	1.05	0.03
Science	4	Outfit	PAPER						NO	1.08	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Science	4	Outfit	PAPER						YES	1.07	0.00
Science	8	Infit	ONLINE							1.03	0.01
Science	8	Infit	PAPER							1.04	0.00
Science	8	Outfit	ONLINE							1.04	0.01
Science	8	Outfit	PAPER							1.05	0.00
Science	8	Infit		FEMALE						1.04	0.01
Science	8	Infit		MALE						1.03	0.01
Science	8	Outfit		FEMALE						1.06	0.01
Science	8	Outfit		MALE						1.04	0.01
Science	8	Infit			NO					1.02	0.00
Science	8	Infit			YES					1.05	0.01
Science	8	Outfit			NO					1.02	0.00
Science	8	Outfit			YES					1.07	0.01
Science	8	Infit				NO				1.03	0.01
Science	8	Infit				YES				1.04	0.01
Science	8	Outfit				NO				1.03	0.01
Science	8	Outfit				YES				1.07	0.01
Science	8	Infit					NO			1.03	0.00
Science	8	Infit					YES			1.04	0.01
Science	8	Outfit					NO			1.04	0.01
Science	8	Outfit					YES			1.06	0.01
Science	8	Infit						NO		1.04	0.00
Science	8	Infit						YES		1.04	0.01
Science	8	Outfit						NO		1.05	0.01
Science	8	Outfit						YES		1.05	0.01
Science	8	Infit							NO	1.04	0.00
Science	8	Infit							YES	1.03	0.01
Science	8	Outfit							NO	1.06	0.01
Science	8	Outfit							YES	1.04	0.01
Science	8	Infit	ONLINE	FEMALE						1.04	0.01
Science	8	Infit	ONLINE	MALE						1.02	0.01
Science	8	Infit	PAPER	FEMALE						1.05	0.00
Science	8	Infit	PAPER	MALE						1.03	0.00
Science	8	Outfit	ONLINE	FEMALE						1.06	0.01
Science	8	Outfit	ONLINE	MALE						1.03	0.01
Science	8	Outfit	PAPER	FEMALE						1.07	0.00
Science	8	Outfit	PAPER	MALE						1.04	0.00
Science	8	Infit	ONLINE		NO					1.02	0.01

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Science	8	Infit	ONLINE		YES					1.04	0.02
Science	8	Infit	PAPER		NO					1.03	0.00
Science	8	Infit	PAPER		YES					1.06	0.00
Science	8	Outfit	ONLINE		NO					1.02	0.01
Science	8	Outfit	ONLINE		YES					1.06	0.02
Science	8	Outfit	PAPER		NO					1.03	0.00
Science	8	Outfit	PAPER		YES					1.08	0.00
Science	8	Infit	ONLINE			NO				1.03	0.01
Science	8	Infit	ONLINE			YES				1.04	0.01
Science	8	Infit	PAPER			NO				1.03	0.00
Science	8	Infit	PAPER			YES				1.05	0.00
Science	8	Outfit	ONLINE			NO				1.02	0.01
Science	8	Outfit	ONLINE			YES				1.06	0.01
Science	8	Outfit	PAPER			NO				1.03	0.00
Science	8	Outfit	PAPER			YES				1.08	0.00
Science	8	Infit	ONLINE				NO			1.03	0.01
Science	8	Infit	ONLINE				YES			1.04	0.01
Science	8	Infit	PAPER				NO			1.03	0.00
Science	8	Infit	PAPER				YES			1.05	0.00
Science	8	Outfit	ONLINE				NO			1.03	0.01
Science	8	Outfit	ONLINE				YES			1.05	0.02
Science	8	Outfit	PAPER				NO			1.04	0.00
Science	8	Outfit	PAPER				YES			1.07	0.00
Science	8	Infit	ONLINE					NO		1.04	0.01
Science	8	Infit	ONLINE					YES		1.03	0.01
Science	8	Infit	PAPER					NO		1.04	0.00
Science	8	Infit	PAPER					YES		1.05	0.00
Science	8	Outfit	ONLINE					NO		1.04	0.01
Science	8	Outfit	ONLINE					YES		1.04	0.02
Science	8	Outfit	PAPER					NO		1.05	0.00
Science	8	Outfit	PAPER					YES		1.06	0.00
Science	8	Infit	ONLINE						NO	1.04	0.01
Science	8	Infit	ONLINE						YES	1.03	0.01
Science	8	Infit	PAPER						NO	1.04	0.00
Science	8	Infit	PAPER						YES	1.04	0.00
Science	8	Outfit	ONLINE						NO	1.05	0.01
Science	8	Outfit	ONLINE						YES	1.03	0.02
Science	8	Outfit	PAPER						NO	1.06	0.00

Content	Grade	Fit Statistic	Mode	Gender	ELL	IEP	Black	Hispanic	White	Predicted Mean	STD
Science	8	Outfit	PAPER						YES	1.05	0.00

Table 11 Predicted Mean Fit by Device

Content	Grade	Fit Statistic	Chromebook	Macintosh	Windows	Predicted Mean	STD
ELA	3	Infit	NO			1.04	0.01
ELA	3	Infit	YES			1.03	0.02
ELA	3	Outfit	NO			1.03	0.01
ELA	3	Outfit	YES			1.06	0.02
ELA	3	Infit		NO		1.02	0.01
ELA	3	Infit		YES		1.05	0.02
ELA	3	Outfit		NO		1.02	0.01
ELA	3	Outfit		YES		1.07	0.03
ELA	3	Infit			NO	1.04	0.01
ELA	3	Infit			YES	1.03	0.02
ELA	3	Outfit			NO	1.02	0.02
ELA	3	Outfit			YES	1.08	0.02
ELA	4	Infit	NO			1.00	0.02
ELA	4	Infit	YES			1.06	0.03
ELA	4	Outfit	NO			1.07	0.03
ELA	4	Outfit	YES			1.13	0.04
ELA	4	Infit		NO		1.02	0.01
ELA	4	Infit		YES		1.04	0.05
ELA	4	Outfit		NO		1.07	0.02
ELA	4	Outfit		YES		1.13	0.07
ELA	4	Infit			NO	1.02	0.03
ELA	4	Infit			YES	1.04	0.03
ELA	4	Outfit			NO	1.09	0.04
ELA	4	Outfit			YES	1.11	0.04
ELA	5	Infit	NO			1.04	0.02
ELA	5	Infit	YES			1.11	0.03
ELA	5	Outfit	NO			1.09	0.02
ELA	5	Outfit	YES			1.23	0.03
ELA	5	Infit		NO		1.04	0.01
ELA	5	Infit		YES		1.11	0.04
ELA	5	Outfit		NO		1.10	0.01
ELA	5	Outfit		YES		1.23	0.04
ELA	5	Infit			NO	1.07	0.02
ELA	5	Infit			YES	1.08	0.02

Content	Grade	Fit Statistic	Chromebook	Macintosh	Windows	Predicted Mean	STD
ELA	5	Outfit			NO	1.15	0.03
ELA	5	Outfit			YES	1.18	0.03
ELA	6	Infit	NO			0.99	0.01
ELA	6	Infit	YES			1.02	0.02
ELA	6	Outfit	NO			1.01	0.01
ELA	6	Outfit	YES			1.03	0.02
ELA	6	Infit		NO		1.01	0.01
ELA	6	Infit		YES		1.00	0.02
ELA	6	Outfit		NO		1.03	0.01
ELA	6	Outfit		YES		1.01	0.02
ELA	6	Infit			NO	1.00	0.01
ELA	6	Infit			YES	1.01	0.01
ELA	6	Outfit			NO	1.01	0.01
ELA	6	Outfit			YES	1.03	0.02
ELA	7	Infit	NO			0.97	0.01
ELA	7	Infit	YES			0.98	0.01
ELA	7	Outfit	NO			0.99	0.01
ELA	7	Outfit	YES			1.01	0.02
ELA	7	Infit		NO		0.99	0.01
ELA	7	Infit		YES		0.97	0.01
ELA	7	Outfit		NO		1.02	0.01
ELA	7	Outfit		YES		0.98	0.02
ELA	7	Infit			NO	0.99	0.01
ELA	7	Infit			YES	0.97	0.01
ELA	7	Outfit			NO	1.01	0.01
ELA	7	Outfit			YES	1.00	0.01
ELA	8	Infit	NO			0.98	0.01
ELA	8	Infit	YES			0.99	0.01
ELA	8	Outfit	NO			1.03	0.01
ELA	8	Outfit	YES			1.03	0.02
ELA	8	Infit		NO		0.99	0.01
ELA	8	Infit		YES		0.98	0.01
ELA	8	Outfit		NO		1.05	0.01
ELA	8	Outfit		YES		1.00	0.02
ELA	8	Infit			NO	0.98	0.01
ELA	8	Infit			YES	1.00	0.01
ELA	8	Outfit			NO	1.02	0.01
ELA	8	Outfit			YES	1.03	0.02

Content	Grade	Fit Statistic	Chromebook	Macintosh	Windows	Predicted Mean	STD
Mathematics	3	Infit	NO			1.03	0.01
Mathematics	3	Infit	YES			1.09	0.02
Mathematics	3	Outfit	NO			1.04	0.01
Mathematics	3	Outfit	YES			1.14	0.02
Mathematics	3	Infit		NO		1.04	0.01
Mathematics	3	Infit		YES		1.07	0.02
Mathematics	3	Outfit		NO		1.06	0.01
Mathematics	3	Outfit		YES		1.13	0.03
Mathematics	3	Infit			NO	1.04	0.01
Mathematics	3	Infit			YES	1.08	0.01
Mathematics	3	Outfit			NO	1.06	0.02
Mathematics	3	Outfit			YES	1.13	0.02
Mathematics	4	Infit	NO			1.02	0.01
Mathematics	4	Infit	YES			1.00	0.02
Mathematics	4	Outfit	NO			1.03	0.01
Mathematics	4	Outfit	YES			1.09	0.02
Mathematics	4	Infit		NO		1.00	0.01
Mathematics	4	Infit		YES		1.02	0.03
Mathematics	4	Outfit		NO		1.03	0.01
Mathematics	4	Outfit		YES		1.09	0.03
Mathematics	4	Infit			NO	1.02	0.01
Mathematics	4	Infit			YES	1.00	0.02
Mathematics	4	Outfit			NO	1.05	0.02
Mathematics	4	Outfit			YES	1.07	0.02
Mathematics	5	Infit	NO			1.01	0.01
Mathematics	5	Infit	YES			1.04	0.01
Mathematics	5	Outfit	NO			1.03	0.01
Mathematics	5	Outfit	YES			1.14	0.02
Mathematics	5	Infit		NO		1.03	0.01
Mathematics	5	Infit		YES		1.03	0.02
Mathematics	5	Outfit		NO		1.07	0.01
Mathematics	5	Outfit		YES		1.11	0.02
Mathematics	5	Infit			NO	1.03	0.01
Mathematics	5	Infit			YES	1.03	0.01
Mathematics	5	Outfit			NO	1.07	0.01
Mathematics	5	Outfit			YES	1.11	0.01
Mathematics	6	Infit	NO			1.02	0.01
Mathematics	6	Infit	YES			1.04	0.01

Content	Grade	Fit Statistic	Chromebook	Macintosh	Windows	Predicted Mean	STD
Mathematics	6	Outfit	NO			1.00	0.01
Mathematics	6	Outfit	YES			1.02	0.01
Mathematics	6	Infit		NO		1.02	0.01
Mathematics	6	Infit		YES		1.05	0.01
Mathematics	6	Outfit		NO		1.01	0.01
Mathematics	6	Outfit		YES		1.02	0.01
Mathematics	6	Infit			NO	1.03	0.01
Mathematics	6	Infit			YES	1.03	0.01
Mathematics	6	Outfit			NO	1.01	0.01
Mathematics	6	Outfit			YES	1.02	0.01
Mathematics	7	Infit	NO			0.97	0.01
Mathematics	7	Infit	YES			0.98	0.01
Mathematics	7	Outfit	NO			0.99	0.01
Mathematics	7	Outfit	YES			1.01	0.02
Mathematics	7	Infit		NO		0.99	0.01
Mathematics	7	Infit		YES		0.97	0.01
Mathematics	7	Outfit		NO		1.02	0.01
Mathematics	7	Outfit		YES		0.98	0.02
Mathematics	7	Infit			NO	0.99	0.01
Mathematics	7	Infit			YES	0.97	0.01
Mathematics	7	Outfit			NO	1.01	0.01
Mathematics	7	Outfit			YES	1.00	0.01
Mathematics	8	Infit	NO			1.01	0.00
Mathematics	8	Infit	YES			1.05	0.01
Mathematics	8	Outfit	NO			1.00	0.00
Mathematics	8	Outfit	YES			1.06	0.01
Mathematics	8	Infit		NO		1.02	0.00
Mathematics	8	Infit		YES		1.04	0.01
Mathematics	8	Outfit		NO		1.03	0.01
Mathematics	8	Outfit		YES		1.03	0.01
Mathematics	8	Infit			NO	1.02	0.00
Mathematics	8	Infit			YES	1.04	0.01
Mathematics	8	Outfit			NO	1.02	0.01
Mathematics	8	Outfit			YES	1.04	0.01
Mathematics	4	Infit	NO			1.00	0.00
Science	4	Infit	YES			0.99	0.01
Science	4	Outfit	NO			0.94	0.01
Science	4	Outfit	YES			0.92	0.01

Content	Grade	Fit Statistic	Chromebook	Macintosh	Windows	Predicted Mean	STD
Science	4	Infit		NO		1.00	0.00
Science	4	Infit		YES		0.99	0.01
Science	4	Outfit		NO		0.96	0.01
Science	4	Outfit		YES		0.90	0.01
Science	4	Infit			NO	1.00	0.00
Science	4	Infit			YES	0.99	0.01
Science	4	Outfit			NO	0.93	0.01
Science	4	Outfit			YES	0.93	0.01
Science	8	Infit	NO			1.02	0.00
Science	8	Infit	YES			1.03	0.00
Science	8	Outfit	NO			1.00	0.00
Science	8	Outfit	YES			1.01	0.01
Science	8	Infit		NO		1.02	0.00
Science	8	Infit		YES		1.03	0.00
Science	8	Outfit		NO		1.00	0.00
Science	8	Outfit		YES		1.00	0.01
Science	8	Infit			NO	1.02	0.00
Science	8	Infit			YES	1.03	0.00
Science	8	Outfit			NO	1.00	0.00
Science	8	Outfit			YES	1.01	0.01

REFERENCES

- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, D.C.: American Educational Research Association.
- Bond, T. & Fox, C. (2007). *Applying the Rasch model: Fundamental measurement in the human sciences*. (2nd Edition). Psychology Press.
- Engelhard, G. Jr. (2009). Using item response theory and model-data fit to conceptualize differential item and person functioning for students with disabilities. *Educational and Psychological Measurement*, 69, 585-602.
- Rasch, G. (1960). *Probabilistic models for some intelligence and attainment tests*. Copenhagen: Danish Institute for Educational Research.
- WINSTEPS (2000). WINSTEPS® Rasch measurement. Copyright John M. Linacre.
- Wright, B., & Masters, G. (1982). *Rating scale analysis*. Chicago, IL: MESA Press.

REFERENCES

- Achieve, Inc. (2005). *Measuring up 2005: A report on assessment anchors and tests in reading and mathematics for Pennsylvania*. Washington, DC: Achieve, Inc.
- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education [AERA, APA, NCME]. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.
- Allman, C. (2004). *Test access: Making tests accessible for students with visual impairments – A guide for test publishers, test developers, and state assessment personnel* (2nd ed.). Louisville, KY: American Printing House for the Blind. Available from <http://www.aph.org>.
- Bond, T. & Fox, C. (2007). *Applying the Rasch model: Fundamental measurement in the human sciences*. (2nd Edition). Psychology Press.
- Brennan, R. L. (1998). Misconceptions at the intersection of measurement theory and practice. *Educational Measurement: Issues and Practice*, 17(1), 5–9.
- Brennan, R. (2004). BB-Class (Version 1.0). [Computer Software] Iowa City, IA: University of Iowa, Center for Advanced Studies in Measurement & Assessment. CASMA: education.uiowa.edu/casma.
- Buja, A. & Eyuboglu, N. (1992). Remarks on parallel analysis. *Multivariate Behavioral Research*, 27, 509–540.
- Chen, W., & Thissen, D. (1997). Local dependence indexes for item pairs using item response theory. *Journal of Educational and Behavioral Statistics*, 22(3), 265–289.
- Cook, L. L., & Eignor, D. R. (1991). NCME instructional module: IRT equating methods. *Educational Measurement: Issues and Practice*, 17(1), 5–9.
- Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297–334.
- Cronbach, L. J. (1971). Test validation. In R. L. Thorndike (Ed.), *Educational Measurement* (2nd ed., pp. 443–507). Washington, DC: American Council on Education. *Educational Measurement: Issues and Practice*, 10, 37–45.
- Cronbach, L., & Shavelson R. L. (2004). My current thoughts on coefficient alpha and successor procedures. *Educational and Psychological Measurement*, 64(3), 391–418.
- D’Agostino, R. B. (1998). Tutorial in biostatistics: Propensity score methods for bias reduction in the comparison of a treatment to a non-randomized control group. *Statistics in Medicine*, 17, 2265–2281.
- Data Recognition Corporation. (2000). *Item viewer and authoring network (IVAN): informational guide*. Maple Grove, MN: DRC.
- Data Recognition Corporation. (2003–2007). *Fairness in testing: Training manual for issues of bias, fairness, and sensitivity*. Maple Grove, MN: DRC.
- Data Recognition Corporation. (2004–2007). *Pennsylvania System of School Assessment (PSSA) style guide*. Maple Grove, MN: DRC.
- Data Recognition Corporation. (2005, December). *Technical report for the PSSA 2005 reading and mathematics*. Maple Grove, MN: DRC.
- Data Recognition Corporation. (2007, May). *Technical report for the PSSA 2006 reading and mathematics: Grades 4, 6, and 7*. Maple Grove, MN: DRC.
- Data Recognition Corporation. (2007, May). *Technical report for the PSSA 2006 writing: Grades 5, 8, and 11*. Maple Grove, MN: DRC.

Grove, MN: DRC.

Data Recognition Corporation. (2007, July). *PSSA writing test score reliability: some available approaches and possible alternatives*. (PSSA TAC Document 071907.5).
Maple Grove, MN: Bishop, N.

Data Recognition Corporation. (2007). *Preliminary technical report for 2008 PSSA science*. Maple Grove, MN: DRC.

Data Recognition Corporation. (2008, February). *Technical report for the PSSA 2007 writing: Grades 5, 8, and 11*.
Maple Grove, MN: DRC.

Data Recognition Corporation. (2008, February). *Technical report for the PSSA 2007 reading and mathematics: Grades 3, 4, 5, 6, 7, 8, and 11*. Maple Grove, MN: DRC.

Data Recognition Corporation. (2008, February). *Preliminary technical report for 2008 PSSA science*. Maple Grove, MN: DRC.

Data Recognition Corporation. (2009, June). *Rater effect study results*. (PSSA TAC Document 06.03.09 E). Maple Grove, MN: Stearns, M.

Data Recognition Corporation. (2010, February). *2009 PSSA technical report*. Maple Grove, MN: DRC.

Data Recognition Corporation. (2011). *Technical report for the 2011 modified PSSA*. Maple Grove, MN: DRC.

Dorans, N. J., & Holland, P. W. (2000). Population invariance and equatability of tests: Basic theory and the linear case. *Journal of Educational Measurement*, 37, 281–306.

Dorans, N. J., Holland, P. W., Thayer, D. T., & Tateneni, K. (2003). Invariance of score linking across gender groups for three advanced placement program exams. In N. J. Dorans (Ed.), *Population invariance of score linking: Theory and applications to advanced placement program examinations* (pp. 79–118), Research Report 03-27. Princeton, NJ: Educational Testing Service.

Dorans, N. J., & Feigenbaum, M. D. (1994). Equating issues engendered by changes to the SAT and PSAT/NMSQT®. In I. M. Lawrence, N. J. Dorans, M. D. Feigenbaum, N. J. Feryok, & N. K. Wright, *Technical issues related to the introduction of the new SAT and PSAT/NMSQT (RM-94-10)*. Princeton, NJ: Educational Testing Service.

Dorans, N., Schmitt, A., & Bleistein, C. (1992). The standardization approach to assessing comprehensive differential item functioning. *Journal of Educational Measurement*, 29, 309–319.

Engelhard, G. Jr. (2009). Using item response theory and model-data fit to conceptualize differential item and person functioning for students with disabilities. *Educational and Psychological Measurement*, 69, 585–602.

Feldt, L. S., & Brennan, R. L. (1989). Reliability. In R. L. Linn (Ed.), *Educational Measurement*, (3rd ed., pp. 105–146). New York, NY: ACE/Macmillan.

Frisbie, D. A. (2005). Measurement 101: Some fundamentals revisited. *Educational Measurement: Issues and Practice*, 24(3), 21–28.

Gulliksen, H. (1950). *Theory of mental tests*. New York: John Wiley and Sons.

Haertel, E. H. (2006). Reliability. In Brennan, R. L. (Ed.). *Educational Measurement* (4th ed., pp. 65–110). Westport, CT: Praeger.

Hambleton, R., Swaminathan, H., and Rogers, J. (1991). *Fundamentals of item response theory*. Newbury Park, CA: Sage.

- Hambleton, R. & Novick, M. (1973). Toward an integration of theory and method for criterion-referenced tests. *Journal of Educational Measurement*, 10, 159–170.
- Hambleton, R. & Rogers, H. (1986). Evaluation of the plot method for identifying potentially biased test items. In S. H. Irvine, S. Newstead, & P. Dann (Eds.), *Computer-based human assessment*, Boston, MA: Kluwer Academic Publishers.
- Hanson, B. A., & Brennan, R. L. (1990). An investigation of classification consistency indexes estimated under alternative strong true score theory models. *Journal of Educational Measurement*, 27(4), 345–359.
- Harvill, L. M. (1991). Standard error of measurement. *Educational Measurement: Issues and Practices*, 10(2), 33–41.
- Horn, J. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, 32, 179–185.
- Huynh, H. (1976). On the reliability of decisions in domainreferenced testing. *Journal of Educational Measurement*, 13, 253–264.
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20, 141–151.
- Koger, M. E., Thacker, A. A., & Dickinson, E. R. (2004). *Relationships among the Pennsylvania System of School Assessment (PSSA) scores, SAT scores, and self-reported high school grades for the classes of 2002 and 2003* (HumRRO Report FR-04-26). Louisville, KY: Human Resources Research Organization.
- Karkee, T., Kim, D., & Fatica K. (April, 2010). Comparability Study of Online and Paper-and-Pencil Tests Using Modified Internally and Externally Matched Criteria. Paper presented at the annual meeting of the American Educational Research Association (AERA). Denver, CO.
- Lane, S. (1999). *Validity evidence for assessments*. Paper presented at the 1999 Edward F. Reidy Interactive Lecture Series, Providence, RI.
- Lane, S., & Stone, C. A. (2002). Strategies for examining the consequences of assessment and accountability programs. *Educational Measurement: Issues and Practice*, 21(1), 23–30.
- Lewis, D. M., Mitzel, H. C., & Green, D. R. (1996). *Standard setting: A bookmark approach*. Symposium presented at the Council of Chief State School Officers National Conference on Large-Scale Assessment, Phoenix, AZ.
- Linacre, J. M. (2009). *A user's guide to WINSTEPS MININSTEP Rasch-model computer programs*. Chicago, IL: Winsteps.
- Linacre, J. M., & Wright, B. D. (2003). *WINSTEPS 3.54: Multiple-choice, rating scale, and partial credit Rasch analysis* [Computer software]. Chicago: MESA Press.
- Livingston, S. & Lewis, C. (1995). Estimating the consistency and accuracy of classifications based on test scores. *Journal of Educational Measurement* 32, 179–197.
- Mantel, N., & Haenszel, W. (1959). Statistical aspects of the analysis of data from retrospective studies of disease. *Journal of the National Cancer Institute*, 22, 719–748.
- Marais, I., & Andrich, D. (2008). Formalizing dimension and response violations of local independence in the unidimensional Rasch model. *Journal of Applied Measurement*, 9(3), 200–215.
- McDonald, R. P. (1979). The structural analysis of multivariate data: A sketch of general theory. *Multivariate Behavioral Research*, 14, 21–38.
- Messick, S. (1989). Validity. In R. L. (Ed.), *Educational Measurement* (3rd ed., pp.3–104). New York: American Council on Education.

- Moses, T., Deng, W., & Zhang, Y. L. (2010). *The Use of Two Anchors in Nonequivalent Groups With Anchor Test (NEAT) Equating* (ETS Research Report No. RR-10-23) Princeton, NJ: ETS.
- No Child Left Behind Act of 2001, Pub. L. No. 107–110, 115 Stat. 1425 (2002).
- Pennsylvania State Board of Education. (1999, January). *Chapter 4. Academic standards and assessment*. Harrisburg, PA: Pennsylvania State Board of Education. Retrieved November 8, 2004, from <http://www.education.state.pa.us>. Also available from <http://www.pacode.com/secure/data/022/Chapter4/s4.51.html>.
- Pennsylvania Department of Education. (2004). *Mathematics item and scoring sampler*. Retrieved December 13, 2004, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2004). *Reading item and scoring sampler*. Retrieved December 13, 2004, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2004, April). *Assessment anchors and eligible content*. Retrieved December 13, 2004, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2004, November). *Mathematics assessment handbook*. Retrieved December 13, 2004, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2004, November). *Reading assessment handbook*. Retrieved December 13, 2004, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2005, December). *2005–2006 Mathematics assessment handbook*. Retrieved January 30, 2006, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2005, December). *2005–2006 Reading assessment handbook*. Retrieved January 30, 2006, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2005). *2005–2006 Mathematics item and scoring sampler*. Retrieved January 30, 2006, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2005). *2005–2006 Reading item and scoring sampler*. Retrieved January 30, 2006, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2005, December). *2005–2006 Writing assessment handbook*. Retrieved January 30, 2006, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2005). *2005–2006 Writing item and scoring sampler*. Retrieved September 14, 2005, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2006). *2006–2007 Mathematics item and scoring sampler*. Retrieved January 30, 2007, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2006). *2006–2007 Reading item and scoring sampler*. Retrieved January 30, 2007, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2006). *2006–2007 Writing item and scoring sampler*. Retrieved January 30, 2007, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2006, December). *2006–2007 Writing assessment handbook*. Retrieved January 30, 2006, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2006). *2006–2007 Science item and scoring sampler*. Retrieved March 15, 2007, from <http://www.education.state.pa.us>

- Pennsylvania Department of Education. (2006, November). *Science assessment handbook*. Retrieved March 15, 2007, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2007, January). *2006–2007 Mathematics assessment handbook*. Retrieved January 30, 2007, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2007, January). *2006–2007 Reading assessment handbook*. Retrieved January 30, 2007, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2007, January). *2007 Accommodations guidelines for students with IEPs, students with 504 plans, English language learners, and all students*. Retrieved January 30, 2007, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2007). *Assessment anchors and eligible content*. Retrieved May 27, 2010, from <http://www.pdesas.org/standard/AnchorsDownloads>
- Pennsylvania Department of Education. (2007). *PSSA 2007 Handbook for assessment coordinators and administrators: Grades 3–8 and 11 reading and mathematics*. Retrieved January 30, 2007, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2007, March). *PSSA reading and mathematics directions for administration manual*. Retrieved April 2, 2007, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2007). *2008 PSSA Accommodations guidelines for students with IEPs and students with 504 plans*. Retrieved March 4, 2008, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2008). *2008–2009 Mathematics item and scoring sampler*. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2008). *2008–2009 Reading item and scoring sampler*. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2008). *2008–2009 Science item and scoring sampler*. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2008). *2008–2009 Writing item and scoring sampler*. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2008). *PSSA 2008 Handbook for assessment coordinators and administrators: Grades 3–8 and 11 reading and mathematics*. Retrieved March 4, 2008, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2009). *PSSA accommodations guidelines for students with IEPs and students with 504 plans*. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2009). *2009–2010 Mathematics item and scoring sampler supplement*. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2009). *2009–2010 Reading item and scoring sampler supplement*, Harrisburg, PA: PDE. Posted separately by grade level. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2009). *2009–2010 Science item and scoring sampler supplement*, Harrisburg, PA: PDE. Posted separately by grade level. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2009). *2009–2010 Writing item and scoring sampler supplement*. Harrisburg, PA: PDE. Posted separately by grade level. Retrieved February 10, 2009, from <http://www.education.state.pa.us>

state.pa.us

- Pennsylvania Department of Education. (2009). *2008–2009 Assessment handbook*. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2009). *The 2008–2009 PSSA handbook for assessment coordinators: Writing, reading and mathematics, science*. Retrieved February 10, 2009, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2010). *PSSA and PSSA-M Accommodations guidelines for students with IEPs and students with 504 plans, revised 1-11-2010*. Retrieved February 24, 2010, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2010). *2009–2010 Assessment handbook*. Retrieved February 24, 2010, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2010). *The 2009–2010 PSSA handbook for assessment coordinators: Writing, reading and mathematics, science*. Retrieved February 24, 2010, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2011). *PSSA, PSSA-M, Keystone (paper/pencil) accommodations guidelines for students with IEPs and students with 504 plans, revised 1-12-2011*. Retrieved February 25, 2011, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2011). *2010–2011 PSSA handbook for assessment coordinators: Reading and mathematics, writing, science*. Retrieved February 25, 2011, from <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2012). *Accommodations Guidelines: Keystone Exams and PSSA (PDE, revised 10/31/2012)*. Retrieved January 22, 2013, <http://www.education.state.pa.us>
- Pennsylvania Department of Education. (2013). *2012–2013 Pennsylvania System of School Assessment: Handbook for Assessment Coordinators*. Retrieved January 22, 2013, from <http://www.education.state.pa.us>
- Qualls, A. L. (1995). Estimating the reliability of a test containing multiple item formats. *Applied Measurement in Education*, 8(2), 111–120.
- Raïche, G. (2005). Critical eigenvalue sizes in standardized residual principal components analysis. *Rasch Measurement Transactions*, 19:1, 1012.
- Rasch, G. (1960). *Probabilistic models for some intelligence and attainment tests*. Copenhagen: Danish Institute for Educational Research.
- Reckase, M. D. (1979). Unifactor latent trait models applied to multifactor tests: Results and implications. *Journal of Educational Statistics*, 4, 207–230.
- Rosenbaum, P. R. (1995). *Observational studies*. New York: Springer-Verlag.
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70, 41–55.
- Rubin, D. B. (2006). *Matched sampling for causal effects*. New York: Cambridge University Press.
- Sinclair, A. L., & Thacker, A. A. (2005). *Relationships among Pennsylvania System of School Assessment (PSSA) scores, university proficiency exam scores, and college course grades in English and math* (HumRRO Report FR-05-55). Louisville, KY: Human Resources Research Organization.
- Sireci, S. G., and Wells, C. S. (2016). *Evaluating Test Accommodations on the Pennsylvania System of School Assessment Exams* (Research Report). East Hampton, Sireci Psychometric Services.
- Smith, R. & Miao, C. (1994). Assessing unidimensionality for Rasch measurement. Chapter 18 in M. Wilson (Ed.)

- Objective Measurement: Theory into Practice. Vol. 2. Norwood NJ: Ablex.
- Spearman C. (1904). The proof and measurement of association between two things. *American Journal of Psychology*, 15, 72–101.
- Spearman C. (1910). Correlation calculated from faulty data. *British Journal of Psychology*, 3, 271–295.
- Stearns, M., & Smith R. M. (2007). *Estimation of classification consistency indices for complex assessments: Model based approaches*. Paper presented at the 2007 Annual Convention of the American Educational Research Association, Chicago, IL.
- Thacker, A. A., & Dickinson, E. R. (2004). *Item content and difficulty mapping by form and item type for the 2001–2003 Pennsylvania System of School Assessment (PSSA)*. Alexandria, VA: Human Resources Research Organization.
- Thacker, A. A., Dickinson, E. R., & Koger, M. E. (2004). *Relationships among the Pennsylvania System of School Assessment (PSSA) and other commonly administered assessments* (HumRRO Report FR-04-33). Louisville, KY: Human Resources Research Organization.
- Thompson, S., Johnstone, C. J., & Thurlow, M. L. (2002). *Universal design applied to large scale assessments* (Synthesis Report 44). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- Traub, R. E. (1994). *Reliability for the social sciences: Theory and application*. Thousand Oaks: Sage.
- Von Davier, A. A., & Wilson, C. (2008). Investigating the population sensitivity assumption of item response theory true score equating across two subgroups of examinees and two test formats. *Applied Psychological Measurement*, 32, 11–26.
- Way, W. D., Lin, C., & Kong, J. (March, 2008). Maintaining Score Equivalence as Tests Transition Online: Issues, Approaches and Trends. Paper presented at the annual meeting of the National Council on Measurement in Education (NCME). New York, NY.
- Webb, N. L. (1997). *Criteria for alignment of expectations and tests in mathematics and science education* (NISE Research Monograph No. 6). Madison: University of Wisconsin–Madison, National Institute for Science Education. Washington, DC: Council of Chief State School Officers.
- Webb, N. L. (1999). *Alignment of science and mathematics standards and assessments in four states* (NISE Research Monograph No. 18). Madison, WI: University of Wisconsin–Madison, National Institute for Science Education.
- Webb, N. L. (2002). *Alignment study in language arts, mathematics, science, and social studies of state standards and tests for four states: State collaborative on test and state standards (SCASS)*. Madison, WI: University of Wisconsin–Madison, Wisconsin Center for Education Research.
- WINSTEPS (2000). *WINSTEPS® Rasch measurement*. Copyright John M. Linacre.
- Wright, B., & Masters, G. (1982). *Rating scale analysis*. Chicago, IL: MESA Press.
- Yen, W. M. (1993). Scaling performance assessments: strategies for managing local item dependence. *Journal of Educational Measurement*, 30(3), 187–213.