PSSA

Pennsylvania System of School Assessment

Science
Grade 5

Item Sampler Scoring Guide

2025–2026

Pennsylvania
Department of Education

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INFORMATION ABOUT SCIENCE

Introduction

General Introduction

The Pennsylvania Department of Education (PDE) provides districts and schools with tools to assist in delivering focused instructional programs aligned with the Pennsylvania Academic Standards (PAS). These tools include STEELS Standards, STEELS Foundation Boxes, assessment handbooks, content-based online Item Samplers, and a Sampler Guide. The online Item Sampler is intended to be used in conjunction with this Sampler Guide as a useful tool for Pennsylvania educators in preparing local instructional programs by providing samples of test item types and scored student responses. The online Item Sampler and this Sampler Guide are not designed to be used as a pretest, a curriculum, or any other benchmark for operational testing.

The online Item Sampler is available in Braille format. For more information regarding Braille, call (717) 901-2238.

Pennsylvania Science, Technology, Engineering, Environmental Literacy & Sustainability (STEELS) Standards

The online Item Sampler and this Sampler Guide contain examples of test questions designed to assess the STEELS standards.

What Is Included

The online Item Sampler contains test questions, or test “items,” that have been written to align to the STEELS standards. The sample test questions model the types of items that may appear on an operational PSSA. Each sample test question has been through a rigorous review process to ensure alignment with the STEELS standards prior to being piloted in an embedded field test within a PSSA assessment and then used operationally on a PSSA assessment. Answer keys, scoring guidelines, and any related stimulus materials are also included. To access the Online Item Sampler, go to https://portal.te.drcedirect.com/PA. Select Item Samplers. Then, select the subject and grade levels as needed. Additionally, this Sampler Guide PDF provides sample student responses for each open-ended (OE) item to demonstrate the range of responses that students provided in response to these items.

Purpose and Uses

The items in the online Item Sampler may be used[1] as examples for creating assessment items at the classroom level. Classroom teachers may find it beneficial to have students respond to the open-ended items in the online Item Sampler. Educators may then use this Sampler Guide as a model to score the responses either independently or together with colleagues within a school or district. This Sampler Guide also includes the *General Description of Scoring Guidelines for Science Open-Ended Items* that students will have access to during a PSSA science administration. The general description of scoring guidelines may be distributed to students for use during local assessments and may also be used by educators when scoring local assessments.

Item Format and Scoring Guidelines

The multiple-choice (MC) items have four answer choices. Each correct response to an MC item is worth one point.

Each OE item in science is scored using an item-specific scoring guideline based on a 0–3-point scale.

Testing Time and Mode of Test Delivery for the PSSA

The PSSA is delivered in an online format. The estimated response time for each item type is listed below.

- **Multiple-Choice:** 1 minute
- **Open-Ended:** 5 minutes

During an official test administration, students are given as much additional time as is necessary to complete the test questions.

[1] The permission to copy and/or use these materials does not extend to commercial purposes.

Item and Scoring Sampler Format

The online Item Sampler and this Sampler Guide include the test directions and scoring guidelines that appear in the PSSA science assessments. Each MC item contains a table that includes the item alignment, the answer key, the depth of knowledge (DOK) level, points possible, and a brief answer-option rationale[2].

Each OE item contains a table that includes the item alignment, DOK level, points possible, and mean score. Additionally, each of the included item-specific scoring guidelines is combined with sample student responses representing each score point to form a practical item-specific scoring guide. The *General Description of Scoring Guidelines for Science Open-Ended Items* used to develop the item-specific scoring guidelines should be used if any additional item-specific scoring guidelines are created for use within local instructional programs. The student responses in this Sampler Guide are actual student responses.

Example Multiple-Choice Item Information Table

Item-Specific Information
Alignment:
Answer Key:
Depth of Knowledge:
Points Possible:

Option Annotations
Brief answer-option analysis or rationale.

Example Open-Ended Item Information Table

Category	Item-Specific Information
Alignment	Assigned STEELS Standard
Depth of Knowledge	Assigned DOK
Points Possible	Number of Points
Mean Score[3]	Average Score

[2] The *p*-values are not included for the MC items in the 2025 Item Sampler.
[3] The mean student scores are not included for the OE items in the 2025 Item Sampler.

General Description of Scoring Guidelines for Science Open-Ended Questions

3 Points

- 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.

2 Points

- 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.

1 Point

- The response demonstrates a *minimal* understanding of the scientific content, concepts, and procedures required by the task(s).
- The response is somewhat correct with *minimal* 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 Points

- 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

PSSA SCIENCE GRADE 5

Science—Summary Data

Multiple-Choice

Sample Number	Alignment	Answer Key	Depth of Knowledge	Points
1	3.1.4.A	C	2	1
2	3.1.3.C	C	2	1
3	3.4.3-5.C	A	2	1
4	3.2.3.D	D	2	1
5	3.2.4.A	D	2	1
6	3.2.4.C	C	2	1
7	3.3.3.A	C	2	1
8	3.3.3.B	B	2	1
9	3.3.4.A	B	2	1
10	3.3.5.A	D	2	1
11	3.5.3-5.FF	C	2	1
12	3.5.3-5.G	A	2	1
13	3.5.3-5.W	D	2	1
14	3.5.3-5.U	C	3	1
15	3.1.3.A	C	2	1
16	3.2.4.B	A	2	1

Open-Ended

Sample Number	Alignment	Depth of Knowledge	Points
17	3.1.4.A	2	3
18	3.3.3.C	2	3

Science Test Directions

Read these directions carefully before beginning the assessment. To look at these directions again, select the **? [Help]** button and choose the **Test Directions** tab.

This section of the test has multiple-choice questions and open-ended questions. Each multiple-choice question has four answer choices. Each open-ended question has one or more areas in which to enter your response(s). The open-ended questions may have multiple pages. These page numbers will be shown below the question number, for example, “1 of 3.”

Answering Questions

Read each question carefully and choose your answer or enter your response.

1. For multiple-choice questions, first, find the answer to the question. Then, select the correct answer using the **Pointer** tool.
    - Only one of the answer choices provided is correct.
    - To change an answer, use the **Pointer** tool to choose a different answer.
    - Select the **Flag** button if you are not sure of the answer to a question. It will mark the question so you know to go back and answer the question later.
2. For open-ended questions, use the keyboard or the equation builder to type your response in the areas provided.
    - For questions that require using the equation builder, select the question mark button **[?]** in the upper-right corner of that feature. This will open **Help**, which offers descriptions about how to use that feature.
    - An example of the scoring guidelines that professional scorers will use to evaluate your responses to open-ended questions can be found by selecting the **? [Help]** button and choosing the **Scoring Guidelines** tab. You may refer to the **Scoring Guidelines** at any time while responding to open-ended questions.
3. Use tools such as the **Cross-Off**, **Highlighter**, **Notepad**, **Magnifier**, **Line Guide**, and **Calculator** to assist you during the test.

Navigation

1. Only one question at a time will appear on the screen. Use the **Next** and **Back** buttons to move from question to question or page to page.
2. When you have answered all the questions, select the **Review/End Test** button at the top-right of the screen.
    - Select questions from the list that appears on the screen to check your work.
    - When you have finished and have checked your answers, follow the directions on the screen to exit.

Helpful Hints

- There is no time limit to finish the test.
- If you need to take a break from the assessment, select the **Pause Test** button. Select the **Resume** button to continue. If you are away from the assessment for more than 20 minutes, you will need to log back in.
- To see your progress on the test, select the **Review/End Test** button. You may go to any question by selecting it from the list that appears on the screen.
- Select the **? [Help]** button to find more information.

Open-Ended Item-Specific Scoring Guideline

#17 Item Information

Category	Item-Specific Information
Alignment	3.1.4.A
Depth of Knowledge	2
Points Possible	3

Item-Specific Scoring Guideline

Score	Description
3	The response demonstrates a *thorough* understanding of constructing an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction by • explaining how two body parts work together to help a scorpion hunt prey **AND** • explaining how two body parts work together to help a scorpion defend itself **AND** • describing the likely function of a scorpion's exoskeleton. The response is clear, complete, and correct.
2	The response demonstrates a *partial* understanding of constructing an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction by fulfilling **two** of the bullets listed under the 3-point response. The response may contain some work that is incomplete or unclear.
1	The response demonstrates a *minimal* understanding of constructing an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction by fulfilling **one** of the bullets listed under the 3-point response. The response may contain some work that is incomplete or unclear.
0	The response provides *insufficient* evidence to demonstrate any understanding of the concept being tested.

Note: No deductions should be taken for misspelled words or grammatical errors.

Responses that will receive credit:

Part A (1 point):

- The eyes sense prey and the claws grab the prey.
- The claws grab prey and the tail stings the prey.
- The eyes see prey and the tail stings the prey.
- The claws move prey into the mouth.
- The eyes see prey and the legs move the scorpion toward the prey.

Part B (1 point):

- The eyes sense a predator and the stinger stings (injects venom/poison) into the predator.
- The claws grab a predator and the stinger stings (injects venom/poison) into the predator.
- The eyes sense a predator and the legs move away from the predator.

Part C (1 point):

- The exoskeleton provides protection from things in the scorpion's environment.
- The exoskeleton protects the internal body parts (organs) from damage.
- The exoskeleton makes it more difficult for a predator to injure the scorpion.
- The exoskeleton provides support for the scorpion so that it can use its muscles.
- The exoskeleton can prevent the scorpion from losing too much of its water (from drying out).

Sample Student Responses

Item 17 – 3 points

Part A – Student Response
The claw and the stinger help them catch their prey and kill them. The claw catches the prey to make it to stop escaping and the stinger kills it with its venom. These body parts help the Scorpion not to starve.

Part B – Student Response
The eye and the claw help the Scorpion defend itself. The eye helps the Scorpion spot predators that might want to eat the Scorpion. And the claw helps the Scorpion defend itslef by if a predator atacks it can defend itself with it and can survive not being eaten.

Part C – Student Response
A likely function of the Scorpion's exoskeleton is to protect the Scorpion from predators from the sky like hawks and eagles. It is like a shell like turtels have but the Scorpion is wearing it. The exoskeleton should be strong to the Scorpion survives.

Annotations
The response demonstrates a thorough understanding of constructing an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. In Part A, the response correctly explains how two body parts work together to help a scorpion hunt prey (*The claw catches the prey . . . the stinger kills it*). In Part B, the response correctly explains how two body parts work together to help a scorpion defend itself (*The eye helps the Scorpion spot predators . . . the claw helps the Scorpion defend itslef*). In Part C, the response correctly describes the likely function of a scorpion's exoskeleton (*to protect the Scorpion*). The response is clear, complete, and correct.

Item 17 – 2 points

Part A – Student Response
the claw and stinger because they can sting there pray to kill them and ues the claw to tacke the pray apart.

Part B – Student Response
Because it can help them fight pray.

Part C – Student Response
to portect them from pretators.

Annotations
The response demonstrates a partial understanding of constructing an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. In Part A, the response correctly explains how two body parts work together to help a scorpion hunt prey (*claw and stinger because they can sting there pray to kill them and ues* [use] *the claw to tacke the pray apart*). In Part B, the response (*it can help them fight pray*) does not correctly explain how two body parts work together to help a scorpion defend itself and receives no credit. In Part C, the response correctly describes the likely function of a scorpion's exoskeleton (*to portect them from pretators*).

Item 17 – 1 point

Part A – Student Response
The legs and the stinger. The scorpion can chase down prey and poke it with its stinger.

Part B – Student Response
The stinger and the claw are the two most sharp and dangerous things on a scorpion.

Part C – Student Response
It can crumble.

Annotations
The response demonstrates a minimal understanding of constructing an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. In Part A, the response correctly explains how two body parts work together to help a scorpion hunt prey (*The legs and the stinger . . . chase down prey and poke it with its stinger*). In Part B, the response (*The stinger and the claw are the two most sharp and dangerous things on a scorpion*) does not correctly explain how two body parts work together to help a scorpion defend itself and receives no credit. In Part C, the response (*It can crumble*) does not correctly describe the likely function of a scorpion's exoskeleton and receives no credit.

Item 17 – 0 points

Part A – Student Response
It can use there eyes to see and hunt.

Part B – Student Response
They can sting anther animals with there stinger.

Part C – Student Response
Claw because they can grab stuff.

Annotations
The response demonstrates insufficient evidence to demonstrate any understanding of constructing an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. In Part A, the response (*It can use there eyes to see and hunt*) identifies how only one body part works to help a scorpion hunt prey, not how two body parts work together, and receives no credit. In Part B, the response (*They can sting anther animals with there stinger*) identifies how only one body part works to help a scorpion defend itself, not how two body parts work together, and receives no credit. In Part C, the response (*Claw because they can grab stuff*) does not correctly describe the likely function of a scorpion's exoskeleton and receives no credit.

Open-Ended Item-Specific Scoring Guideline

#18 Item Information

Category	Item-Specific Information
Alignment	3.3.3.C
Depth of Knowledge	2
Points Possible	3

Item-Specific Scoring Guideline

Score	Description
3	The response demonstrates a *thorough* understanding of making a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard by • identifying a likely effect caused by a tornado **AND** • identifying the method that would best help protect people from the effects of a tornado **AND** • explaining how the method identified in part B would best help protect people from the effects of a tornado. The response is clear, complete, and correct.
2	The response demonstrates a *partial* understanding of making a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard by fulfilling **two** of the bullets listed under the 3-point response. The response may contain some work that is incomplete or unclear.
1	The response demonstrates a *minimal* understanding of making a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard by fulfilling **one** of the bullets listed under the 3-point response. The response may contain some work that is incomplete or unclear.
0	The response provides *insufficient* evidence to demonstrate any understanding of the concept being tested.

Note: No deductions should be taken for misspelled words or grammatical errors.

Responses that will receive credit:

Part A (1 point):

- strong winds
- downed trees
- downed power lines
- damage to buildings and structures
- flying debris/objects
- people get hurt/will die
- communities/towns/neighborhoods are destroyed
- cause damage

Part B (1 point):

- A storm cellar would best protect people from the effects of a tornado.

Part C (1 point):

- A storm cellar is completely or partially underground where people are protected from winds and flying debris/objects above ground.
- A storm cellar is built from wind-resistant materials.
- A storm cellar is built into the ground.

Note: A response that identifies a method other than a storm cellar (such as boarded windows) but provides a reasonable explanation for protection from the effects of a tornado will receive 1 point.

Sample Student Responses

Item 18 – 3 points

Part A – Student Response
Debris flying everywhere.

Part B – Student Response
The storm cellar would be the best for helping protect people from a tornado.

Part C – Student Response
The storm cellar would best help protect people from tornados because it's underground, and way more barricaded than the other options.

Annotations
The response demonstrates a thorough understanding of making a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard. In Part A, the response correctly identifies a likely effect caused by a tornado (*Debris flying everywhere*). In Part B, the response correctly identifies the method shown that would best help protect people from the effects of a tornado (*storm cellar*). In Part C, the response correctly explains how the method identified in Part B would best help protect people from the effects of a tornado (*because it's underground*). The response is clear, complete, and correct.

Item 18 – 2 points

Part A – Student Response
When a cold and warm font meet then it starts to make a tornato.

Part B – Student Response
The Storm Cellar.

Part C – Student Response
Because its underground and it has nothing to rip off.

Annotations
The response demonstrates a partial understanding of making a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard. In Part A, the response (*When a cold and warm font meet then it starts to make a tornato*) does not correctly identify a likely effect caused by a tornado and receives no credit. In Part B, the response correctly identifies the method shown that would best help protect people from the effects of a tornado (*Storm Cellar*). In Part C, the response correctly explains how the method identified in Part B would best help protect people from the effects of a tornado (*Because its underground and it has nothing to rip off*).

Item 18 – 1 point

Part A – Student Response
Destroyed buildings. People with out homes.

Part B – Student Response
To get to a place that can protect them like a basement.

Part C – Student Response
The person wouldn’t be harmed by the tornado.

Annotations
The response demonstrates a minimal understanding of making a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard. In Part A, the response correctly identifies a likely effect caused by a tornado (*Destroyed buildings*). In Part B, the response (*a basement*) does not identify which of the methods shown would best help protect people from the effects of a tornado and receives no credit. In Part C, the response (*The person wouldn’t be harmed by the tornado*) does not correctly explain how the method identified in Part B would best help protect people from the effects of a tornado and receives no credit.

Item 18 – 0 points

Part A – Student Response
sandbag barrier is a good idea.

Part B – Student Response
also for other things.

Part C – Student Response
it can help alot because if we have floods we need to be safe.

Annotations
The response demonstrates insufficient evidence to demonstrate any understanding of making a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard. In Part A, the response (*sandbag barrier*) does not correctly identify a likely effect caused by a tornado and receives no credit. In Part B, the response (*also for other things*) does not identify which of the methods shown would best help protect people from the effects of a tornado and receives no credit. In Part C, the response (*it can help alot because if we have floods we need to be safe*) does not provide an explanation for an acceptable method and how it would best help protect people from the effects of a tornado and receives no credit.

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Item Sampler Scoring Guide