



ARIZONA SCIENCE TEST

Computer-Based  
Sample Test  
Scoring Guide  
Grade 5 Science



Created September 2020  
Prepared by the Arizona Department of Education

## About the Sample Test Scoring Guide

The AzSCI Sample Test Scoring Guides provide details about the items, student response types, correct responses, and related scoring considerations for AzSCI Sample Test items.

Within this guide, each item is presented with the following information:

- Item number
- Domain (Reporting Category)
- Science and Engineering Practices (SEP) Group (Reporting Category)
- Content Standard
- SEP
- Crosscutting Concepts (CC)
- Phenomenon
- TAGS
- Item Type

The items included in this guide are representative of the kinds of items that students can expect to experience when taking the computer-based test for AzSCI Grade 5 Science.

AzSCI items are aligned to at least two of the three multidimensional science standards. Each item will be aligned to a content standard and either a science and engineering practice (SEP) or a crosscutting concept (CC), some items may be aligned to both an SEP and a CC. Item information may vary due to alignment requirements; for example, AzSCI items will only contribute to a student's SEP Group score if it is aligned to the SEP listed within the standard text, as noted within this field. Items not aligned to a dimension (SEP Group, SEP, and CC) will be left blank.

|   |   |
|---|---|
| Item Number   | 1   |
| Item Title  | Coconino County Fossils   |
| Domain ( <i>Reporting Category</i> )  | Earth and Space   |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | Sensemaking   |
| Content Standard  | 4.E1U1.7  |
| SEP   | Developing and Using Models   |
| Crosscutting Concepts (CC)  | Patterns  |
| Phenomenon  | Fossils of organisms that appear to have come from deep sea, shoreline, swamp, and upland environments can all be found within Coconino county. |
| TAGS  | S3  |
| Item Type   | Gap Match   |

Determine the order in which fossils will **most likely** be found, based on **Table 1** and **Figure 1**. Arrange the order with the fossil in Site 1 at the top. Move each type of fossil into the correct box in the table.

| Order | Fossil           |
|-------|------------------|
| 1     | Petrified wood   |
| 2     | Amphibian tracks |
| 3     | Shark teeth      |

| Score | Scoring Rubric  |
|-------|---|
| 1     | Correct order from the top: Petrified wood; Amphibian tracks; Shark teeth |
| 0     | The response is incorrect or irrelevant.                                  |

|   |   |
|---|---|
| Item Number   | 2   |
| Item Title  | Coconino County Fossils   |
| Domain ( <i>Reporting Category</i> )  | Earth and Space   |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | Sensemaking   |
| Content Standard  | 4.E1U1.7  |
| SEP   | Developing and Using Models   |
| Crosscutting Concepts (CC)  | Stability and Change  |
| Phenomenon  | Fossils of organisms that appear to have come from deep sea, shoreline, swamp, and upland environments can all be found within Coconino county. |
| TAGS  | G3  |
| Item Type   | Multiple Choice   |

This question has **two** parts. First answer Part A. Then answer Part B.

**Part A**

Based on **Figure 1**, which statement **best** describes the Coconino County environment over the past 400 million years?

- A. Coconino County was below sea level.
- B. Coconino County was far above sea level.
- C. Until recently, sea level was higher than the elevation of Coconino County.
- D. Sea level increased, covering Coconino County with ocean water, but then decreased.

**Part B**

Which evidence from **Figure 1** supports the answer to Part A?

- A. The fossils found in Coconino County are land fossils.
- B. The fossils found in Coconino County are marine fossils.
- C. The oldest and the most recent fossils found in Coconino County are marine fossils.
- D. The oldest and the most recent fossils found in Coconino County are land fossils.

(1 Point)

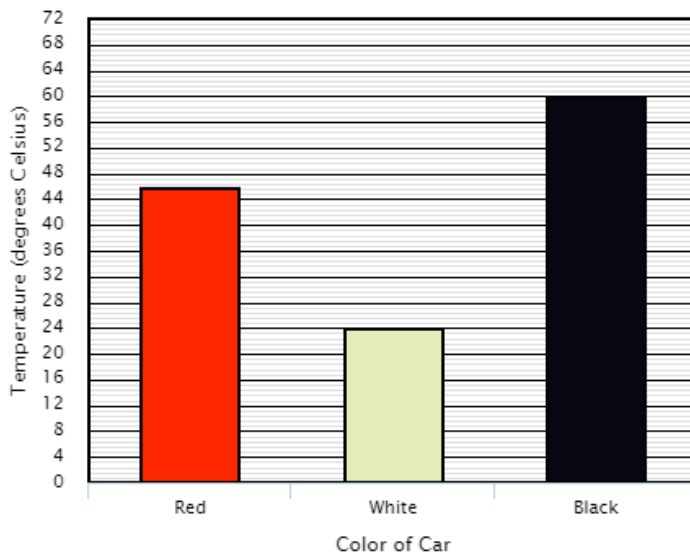
|   |   |
|---|---|
| Item Number   | 3   |
| Item Title  | The Red Car   |
| Domain ( <i>Reporting Category</i> )  | Physical Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | Sensemaking   |
| Content Standard  | 3.P4U1.3  |
| SEP   | Developing and Using Models   |
| Crosscutting Concepts (CC)  | Patterns  |
| Phenomenon  | A student sees a red car in a parking lot on a sunny 80-degree day. When the student touches the hood of the car it is hot. |
| TAGS  | S2  |
| Item Type   | Bar Graph   |

The student puts a thermometer on the hood of each car to measure the amount of energy each hood is receiving from the sun.

The student records the temperatures 24°C, 46°C, and 60°C.

Use the bar graph to show the amount of energy each car hood is receiving from the sun. Drag the top of each bar to the correct height.

**Hood Temperatures**



| Score | Scoring Rubric  |
|-------|---|
| 1     | Student places bar height (from left to right) 46, 24, and 60 |
| 0     | The response is incorrect or irrelevant.                      |

|   |   |
|---|---|
| Item Number   | 4   |
| Item Title  | The Red Car   |
| Domain ( <i>Reporting Category</i> )  | Physical Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | Sensemaking   |
| Content Standard  | 5.P1U1.1  |
| SEP   | Analyzing and Interpreting Data   |
| Crosscutting Concepts (CC)  | Energy and Matter   |
| Phenomenon  | A student sees a red car in a parking lot on a sunny 80-degree day. When the student touches the hood of the car it is hot. |
| TAGS  | G3  |
| Item Type   | Slider, Multiple Choice   |

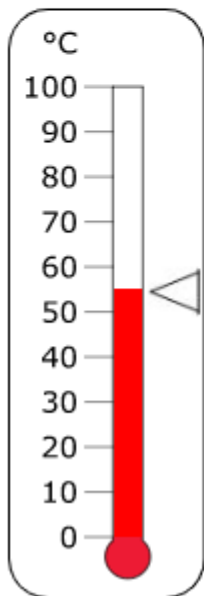
This question has **two** parts. First answer Part A. Then answer Part B.

### Part A

The student left a crayon in a car for more than 45 minutes on a day when the outdoor temperature reached 28°C. Crayons become liquid at temperatures between 49°C and 64°C.

Indicate a temperature on the thermometer that would cause the student's crayon to begin changing its physical state.

Drag the thermometer bar to show the correct temperature.



**Part B**

Crayons are made of very small unseen particles that cannot become smaller. What happens to these particles when the crayon begins to change its physical state?

- A. The particles remain unchanged.
- B. The particles decrease in number.
- C. The particles change what they are made of.
- D. The particles increase in number.

| Score | Scoring Rubric  |
|-------|---|
| 1     | Part A: Student raises indicator to any position between 50 and 65<br>Part B: Option A is selected. |
| 0     | The response is incorrect or irrelevant.  |

|   |   |
|---|---|
| Item Number   | 5   |
| Item Title  | The Red Car   |
| Domain ( <i>Reporting Category</i> )  | Physical Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | Sensemaking   |
| Content Standard  | 3.P4U1.3  |
| SEP   | Develop and Use Models  |
| Crosscutting Concepts (CC)  | Energy and Matter   |
| Phenomenon  | A student sees a red car in a parking lot on a sunny 80-degree day. When the student touches the hood of the car it is hot. |
| TAGS  | G3  |
| Item Type   | Point Graph, Multiple Choice  |

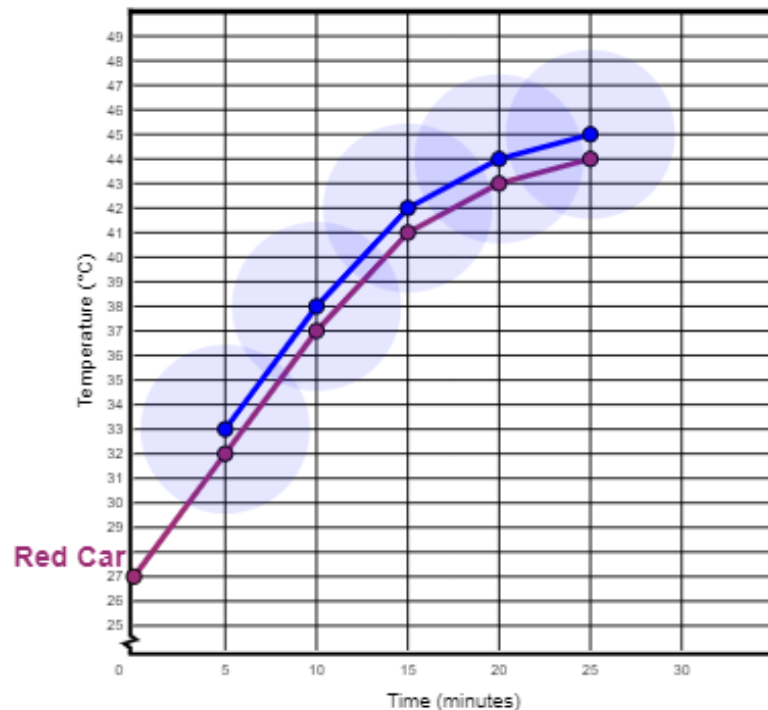
This question has **two** parts. First answer Part A. Then answer Part B.

### Part A

The line on the graph shows how warm the red car can get in 25 minutes based on the student observations from **Table 1**. Complete the graph to compare the temperature data for the red car with the car temperature data shown in **Table 2**.

Plot the **five** points from the data in **Table 2**.

### Heating Comparisons





**Part B**

Based on the graph, what is **most likely** the color of the car that produced the data in **Table 2**?

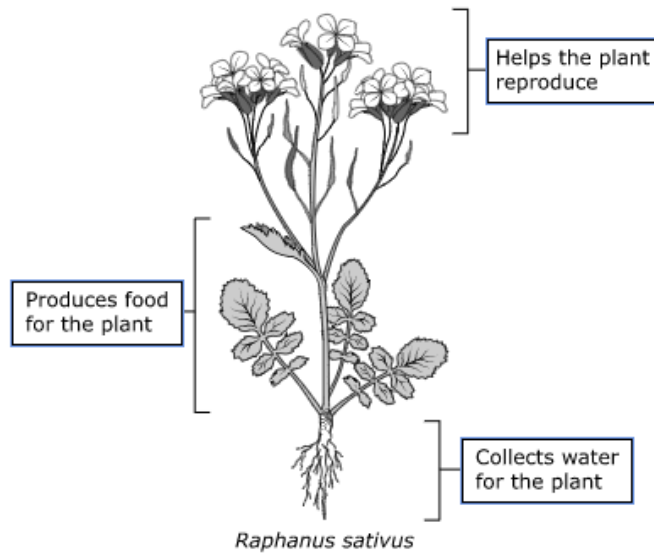
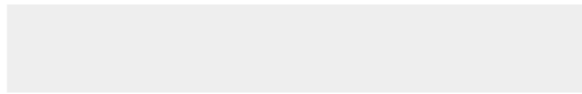
- A. White
- B. Light gray
- C. Black
- D. Gold

| Score | Scoring Rubric   |
|-------|--|
| 1     | Part A: The student correctly plots the points (5, 33), (10, 38), (15, 42), (20, 44) and (25, 45) on the graph, AND<br>Part B: Option C is selected. |
| 0     | The response is incorrect or irrelevant.   |

|   |   |
|---|---|
| Item Number   | 6   |
| Item Title  | Pollinator Preferences  |
| Domain ( <i>Reporting Category</i> )  | Life Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | Sensemaking   |
| Content Standard  | 3.L1U1.5  |
| SEP   | Developing and Using Models   |
| Crosscutting Concepts (CC)  | Structure and Function  |
| Phenomenon  | In a population of radish plants, yellow flowers attracted honeybees more often than white flowers did, even though white was the most common flower color. |
| TAGS  | S3  |
| Item Type   | Graphic Gap Match   |

Match each function of the radish plant to the plant structure that helps the radish plant population survive.

Move the answers to the correct boxes.



| Score | Scoring Rubric   |
|-------|--|
| 1     | Student places “Produces food for the plant” to the left of the leaves.<br>Student places “Helps the plant reproduce” to the right of the flowers.<br>Student places “Collects water for the plant” to the right of the roots. |
| 0     | The response is incorrect or irrelevant.   |

|   |   |
|---|---|
| Item Number   | 7   |
| Item Title  | Pollinator Preferences  |
| Domain ( <i>Reporting Category</i> )  | Life Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | <i>Item will not contribute to SEP Group score.</i>   |
| Content Standard  | 3.L1U1.5  |
| SEP   | Constructing Explanations and Designing Solutions   |
| Crosscutting Concepts (CC)  | Structure and Function  |
| Phenomenon  | In a population of radish plants, yellow flowers attracted honeybees more often than white flowers did, even though white was the most common flower color. |
| TAGS  | S3  |
| Item Type   | Inline Choice   |

Explain how honeybees carrying pollen help the radish plant population.

Complete the sentences by selecting the correct answers from the drop-down menus.

Pollen grains help the radish plants produce  .

Honeybees help the plants by carrying pollen from one plant to another, which transfers  .

| Score | Scoring Rubric   |
|-------|--|
| 1     | Correct Answer: Pollen grains help the radish plants produce <b>offspring</b> . Honeybees help the plants by carrying pollen from one plant to another, which transfers <b>genetic information</b> . |
| 0     | The response is incorrect or irrelevant.   |

|   |   |
|---|---|
| Item Number   | 8   |
| Item Title  | Pollinator Preferences  |
| Domain ( <i>Reporting Category</i> )  | Life Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | <i>Item will not contribute to SEP Group score.</i>   |
| Content Standard  | 3.L1U1.5  |
| SEP   | Constructing Explanations and Designing Solutions   |
| Crosscutting Concepts (CC)  | Structure and Function  |
| Phenomenon  | In a population of radish plants, yellow flowers attracted honeybees more often than white flowers did, even though white was the most common flower color. |
| TAGS  | G2  |
| Item Type   | Multiple Choice   |

Which statement explains how having yellow flowers benefits radish plants?

- A. Plants with yellow flowers are larger than plants with other flower colors.
- B. Yellow flowers frequently attract honeybees, which helps the plants reproduce.
- C. Yellow flowers are prettier, which helps the plants outlive other plants.
- D. Plants with yellow flowers are more likely to outlive plants with other flower colors.

(1 Point)

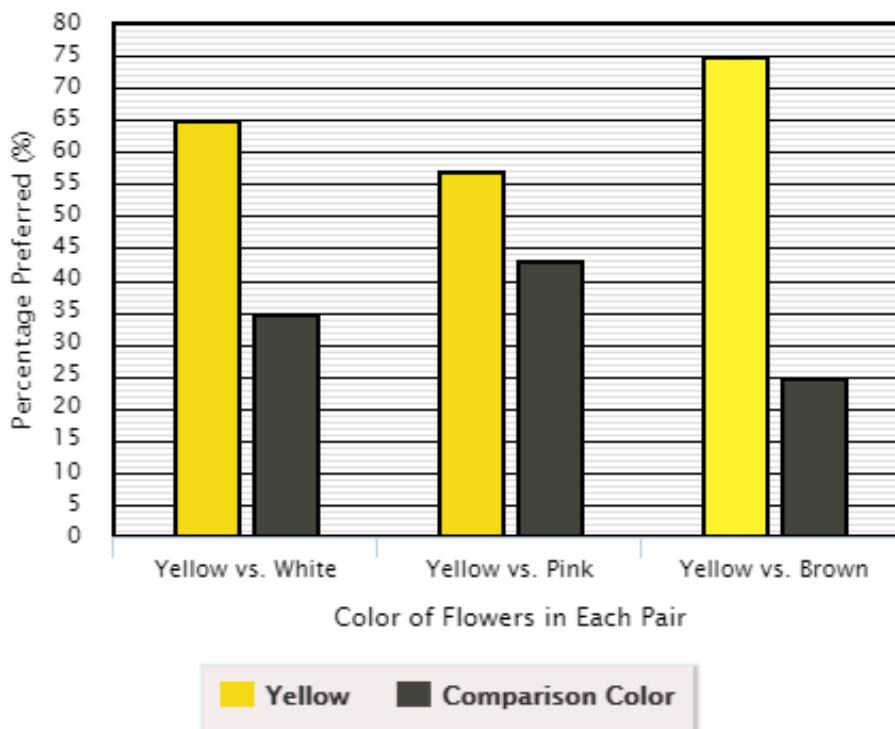
|   |   |
|---|---|
| Item Number   | 9   |
| Item Title  | Pollinator Preferences  |
| Domain ( <i>Reporting Category</i> )  | Life Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | <i>Item will not contribute to SEP Group score.</i>   |
| Content Standard  | 5.L3U1.9  |
| SEP   | Analyzing and Interpreting Data   |
| Crosscutting Concepts (CC)  | Patterns  |
| Phenomenon  | In a population of radish plants, yellow flowers attracted honeybees more often than white flowers did, even though white was the most common flower color. |
| TAGS  | S3  |
| Item Type   | Bar Graph, Inline Choice  |

This question has **two** parts. First answer Part A. Then answer Part B.

### Part A

Compare the honeybee preferences by graphing the data in **Table 2**. Drag the top of each bar to the correct height.

### Honeybee Flower Preferences



**Part B**

Based on the Honeybee Flower Preferences, complete the sentence by selecting the correct answers from the drop-down menu.

Based on the graph, it is likely that as a second choice, honeybees prefer to

visit  flowers, and they least prefer to visit

flowers.

| Score | Scoring Rubric   |
|-------|--|
| 2     | <p>Both parts are answered correctly:</p> <p>Part A: Student raises bars to the following values from left to right: 65, 35; 57, 43; 75, 25</p> <p>Part B: Based on the graph, it is likely that as a second choice, honeybees prefer to visit <b>pink</b> flowers, and they prefer to visit <b>brown</b> flowers.</p> |
| 1     | <p>Only one part is answered correctly.</p>  |
| 0     | <p>The response is incorrect or irrelevant.</p>  |

|   |   |
|---|---|
| Item Number   | 10  |
| Item Title  | Pollinator Preferences  |
| Domain ( <i>Reporting Category</i> )  | Life Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | <i>Item will not contribute to SEP Group score.</i>   |
| Content Standard  | 5.L3U1.9  |
| SEP   | Analyzing and Interpreting Data   |
| Crosscutting Concepts (CC)  | Cause and Effect  |
| Phenomenon  | In a population of radish plants, yellow flowers attracted honeybees more often than white flowers did, even though white was the most common flower color. |
| TAGS  | G2  |
| Item Type   | Fill in Blank   |

Based on the data in **Tables 1 and 2**, which color of flower will be seen the **most** in the radish population over time?

Enter the name of a color in the box.

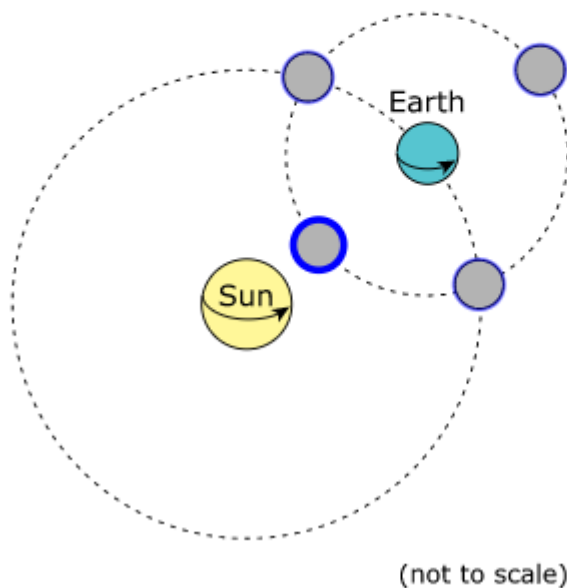
yellow

| Score | Scoring Rubric                              |
|-------|---|
| 1     | Student enters: Yellow (not case sensitive) |
| 0     | The response is incorrect or irrelevant.    |

|   |  |
|---|--|
| Item Number   | 11   |
| Item Title  | Motions and Forces   |
| Domain ( <i>Reporting Category</i> )  | Earth and Space Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | Sensemaking  |
| Content Standard  | 5.E2U1.7   |
| SEP   | Developing and Using Models  |
| Crosscutting Concepts (CC)  | Patterns   |
| Phenomenon  | Gravity affects the motion of the solar system and the motion of objects on Earth. |
| TAGS  | G2   |
| Item Type   | Hot Spot   |

The appearance of the moon from any position on Earth changes during each month.

Choose the position of the moon that creates the appearance of a new moon for observers on Earth. Select the moon that is in the correct position.



| Score | Scoring Rubric  |
|-------|---|
| 1     | Student selects only the circle for locating the moon directly between the sun and Earth. |
| 0     | The response is incorrect or irrelevant.  |



|   |  |
|---|--|
| Item Number   | 12   |
| Item Title  | Motions and Forces   |
| Domain ( <i>Reporting Category</i> )  | Earth and Space Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | Sensemaking  |
| Content Standard  | 5.E2U1.7   |
| SEP   | Constructing Explanations and Designing Solutions                                  |
| Crosscutting Concepts (CC)  | Systems and System Models  |
| Phenomenon  | Gravity affects the motion of the solar system and the motion of objects on Earth. |
| TAGS  | G3   |
| Item Type   | Multiple Choice  |

A student claims that the investigation shown in **Figure 2** can also be used to model the moon's orbit around Earth if students shorten the string attached to the foam sphere.

Which statement **best** explains how making this change would model the moon's orbit?

- A. The foam sphere would take longer to make one revolution.
- B. The foam sphere would touch the top of the pipe and stop moving.
- C. The foam sphere would revolve so that its opposite side faces the student's head.
- D. The foam sphere would take less time to make one revolution.

(1 Point)

|   |  |
|---|--|
| Item Number   | 13   |
| Item Title  | Motions and Forces   |
| Domain ( <i>Reporting Category</i> )  | Earth and Space Science  |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | <i>Item will not contribute to SEP Group score.</i>                                |
| Content Standard  | 5.E2U1.8   |
| SEP   | Constructing Explanations and Designing Solutions                                  |
| Crosscutting Concepts (CC)  | Cause and Effect   |
| Phenomenon  | Gravity affects the motion of the solar system and the motion of objects on Earth. |
| TAGS  | G3   |
| Item Type   | Multiple Choice  |

A student is performing the investigation shown in **Figure 2**. The string breaks while the foam sphere is moving. The sphere moves in a straight line and then falls to the ground.

Which statement **best** explains this motion?

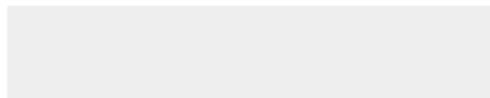
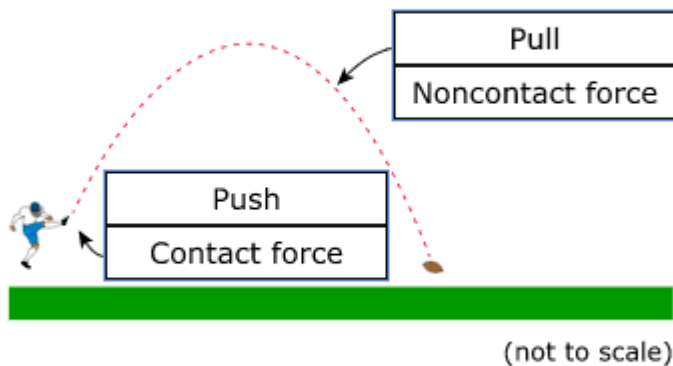
- A. Earth's gravity causes all objects to move in straight lines.
- B. Earth's gravity works mostly on objects that are motionless.
- C. Earth's gravity pulls all objects toward Earth's center.
- D. Earth's gravity works mostly on objects that are not attached to anything.

(1 Point)

|   |  |
|---|--|
| Item Number   | 14   |
| Item Title  | Motions and Forces   |
| Domain ( <i>Reporting Category</i> )  | Physical Science   |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | <i>Item will not contribute to SEP Group score.</i>                                |
| Content Standard  | 5.P2U1.3   |
| SEP   | Developing and Using Models  |
| Crosscutting Concepts (CC)  | Stability and Change   |
| Phenomenon  | Gravity affects the motion of the solar system and the motion of objects on Earth. |
| TAGS  | S2   |
| Item Type   | Graphic Gap Match  |

Use **Figure 3** to identify the kinds of forces that act on the football at the two positions shown.

Move each of the **four** answers into a correct box.



| Score | Scoring Rubric   |
|-------|--|
| 1     | The student selects both "Push" and "Contact force" for the forces at the kicker's foot and "Pull" and "Noncontact force" for the ball on the downward path of the trajectory. |
| 0     | The response is incorrect or irrelevant.   |

|   |  |
|---|--|
| Item Number   | 15   |
| Item Title  | Motions and Forces   |
| Domain ( <i>Reporting Category</i> )  | Physical Science   |
| Science and Engineering Practices (SEP) Group ( <i>Reporting Category</i> ) | <i>Item will not contribute to SEP Group score.</i>                                |
| Content Standard  | 5.P2U1.3   |
| SEP   | Obtaining, Evaluating, and Communication of Information                            |
| Crosscutting Concepts (CC)  | Cause and Effect   |
| Phenomenon  | Gravity affects the motion of the solar system and the motion of objects on Earth. |
| TAGS  | G3   |
| Item Type   | Multiple Choice  |

This question has **two** parts. First answer Part A. Then answer Part B.

### Part A

A student writes a conclusion based on the information in **Figures 1, 2, and 3**. Complete the sentence by selecting the correct answers from the drop-down menus so that the student's conclusion is valid.

The evidence in the figures shows that Earth's forward motion is  into a curved path by .

**Part B**

A student claims that **Figure 2** incorrectly represents the force of gravity.

Which evidence **best** supports the student's claim?

- A. The string connects the plastic pipe and the foam sphere although gravity is a noncontact force.
- B. Gravity moves the foam sphere away from the plastic pipe when the pipe is rotated.
- C. The student's head is at the center and represents the force of gravity.
- D. Swinging the foam sphere faster shows that the force of gravity can be increased.

| Score | Scoring Rubric   |
|-------|--|
| 1     | The student selects "pulled" and the "force of gravity"<br><br>AND<br><br>Part B = A |
| 0     | The response is incorrect or irrelevant.   |