Computer-Based Sample Test Scoring Guide

Grade 5 Science

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Prepared by the Arizona Department of Education

About the Sample Test Scoring Guide

The Arizona Science Test (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
- Title
- Domain (Reporting Category)
- Science and Engineering Practices (SEP) Group
- Content Standard
- SEP
- Crosscutting Concept (CC)
- Phenomenon
- TAGS
- Item Type
- Number of score points
- Static presentation of the item
- Static presentation of student response field (when appropriate)
- Answer key or scoring rubric

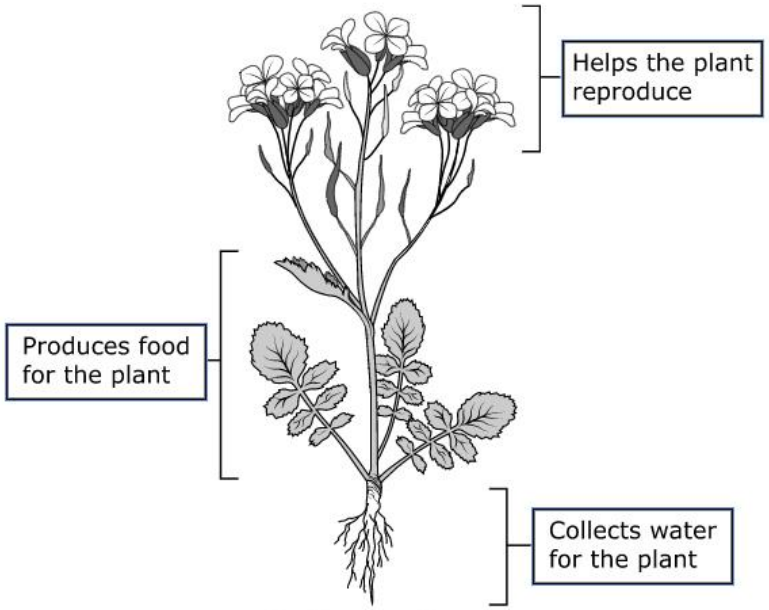
The items included in this guide are representative of the kinds of items that students can expect to experience when taking the computer-based test for AzSCI Grade 5 Science.

Grade 5 Science Sample Test

Item Number	1
Item Title	Pollinator Preferences
Domain (Reporting Category)	Life Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Sensemaking
Content Standard	3.L1U1.5
SEP	Develop and Use 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.



Raphanus sativus

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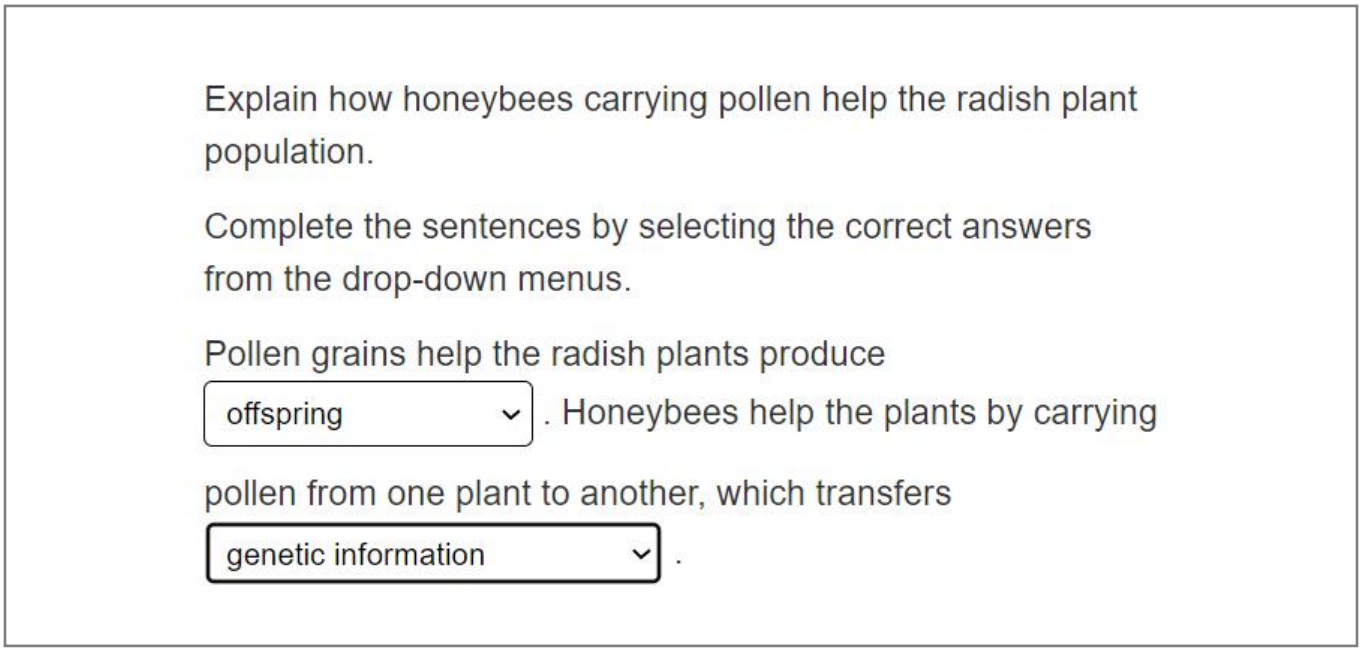
Scoring Rubric	
Score	Description
1	Student places “Produces food for the plant” to the left of the leaves. Student places “Helps the plant reproduce” to the right of the flowers. Student places “Collects water for the plant” to the right of the roots.
0	The response is incorrect or irrelevant.

(1 Point)

Grade 5 Science Sample Test

Item Number	2
Item Title	Pollinator Preferences
Domain (Reporting Category)	Life Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Does not contribute
Content Standard	3.L1U1.5
SEP	Construct Explanations and Design 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



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Scoring Rubric	
Score	Description
1	Correct answer: Pollen grains help the radish plants produce **offspring**. Honeybees help the plants by carrying pollen from one plant to another, which transfers **genetic information**.
0	The response is incorrect or irrelevant.

(1 Point)

Grade 5 Science Sample Test

Item Number	3
Item Title	Pollinator Preferences
Domain (Reporting Category)	Life Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Does not contribute
Content Standard	3.L1U1.5
SEP	Construct Explanations and Design 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)

Grade 5 Science Sample Test

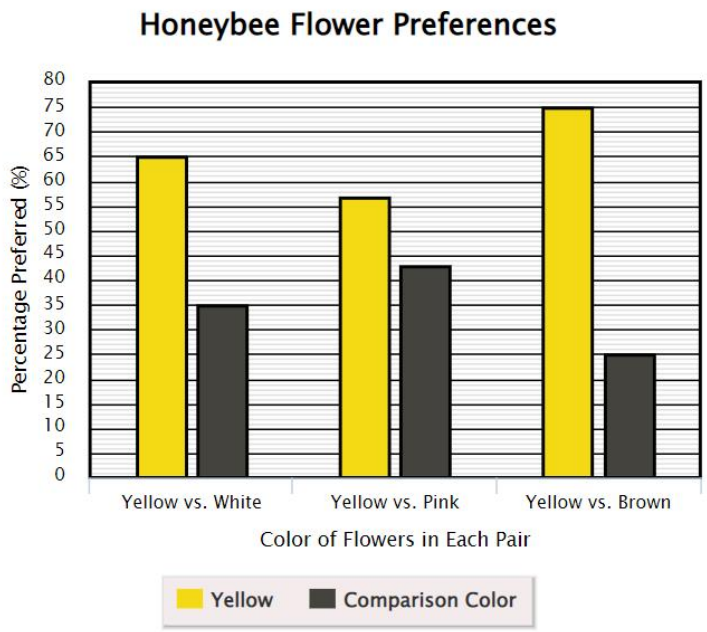
Item Number	4
Item Title	Pollinator Preferences
Domain (Reporting Category)	Life Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Investigating
Content Standard	5.L3U1.9
SEP	Analyze and Interpret Data
Crosscutting Concepts (CC)	Patterns
Phenomenon	In a population of radish plants, yellow flowers attracted honeybees more often than white flowers did, even though white was the most common flower color.
TAGS	S3
Item Type	TPD–Bar Graph and Inline Choice

Note: This question has two parts –Part A

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.



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Note: This question has two parts(cont.)–Part B

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 [pink] flowers, and they least prefer to visit [brown] flowers.

Scoring Rubric	
Score	Description
1	PART A: Student raises bars to the following values from left to right: be 65, 35; 57, 43; 75, 25 PART B: Based on the graph, it is likely that as a second choice, honeybees prefer to visit pink flowers, and they least prefer to visit brown flowers.
0	The response is incorrect or irrelevant.

(1 Point) Student selected the correct answer for each part.

Grade 5 Science Sample Test

Item Number	5
Item Title	Pollinator Preferences
Domain (Reporting Category)	Life Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Investigating
Content Standard	5.L3U1.9
SEP	Analyze and Interpret 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	G3
Item Type	Gap Match

Move the correct answer to the box.

Based on the data in **Table 1** and **Table 2**, the [yellow] flower will be seen the most in the radish population over time.

Scoring Rubric	
Score	Description
1	Based on the data in **Table 1** and **Table 2**, the **yellow** flower will be seen the most in the radish population over time.
0	The response is incorrect or irrelevant.

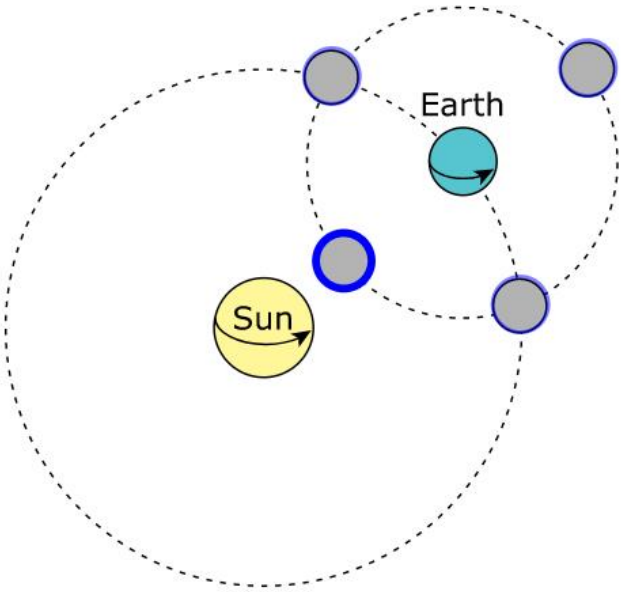
(1 Point)

Grade 5 Science Sample Test

Item Number	6
Item Title	Motions and Forces
Domain (Reporting Category)	Earth and Space Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Sensemaking
Content Standard	5.E2U1.7
SEP	Develop and Use 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.



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

(1 Point)

Grade 5 Science Sample Test

Item Number	7
Item Title	Motions and Forces
Domain (Reporting Category)	Earth and Space Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Sensemaking
Content Standard	5.E2U1.7
SEP	Develop and Use Models
Crosscutting Concepts (CC)	System 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)

Grade 5 Science Sample Test

Item Number	8
Item Title	Motions and Forces
Domain (Reporting Category)	Earth and Space Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Does not contribute
Content Standard	5.E2U1.8
SEP	Construct Explanations and Design 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.

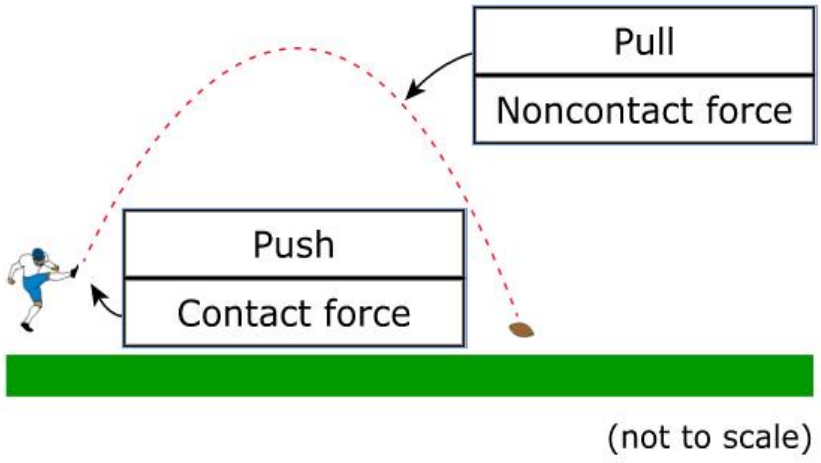
(1 Point)

Grade 5 Science Sample Test

Item Number	9
Item Title	Motions and Forces
Domain (Reporting Category)	Physical Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Does not contribute
Content Standard	5.P2U1.3
SEP	Develop and Use 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.



Scoring Rubric	
Score	Description
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.

(1 Point)

Grade 5 Science Sample Test

Item Number	10
Item Title	Motions and Forces
Domain (Reporting Category)	Physical Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Does not contribute
Content Standard	5.P2U1.3
SEP	Obtain, Evaluate, and Communicate 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	TPI–Inline Choice and Multiple Choice

Note: This question has two parts –Part A

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 [pulled] into a curved path by [the force of gravity] .

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Note: This question has two parts(cont.)–Part B

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.

Scoring Rubric	
Score	Description
2	Both parts are answered correctly: PART A: The evidence in the figures shows that Earth's forward motion is **pulled** into a curved path by **the force of gravity**. PART B: A
1	The student provides the correct response to Part A or Part B.

(2 Point) Student selected the correct answer for each part.

Grade 5 Science Sample Test

Item Number	11
Item Title	Coconino County Fossils
Domain (Reporting Category)	Earth and Space Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Sensemaking
Content Standard	4.E1U1.7
SEP	Develop and Use 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 Table

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A scientist wants to find fossils in Coconino County. There are three selected sites, each with different ages of rocks, as shown in **Table 1: Average Age of Rocks**.

Table 1: Average Age of Rocks

Site	When Rocks Formed
1	About 230 million years ago
2	About 260 million years ago
3	About 350 million years ago

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

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

(1 Point)

Grade 5 Science Sample Test

Item Number	12
Item Title	Coconino County Fossils
Domain (Reporting Category)	Earth and Space Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Sensemaking
Content Standard	4.E1U1.7
SEP	Develop and Use 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	TPD—Multiple Choice and Multiple Choice

Note: This question has two parts –Part A

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.

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Note: This question has two parts(cont.)–Part B

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) Student selected the correct answer for each part.

Grade 5 Science Sample Test

Item Number	13
Item Title	Coconino County Fossils
Domain (Reporting Category)	Earth and Space Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Sensemaking
Content Standard	4.E1U1.7
SEP	Construct Explanations and Design Solutions
Crosscutting Concepts (CC)	Cause and Effect
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	Match Table Grid

Coconino County has relatively few rocks and fossils that were formed between 220 million years ago and the present time.

Determine whether each statement is likely or is not likely a reason for the lack of fossils in the fossil record in Coconino County during this time period.

Select **all** the correct answers.

Statements	Likely a Reason	Not Likely a Reason
Rocks that are 220 million years old and younger have eroded.	○	◉
Rocks that are 220 million years old and younger are found more often.	◉	○
Older organisms became extinct between 220 million years ago and the present time.	◉	○
Coconino County was below sea level between 220 million years ago and the present time.	○	◉

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Scoring Rubric	
Score	Description
1	**Likely a Reason**: students select Column 1 for Rows 2,3 **Not Likely a Reason**: students select Column 2, Rows 1,4
0	The response is incorrect or irrelevant.

(1 Point)

Grade 5 Science Sample Test

Item Number	14
Item Title	The Red Car
Domain (Reporting Category)	Physical Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Sensemaking
Content Standard	3.P4U1.3
SEP	Develop and Use 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

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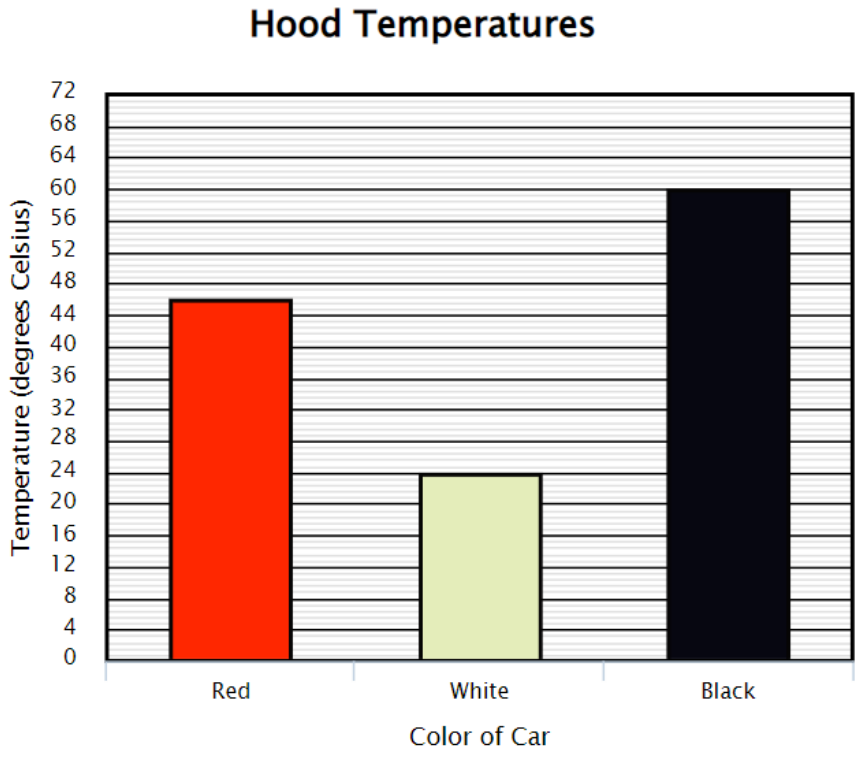
The student puts a thermometer on the hood of each car to measure the amount of energy each hood is receiving from the sun.

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.



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

(1 Point)

Grade 5 Science Sample Test

Item Number	15
Item Title	The Red Car
Domain (Reporting Category)	Physical Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Does not contribute
Content Standard	3.P4U1.3
SEP	Analyze and Interpret Data
Crosscutting Concepts (CC)	Structure and Function
Phenomenon	
TAGS	S2
Item Type	TPD—Point Graph and Multiple Choice

Note: This question has two parts –Part A

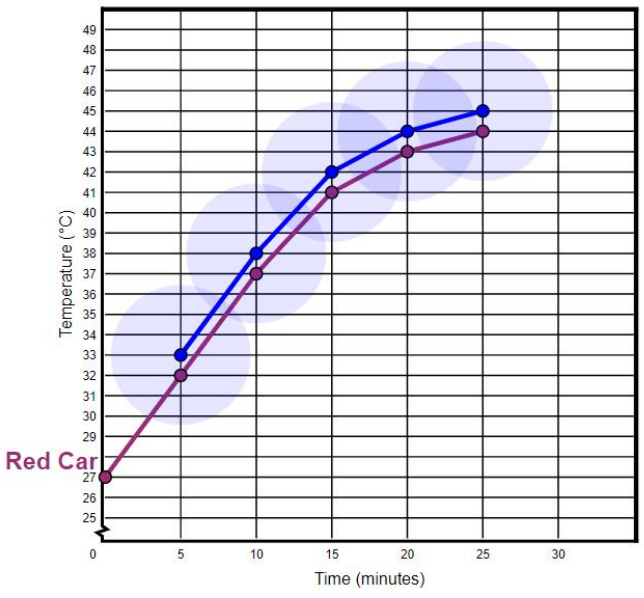
This question has **two** parts. First answer Part A. Then answer Part B.

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



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Note: This question has two parts(cont.)–Part B

Part B

Based on the graph in Part A, 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

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

(1 Point) Student selected the correct answer for each part.

Grade 5 Science Sample Test

Item Number	16
Item Title	The Red Car
Domain (Reporting Category)	Physical Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Investigating
Content Standard	5.P1U1.1
SEP	Analyze and Interpret Data
Crosscutting Concepts (CC)	Energy and Matter
Phenomenon	
TAGS	G3
Item Type	Multiple Response

Crayons are made of very small unseen particles that cannot become smaller. A student left a crayon in the red 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.

Based on the data shown in **Table 1**, which statements **best** describe the physical state of the crayon?

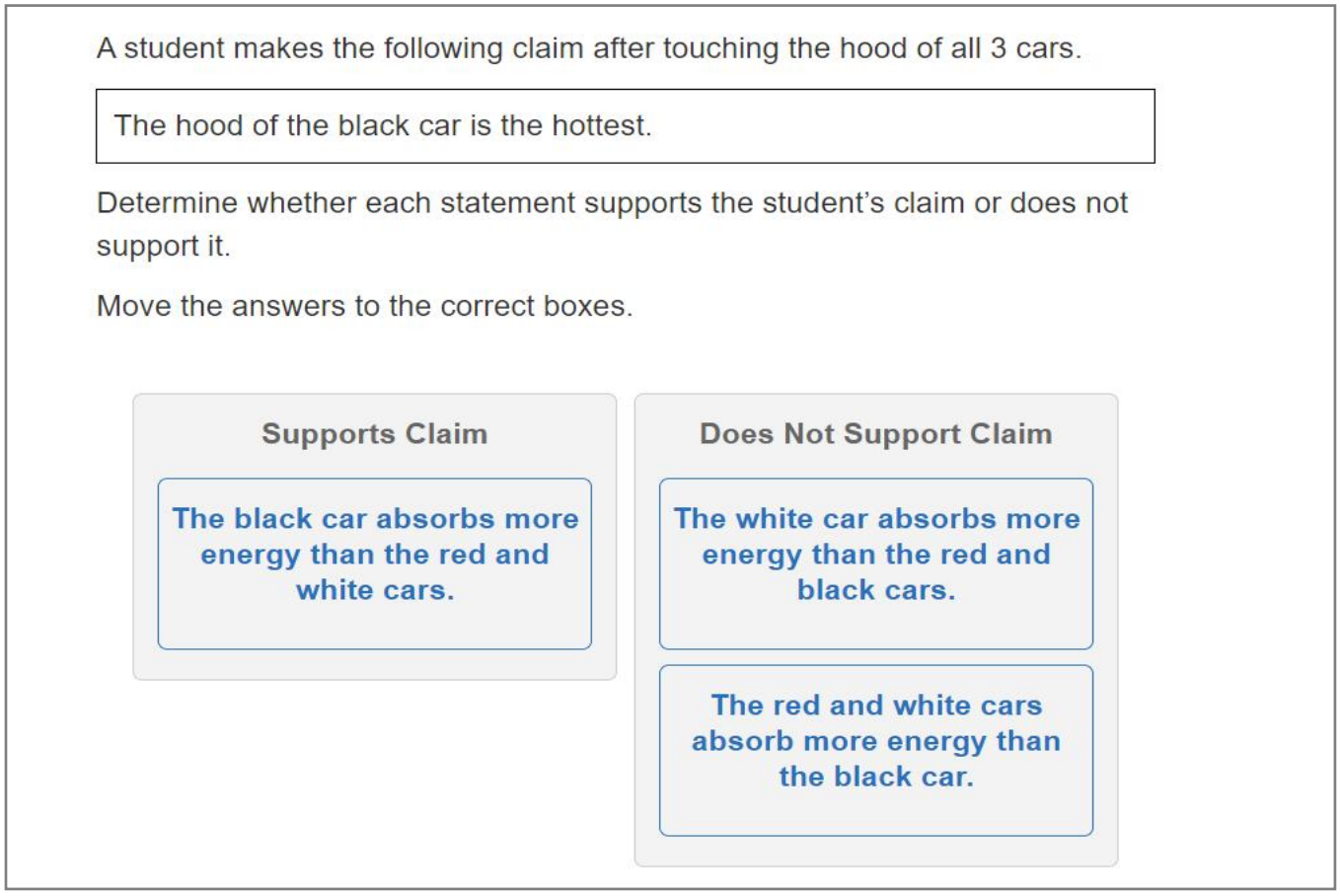
Select **two** correct answers.

- [x] A. The number of crayon particles remains the same.
- [ ] B. The number of crayon particles increases.
- [ ] C. The number of crayon particles decreases.
- [ ] D. The crayon particles are more likely to begin changing into a liquid at 25 minutes than at 45 minutes.
- [x] E. The crayon particles are more likely to begin changing into a liquid at 40 minutes than at 35 minutes.

(1 Point)

Grade 5 Science Sample Test

Item Number	17
Item Title	The Red Car
Domain (Reporting Category)	Physical Science
Science and Engineering Practices (SEP) Group (Reporting Category)	Investigating
Content Standard	5.P4U1.6
SEP	Analyze and Interpret Data
Crosscutting Concepts (CC)	Energy and Matter
Phenomenon	
TAGS	S3
Item Type	Match



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Scoring Rubric	
Score	Description
1	**Supports Claim**: The black car absorbs more energy than the red and white cars. **Does Not Support:** The white car absorbs more energy than the red and black cars. The red and white cars absorb more energy than the black car.
0	The response is incorrect or irrelevant.

(1 Point)