Computer-Based Sample Test Scoring Guide

Grade 8 Math

Created September 2021
Prepared by the Arizona Department of Education

About the Sample Test Scoring Guide

The Arizona's Academic Standards Assessment (AASA) Sample Test Scoring Guides provide details about the items, student response types, correct responses, and related scoring considerations for AASA Sample Test items.

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

- Item number
- Cluster
- Content Standard
- Depth of Knowledge (DOK)
- Static presentation of the item
- Static presentation of student response field (when appropriate)
- Answer key, rubric or exemplar
- Applicable score point(s) for each item

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 AASA Grade 8 Math.

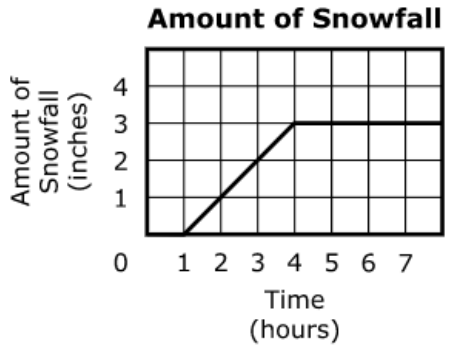
Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
1	8.F.B	8.F.B.5	2

Daniel recorded the amount of snowfall during an 8-hour period in the graph shown.

Complete the sentences about the graph.

Move the correct answer to each box. Not all answers will be used.



decreasing linear

The graph shows a function that is [nonlinear].

When $2 < x < 3$, the graph is [increasing].

When $5 < x < 7$, the graph is [constant].

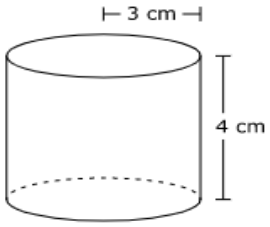
Scoring Rubric	
Score	Description
1	Student response is "nonlinear" in Gap 1, "increasing" in Gap 2, and "constant" in Gap 3.
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
2	8.G.C	8.G.C.9	2

The dimensions, in centimeters (cm), for Cylinder F are shown.

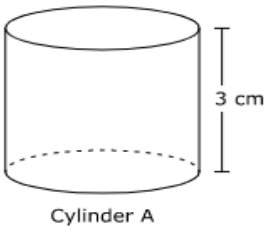


Cylinder F

Which cylinders have the same volume as Cylinder F? (Cylinders are not to scale.)

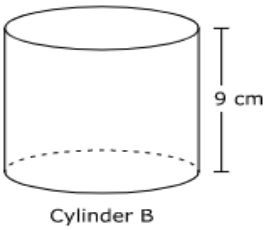
Select all the correct answers.

☐ A.



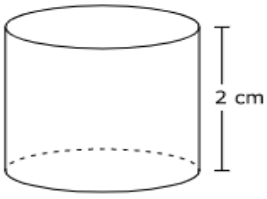
Cylinder A

☑ B.



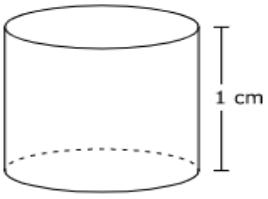
Cylinder B

☐ C.



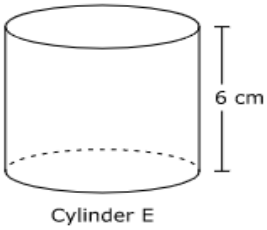
Cylinder C

☑ D.



Cylinder D

☐ E.



Cylinder E

(1 Point) Student selected all of the correct answers.

Grade 8 Math Sample Test

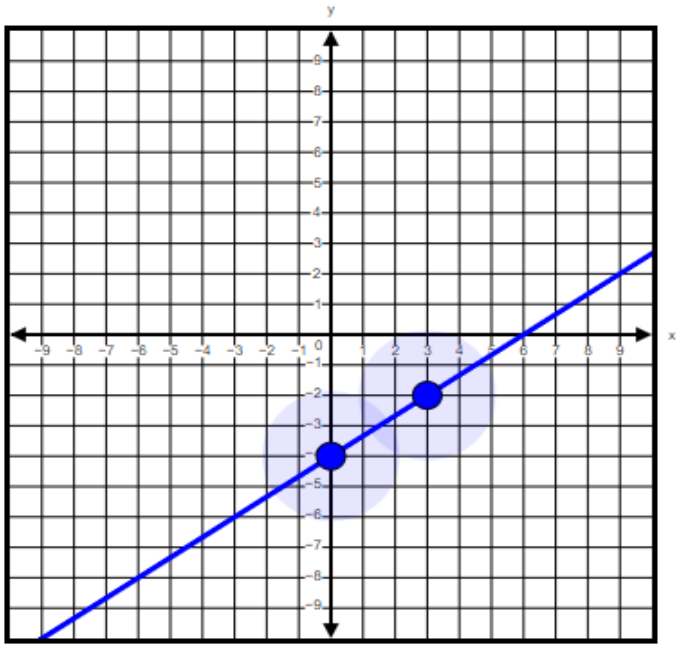
Item Number	Cluster	Content Standard	DOK
3	8.EE.B	8.EE.B.6	2

A linear equation is given.

$y = \frac{2}{3}x - 8$

Graph a line with the same slope as the equation given and a y-intercept of -4.

Select two points on the coordinate plane. A line will connect the points.



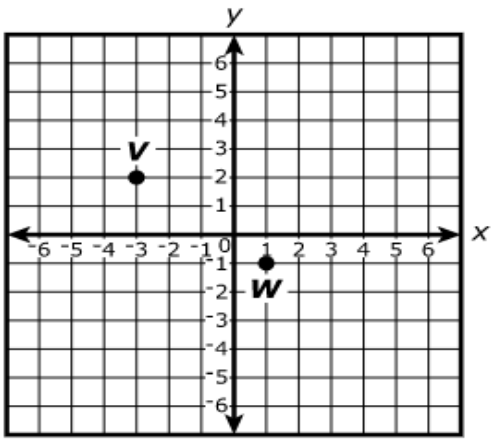
Scoring Rubric	
Score	Description
1	Student response is to plot the line $y = \frac{2}{3}x - 4$.
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
4	8.G.B	8.G.B.8	2

What is the distance between point V and point W?



- A. $\sqrt{5}$
- B. $\sqrt{7}$
- C. 5
- D. 7

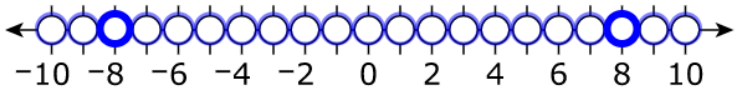
(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
5	8.EE.A	8.EE.A.2	2

What are the solutions to the equation $x^2 = 64$?

Select all the correct answers on the number line.



Scoring Rubric	
Score	Description
1	The student correctly identifies hot spots at -8 and 8.
0	The response is incorrect or irrelevant.

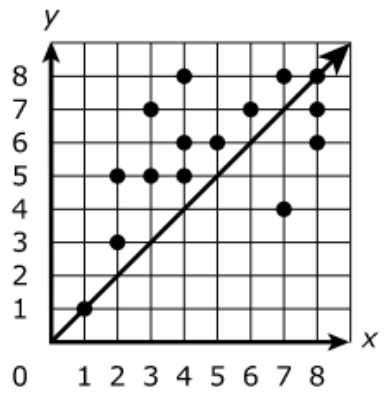
(1 Point)

Grade 8 Math Sample Test

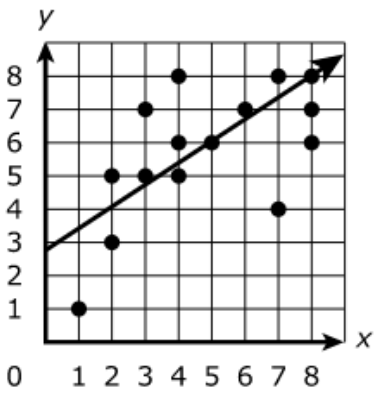
Item Number	Cluster	Content Standard	DOK
6	8.SP.A	8.SP.A.2	2

Which graph shows a line of best fit that best represents the data?

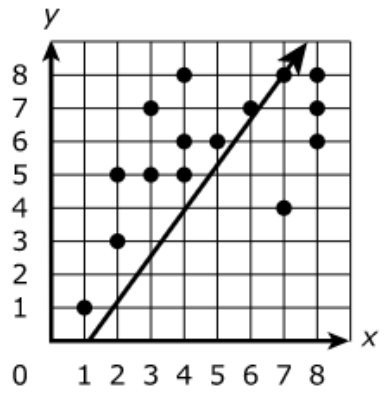
A.



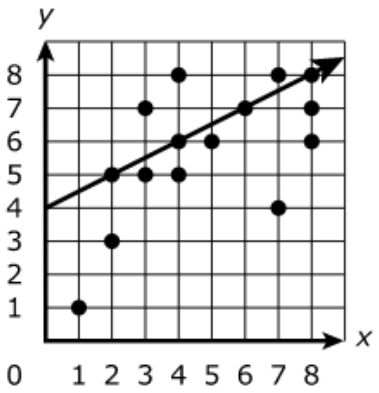
B.



C.



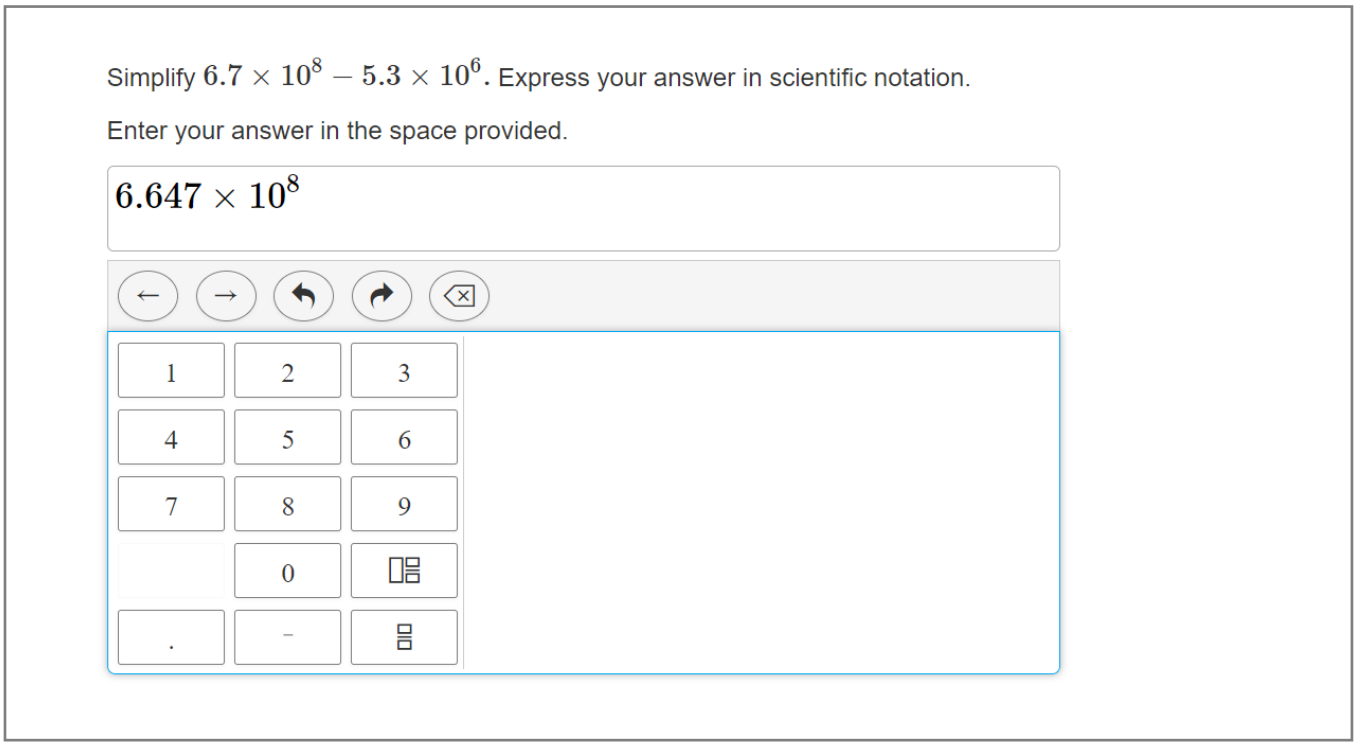
D.



(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
7	8.EE.A	8.EE.A.4	2



Scoring Rubric	
Score	Description
1	Student response is 6.647 in the first gap and 8 in the second gap or equivalent numbers. Rounding is not allowed.
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
8	8.F.A	8.F.A.3	1

Classify each function as either linear or nonlinear.

Select all the correct answers.

Function	Linear	Nonlinear
$y = \frac{1}{7}x + \frac{5}{6}$	●	○
$y = 4x^3$	○	●
$y = x^2$	○	●
$y = 3x$	●	○

Scoring Rubric	
Score	Description
1	Student response is "Linear" for $y = \frac{1}{7}x + \frac{5}{6}$ and $y = 3x$. Student response is "Nonlinear" for $y = 4x^3$ and $y = x^2$.
0	The response is incorrect or irrelevant.

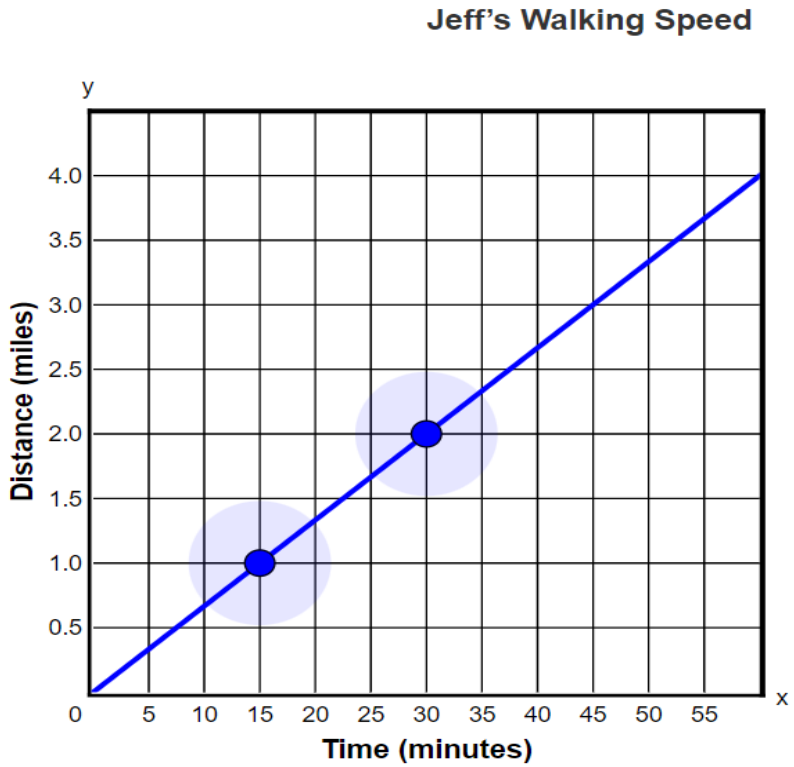
(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
9	8.EE.B	8.EE.B.5	1

Jeff is walking at a constant speed of 1 mile every 15 minutes. Graph the line that represents the distance Jeff walks, y, after x minutes.

Select two points on the coordinate grid. A line will connect the points.



Scoring Rubric	
Score	Description
1	Student response is the selection of correct points on the graph to create the line y = (1/15)x.
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
10	8.NS.A	8.NS.A.3	2

For each inequality, determine whether c could be rational or irrational, or whether it cannot be determined.

Select all the correct answers. You may select more than one answer in each row.

Inequality	Could Be Rational	Could Be Irrational	Cannot Be Determined
$1.9999 < c < 2.0001$	☑	☑	☐
$\frac{1}{2} < c < \frac{1}{3}$	☐	☐	☑
$\sqrt{2} < c < \pi$	☑	☑	☐

Scoring Rubric	
Score	Description
1	Student identified: 1st inequality: *c* could be rational and *c* could be irrational 2nd inequality: *c* cannot be determined 3rd inequality: *c* could be rational and *c* could be irrational
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
11	8.EE.A	8.EE.A.3	2

How many times larger is 8×10^6 than 2×10^3?

- A. 4×10^2
- B. 4×10^3
- C. 6×10^2
- D. 6×10^3

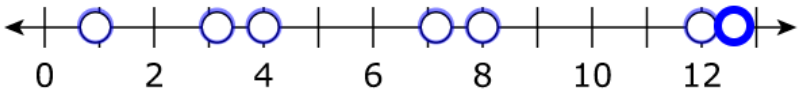
(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
12	8.NS.A	8.NS.A.2	2

Which point is the best approximation of 4π?

Select the correct answer on the number line.



Scoring Rubric	
Score	Description
1	The student correctly identifies the approximation of 4π at the last hot spot on the right.
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
13	8.EE.C	8.EE.C.7	1

Three linear equations are shown. Determine whether each equation has one solution, no solution, or infinitely many solutions.

Move the correct answer to each box.

One solution	$7(x + 8) = -4$
No solution	$3x + (5 - 2x) = x - 8$
Infinitely many solutions	$3 + 12x = 3(4x + 1)$

Scoring Rubric	
Score	Description
1	Student arranges equations in correct categories. 7(x + 8) = –4 has one solution. 3x + (5 – 2x) = x – 8 has no solution. 3 + 12x = 3(4x + 1) has infinitely many solutions.
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
14	8.NS.A	8.NS.A.1	1

Classify each number as rational or irrational.

Select each correct answer.

Number	Classification
4.3125000001	Rational
6π	Irrational
$-0.53\overline{124}$	Rational
$\sqrt{13}$	Irrational
$-\frac{\pi}{\pi}$	Rational

(1 Point) Student selected all of the correct answers from the dropdowns.

Grade 8 Math Sample Test

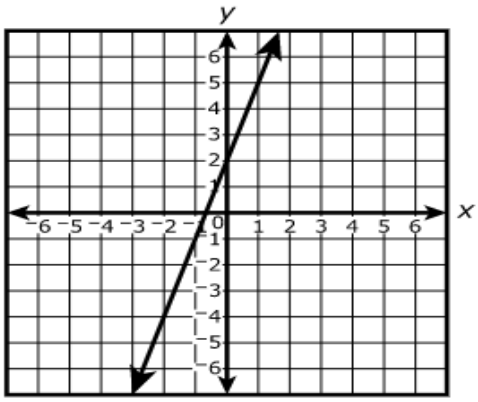
Item Number	Cluster	Content Standard	DOK
15	8.F.A	8.F.A.2	2

The table and the graph represent two functions.

Function 1

x	y
-2	-1
-1	1
0	3
1	5
2	7

Function 2



Which statement is true?

- A. The slope of Function 1 is equal to the slope of Function 2.
- B. The slope of Function 1 is 2 times as great as the slope of Function 2.
- C. The slope of Function 2 is 1.5 times as great as the slope of Function 1.
- D. The slope of Function 2 is negative, and the slope of Function 1 is positive.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
16	8.EE.C	8.EE.C.8	2

A system of equations is given.

$3x + 2y = 10$

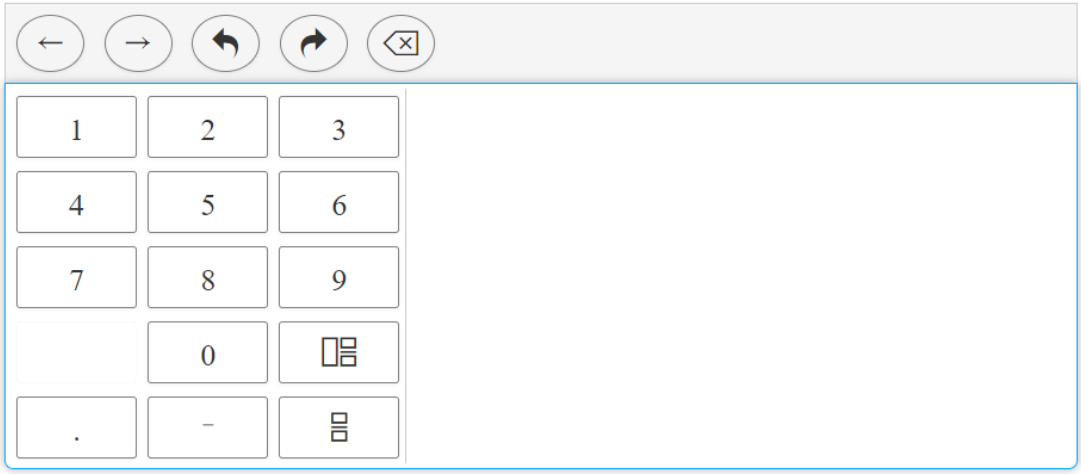
$7x - 3y = 8$

What are the values of x and y for the solution to this system?

Enter your answer in the space provided.

$x = 2$

$y = 2$



Scoring Rubric	
Score	Description
1	Student response is to enter 2 in the first space and 2 in the second space or equivalent numbers.
0	The response is incorrect or irrelevant.

(1 Point)

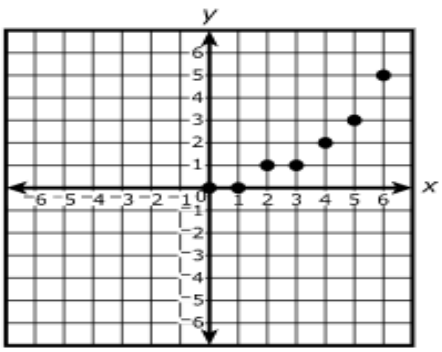
Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
17	8.F.A	8.F.A.1	1

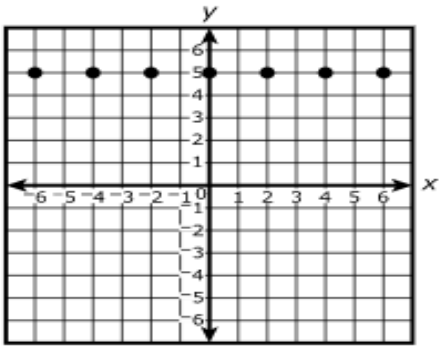
Which graphs represent a function?

Select all the correct answers.

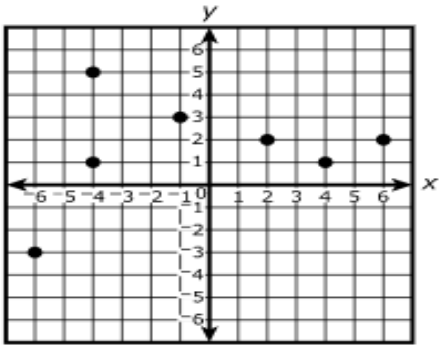
☑ A.



☑ B.



☐ C.



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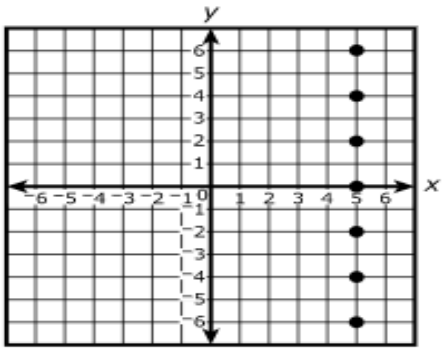
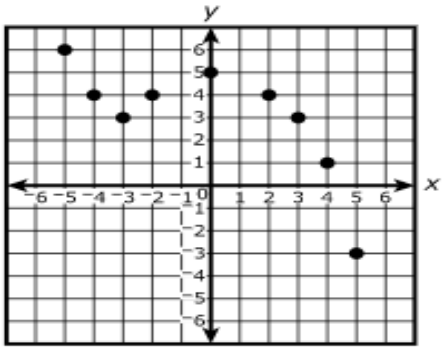
Item Number 17 (cont.)

D.



E.



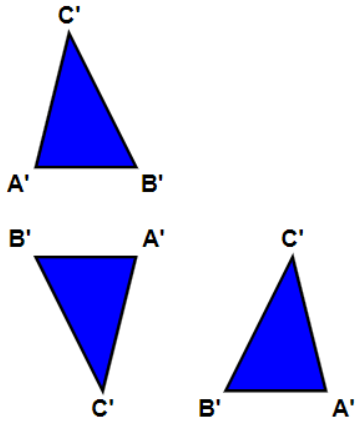
(1 Point) Student selected all of the correct answers.

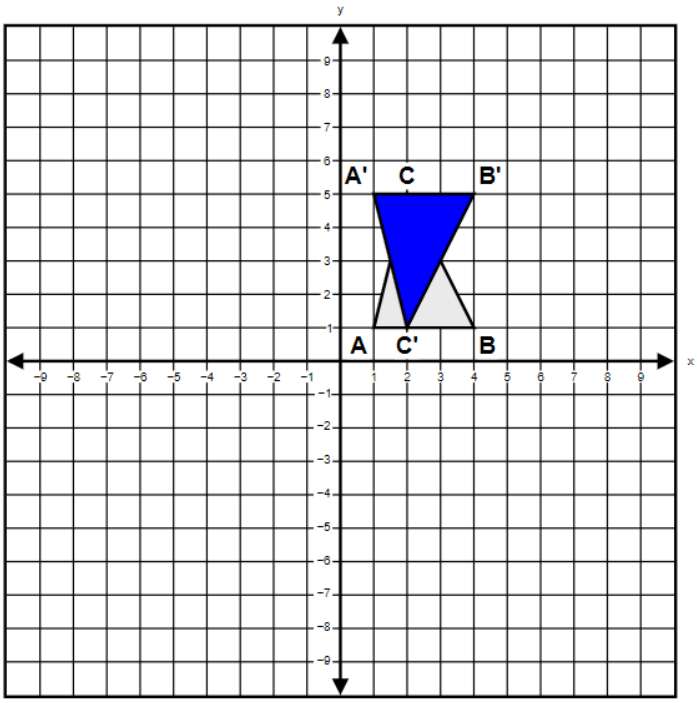
Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
18	8.G.A	8.G.A.3	2

Triangle ABC is shown on the coordinate grid. Triangle ABC is reflected across the line $y = 3$ to create $\triangle A'B'C'$.

Select the correct orientation of $\triangle A'B'C'$ and position it correctly in the coordinate grid.





Scoring Rubric	
Score	Description
1	Student selects the triangle of correct orientation and places it with vertices at the following locations: *A*' (1, 5) *B*' (4, 5) *C*' (2, 1)
0	The response is incorrect or irrelevant.

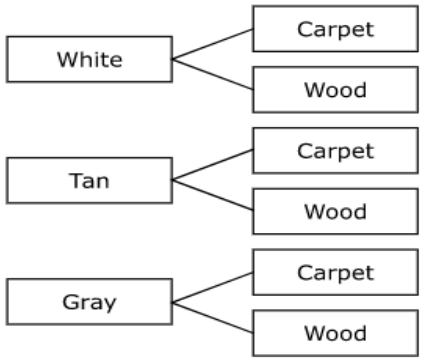
(1 Point)

Grade 8 Math Sample Test

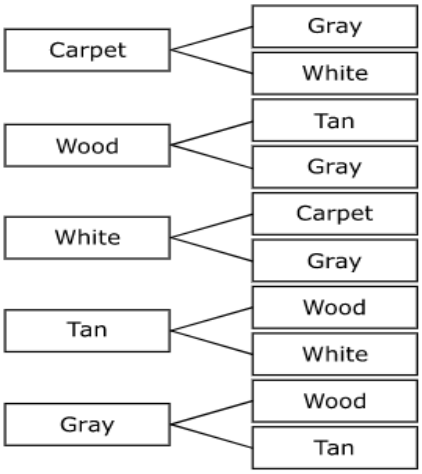
Item Number	Cluster	Content Standard	DOK
19	8.SP.B	8.SP.B.5	1

Bob is renovating his bedroom. He is choosing between three different paint colors for the walls (white, tan, and gray) and two different types of flooring (carpet and wood). Which tree diagram could be used to show all possible outcomes for the choices available?

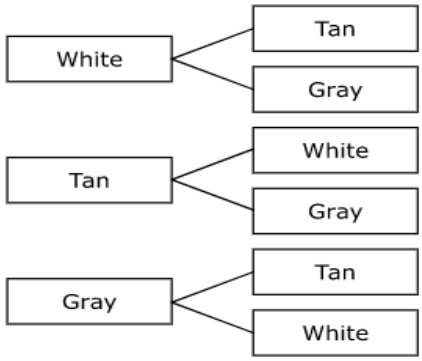
A.



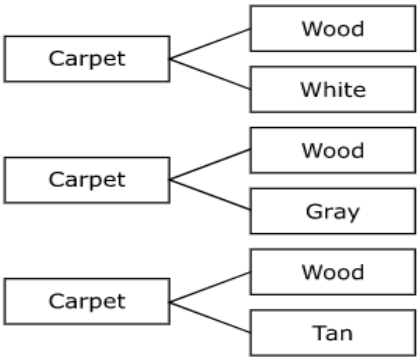
B.



C.



D.

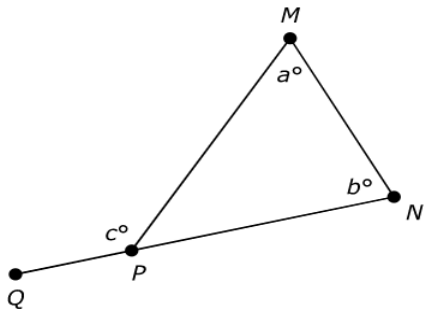


(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
20	8.G.A	8.G.A.5	2

Write an equation that shows b in terms of a and c.



Enter your answer in the space provided.

$b = c - a$

Scoring Rubric	
Score	Description
1	Student response is "c – a" or equivalent equation.
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
21	8.SP.A	8.SP.A.1	1

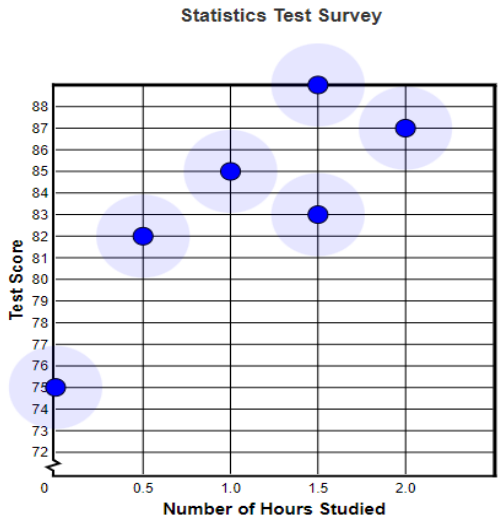
Marcus took a survey of his class and recorded the number of hours each student studied for the statistics test, as well as each student's test score. He recorded the results in the table shown.

Statistics Test Survey

Number of Hours Studied	Test Score
0	75
1	85
1.5	89
0.5	82
1.5	83
2	87

Represent Marcus's data in a scatter plot.

Select a location on the coordinate grid to plot each data point from the table.



Scoring Rubric	
Score	Description
1	The student correctly plots the points (0, 75), (1, 85), (1.5, 89), (0.5, 82), (1.5, 83), and (2, 87).
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
22	8.EE.A	8.EE.A.1	2

Which expression is equivalent to $\frac{5^8}{5^2}$?

- A. 5^4
- B. 5^6
- C. 5^{10}
- D. 5^{16}

(1 Point)

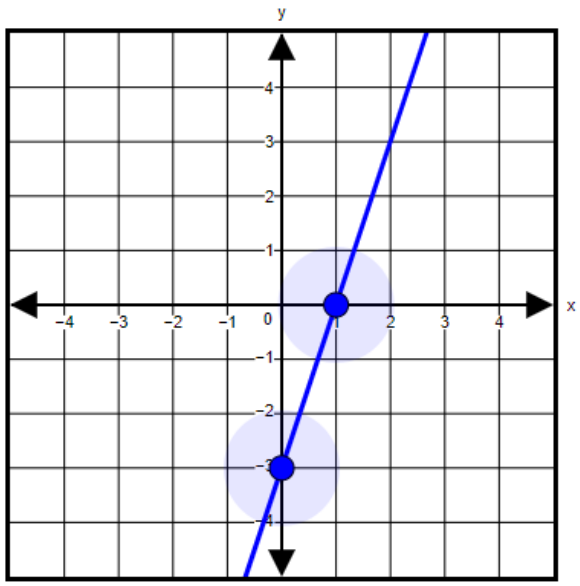
Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
23	8.F.B	8.F.B.4	2

A linear equation is represented by the equation $y = 9x - 3$. A second linear function has the same y-intercept, but has $\frac{1}{3}$ the rate of change.

Create the graph of the second function.

Select two points on the coordinate plane. A line will connect the points.



Scoring Rubric	
Score	Description
1	The student correctly graphs the function $y = 3x - 3$.
0	The response is incorrect or irrelevant.

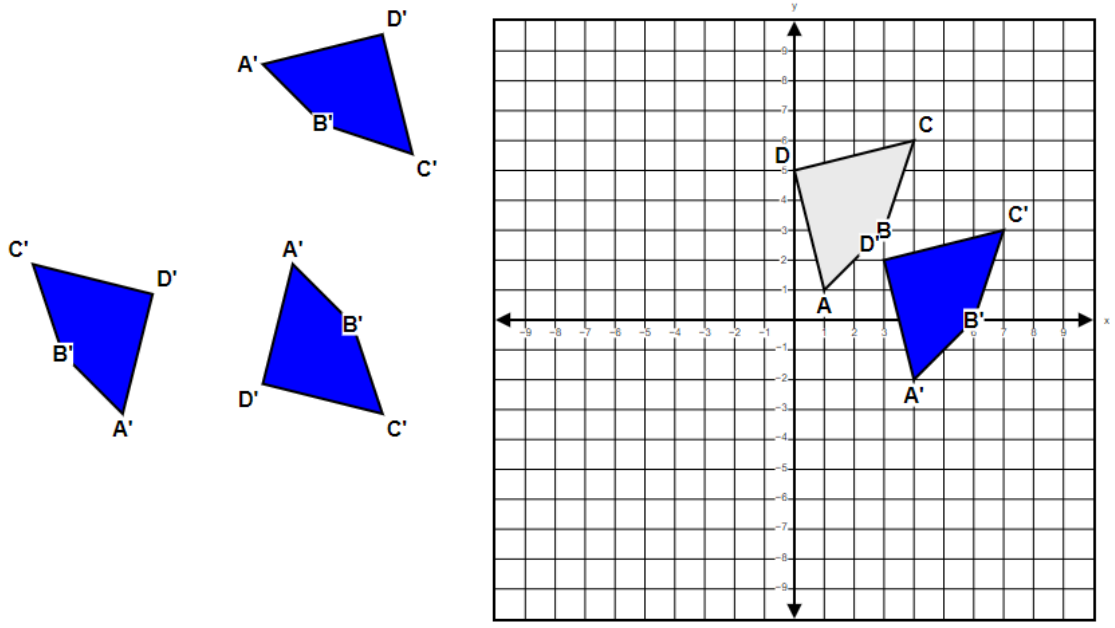
(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
24	8.G.A	8.G.A.3	1

Quadrilateral $ABCD$ is transformed by the rule $(x, y) \rightarrow (x + 3, y - 3)$ to create quadrilateral $A'B'C'D'$.

Select the correct orientation of the quadrilateral $A'B'C'D'$ and position it correctly in the coordinate grid.



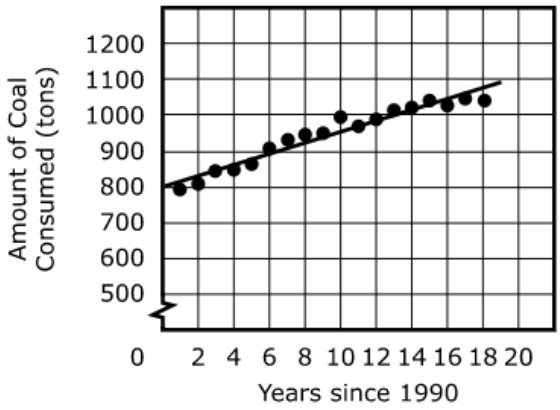
Scoring Rubric	
Score	Description
1	Student places the quadrilateral in the same orientation with *A′* at (4, –2), *B′* at (6, 0), *C′* at (7, 3), and *D′* at (3, 2).
0	The response is incorrect or irrelevant.

(1 Point)

Grade 8 Math Sample Test

Item Number	Cluster	Content Standard	DOK
25	8.SP.A	8.SP.A.3	2

The plot shows the amount of coal consumption for electricity generation in the United States since 1990, with the line of best fit given by $y = 800 + 15.5x$.



Based on the graph, which statements are true?

Select all the correct answers.

- [ ] A. The consumption of coal in 1990 was 15.5 tons.
- [x] B. On average, the consumption of coal increased each year.
- [x] C. The y-intercept is the best estimate of coal consumption in 1990.
- [ ] D. The average change in coal consumption was 250 tons per year.
- [ ] E. The average change in coal consumption per decade was 200 tons.

(1 Point) Student selected all of the correct answers.