MISSISSIPPI
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EDUCATION

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Grade 8 Mathematics

Sample Test Items

1. Which rational number can be represented by the decimal value $0.\overline{33}$?

Ⓐ $\frac{1}{33}$

Ⓑ $\frac{1}{3}$

Ⓒ $\frac{33}{100}$

Ⓓ $\frac{33}{10}$

2. Adrian is creating a number line. Between which pair of numbers should Adrian place $\sqrt{0.5}$?

Ⓐ 0 and 0.35

Ⓑ 0.35 and 0.6

Ⓒ 0.6 and 0.75

Ⓓ 0.75 and 1

3. Which expressions are equivalent to $\left(2^{-3} \cdot 2^{-2} \cdot 2^{3}\right)$?

Select **two** answer choices.

Ⓐ 8^{-2}

Ⓑ 2^{2}

Ⓒ $\frac{1}{4}$

Ⓓ $\frac{1}{64}$

Ⓔ 2^{-2}

4. What are the exact solutions to the equation $x^2 = 26$?

Select **two** answer choices.

Ⓐ -13

Ⓑ $-\sqrt{26}$

Ⓒ 5.1

Ⓓ $\sqrt{26}$

Ⓔ 13

5. Blake and Anthony have a snail race. Blake's snail moves 1.5×10^{-3} centimeters per minute. Anthony's snail moves 3.5×10^{-4} centimeters per minute. How much faster is Blake's snail racing than Anthony's?

Ⓐ 1.15×10^{-3}

Ⓑ 1.15×10^{3}

Ⓒ 5×10^{7}

Ⓓ 5×10^{-7}

6. The equation represents Jon's earnings from mowing yards.

$y = 11.50x$

The table represents David's earnings from painting houses.

Days	Tuesday	Thursday	Saturday
Hours	2.5	3.5	5
Earnings ($)	29	40.60	58

Who earns more money?

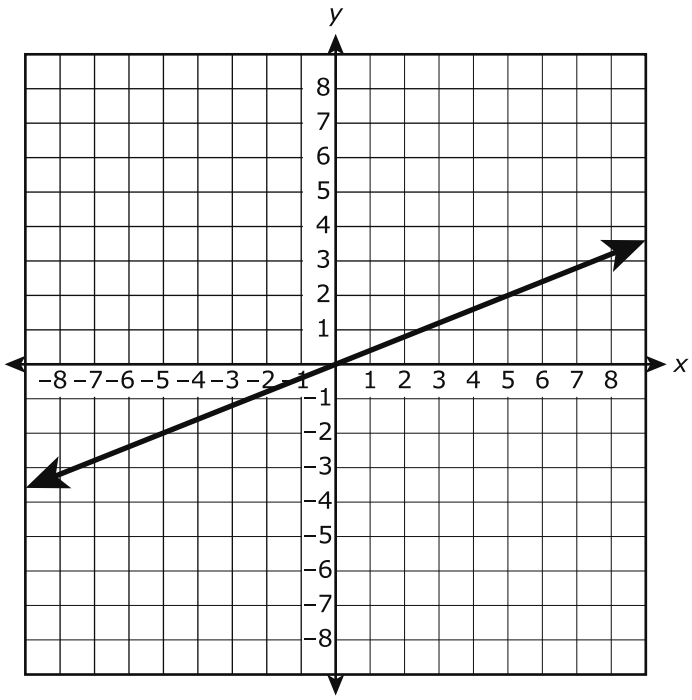
Ⓐ Jon would earn more money. He makes $\$11.50$ per hour.

Ⓑ Jon would earn more money. He makes $\$11.60$ per hour.

Ⓒ David would earn more money. He makes $\$11.50$ per hour.

Ⓓ David would earn more money. He makes $\$11.60$ per hour.

7. The graph of a line is shown.



What is the equation of this line?

Ⓐ $y = \frac{2}{5}x$

Ⓑ $y = \frac{5}{2}x$

Ⓒ $y = 2x + 5$

Ⓓ $y = 5x + 2$

8. Which statement describes the solution to the equation $\frac{2}{3}(3x + 9) - 4 = \frac{1}{3}(9x + 21) - (x + 5)$?

Ⓐ The equation has no solutions.

Ⓑ The equation has infinitely many solutions.

Ⓒ The equation has exactly one solution, $x = \frac{5}{2}$.

Ⓓ The equation has exactly one solution, $x = -\frac{3}{4}$.

9. A system of equations is shown.

$$\begin{cases} 9x - 3y = 9 \\ -9x + 3y = 9 \end{cases}$$

Which statement is true?

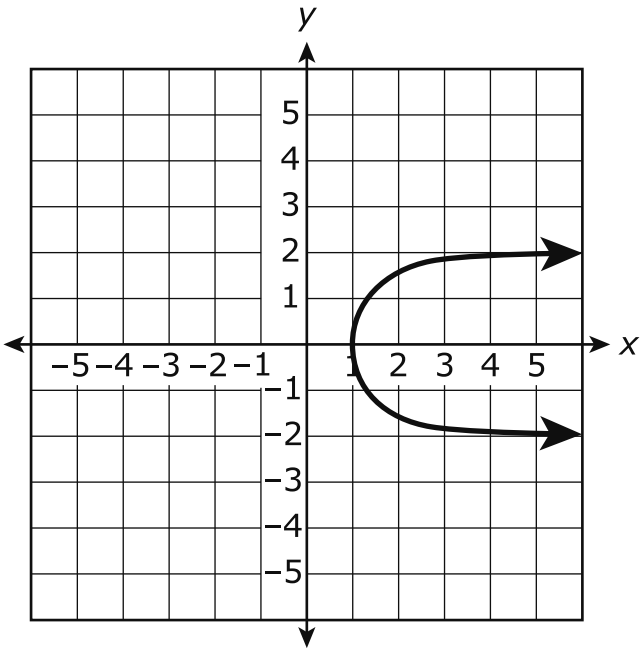
Ⓐ There are no solutions because the constant 9 is the same on the right side of each equation.

Ⓑ There are no solutions because when you add the equations, the resulting equation has no solution.

Ⓒ There are infinitely many solutions because you can use addition to obtain an equation that is always true.

Ⓓ The solution is $(0, 0)$ because when you substitute 0 for both x and y, the variable terms drop out and the equations are the same.

10. Select the boxes that identify each relation as a function or not a function.

	Function	Not a Function
	○	○
$\{(0,6),(2,10),(4,14),(6,20)\}$	○	○
$y = x^3 + 4$	○	○
x −3 5 11 −3 ***y*** 8 12 15 4	○	○

11. Given the two functions below, determine which value of x yields the relationship Function 1 $>$ Function 2.

Function 1: $y = x^2 + 1$

Function 2:

x	*y*
−2	7
−1	4
0	1
1	−2

Ⓐ -2

Ⓑ -1

Ⓒ 0

Ⓓ 1

12. Select a box in each row to correctly identify each equation as a linear function or a nonlinear function.

	Linear Function	Nonlinear Function
$3y = x^2 - 3$	○	○
$y = 4x + 8$	○	○
$y = \frac{1}{2}x + 8$	○	○
$4x^2 + 8 = y$	○	○
$-2x + 8y = 4$	○	○

13. Line segment MN is 5 units long, and line segment ST is 7 units long. Line segment MN is translated 1 unit up, and line segment ST is translated 1 unit down.

Which statement is true?

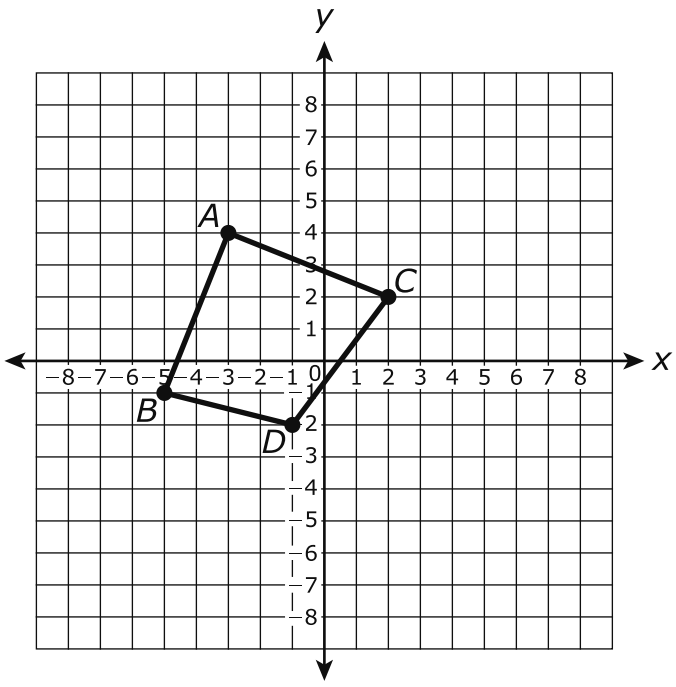
Ⓐ Line segment $M'N'$ and line segment $S'T'$ are both 6 units long.

Ⓑ Line segment $M'N'$ and line segment $S'T'$ are both 12 units long.

Ⓒ Line segment $M'N'$ is 7 units long, and line segment $S'T'$ is 5 units long.

Ⓓ Line segment $M'N'$ is 5 units long, and line segment $S'T'$ is 7 units long.

14. The graph shows quadrilateral $ABCD$.



Quadrilateral $ABCD$ is reflected over the x-axis and then translated 6 units to the right to form quadrilateral $A'B'C'D'$. What are the coordinates of D'?

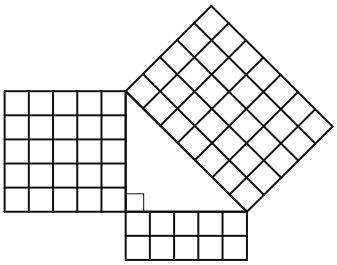
Ⓐ $(-7, 2)$

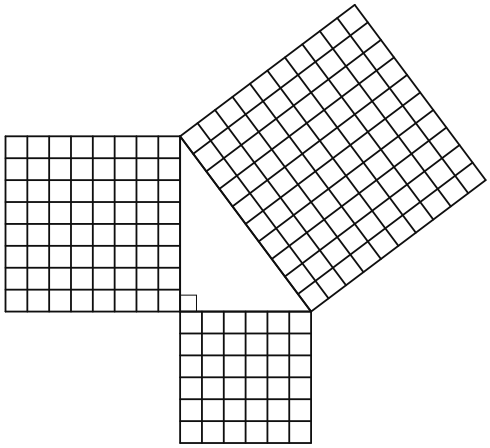
Ⓑ $(7, -2)$

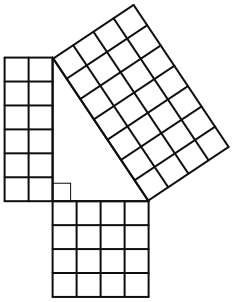
Ⓒ $(4, 1)$

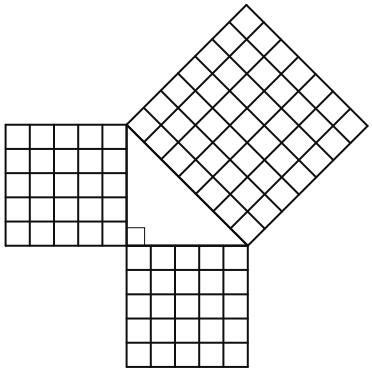
Ⓓ $(5, 2)$

15. Which image provides an informal proof that the three sides shown form the given right triangle?

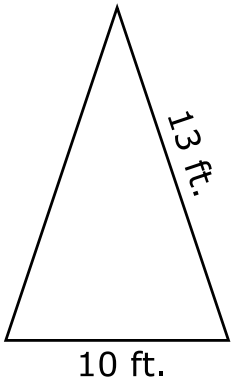
Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

16. Taylor uses 2 sticks that are 13 feet long to make the slanted sides of a tent. From the bottom poles, the opening is 10 feet long.



What is the height of the tent in feet?

Write the answer in the box.

☐ feet

17. Which measurement **best** represents the distance between the points $(1,4)$ and $(3,1)$ on a coordinate plane?

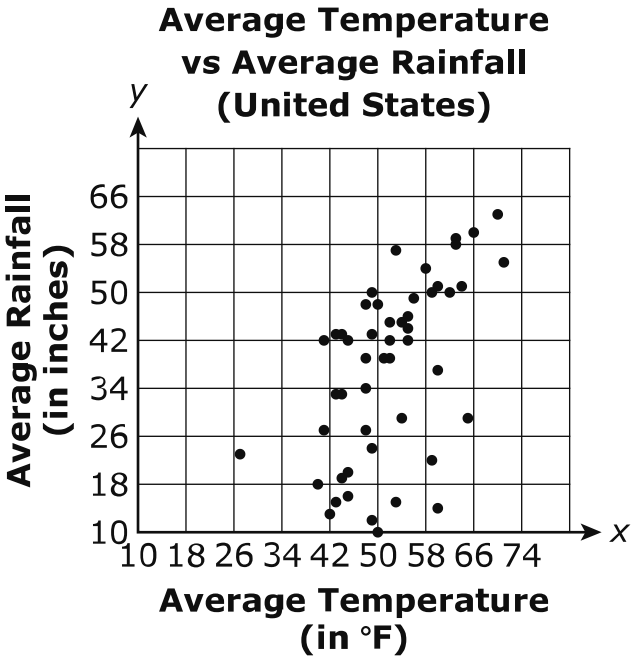
Ⓐ 2.2 units

Ⓑ 3.6 units

Ⓒ 10 units

Ⓓ 13 units

18. The graph shows the average yearly temperature and average yearly rainfall in the United States.



Which statement **best** describes the association between average yearly temperature and average yearly rainfall in the United States?

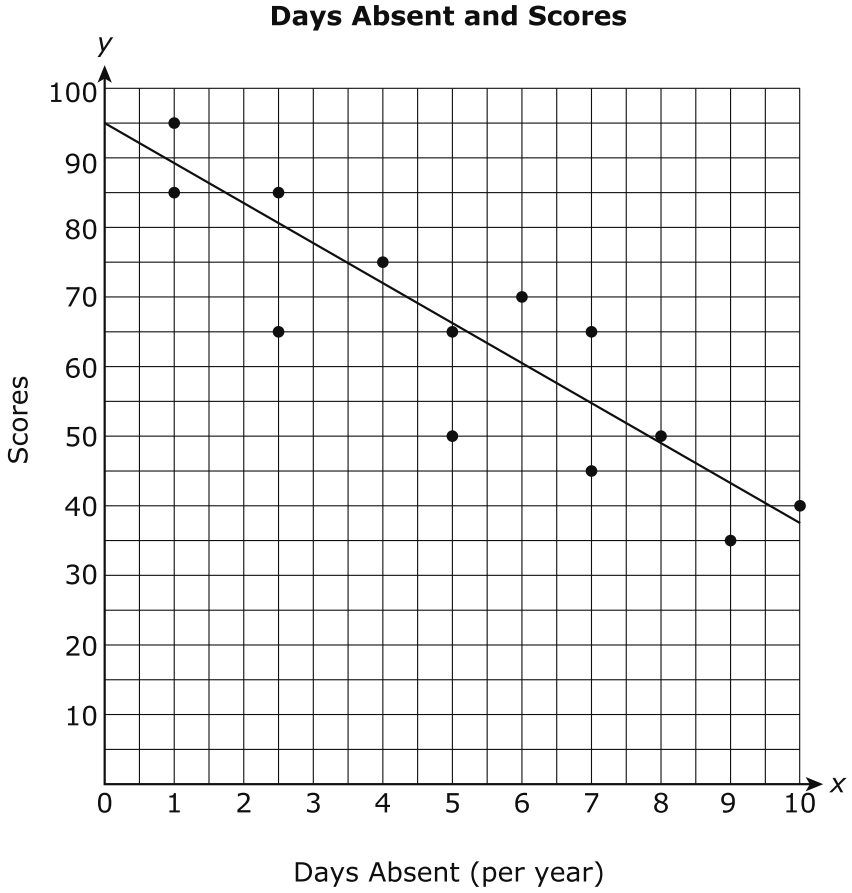
Ⓐ The association is negative because lower temperatures tend to have lower rainfalls.

Ⓑ The association is negative because lower temperatures tend to have higher rainfalls.

Ⓒ The association is positive because higher temperatures tend to have lower rainfalls.

Ⓓ The association is positive because higher temperatures tend to have higher rainfalls.

19. Walker Middle School created a scatter plot to examine the relationship between the absences of thirteen students and their final scores.



The line of best fit is shown in the data on the scatter plot. Which statement describes why the linear model is the line of best fit?

Ⓐ It is the line of best fit because it goes through two points in the scatter plot.

Ⓑ It is the line of best fit because it goes through the center of the data.

Ⓒ It is the line of best fit because it shows more values above the line.

Ⓓ It is the line of best fit because it ignores the outliers.

20. A study was conducted to determine how many cats and dogs were rescued or donated at an animal shelter. The data is shown in the two-way table.

	Cats	**Dogs**	**Total**
Rescued	56	124	180
Donated	31		50
Total	87	143	230

According to the table, how many dogs were donated to the shelter?

Write the answer in the box.

Grade 8 Math Sample Test Items
Paper-Pencil Answer Key Document

Sequence	Key	Standard	Possible Points
1	B	8.NS.1	1
2	C	8.NS.2	1
3	C,E	8.EE.1	1
4	B,D	8.EE.2	1
5	A	8.EE.4	1
6	D	8.EE.5	1
7	A	8.EE.6	1
8	B	8.EE.7	1
9	B	8.EE.8	1
10	2,3,5,8	8.F.1	1
11	D	8.F.2	1
12	2,3,5,8,9	8.F.3	2
13	D	8.G.1	1
14	D	8.G.3	1
15	B	8.G.6	1
16	12	8.G.7	1
17	B	8.G.8	1
18	D	8.SP.1	1
19	B	8.SP.2	1
20	19	8.SP.4	1