

1

Beth draws triangle PQR. She also draws a square with side length PQ, a square with side length QR, and a square with side length RP.

Beth states that the sum of the areas of two of the squares is equal to the area of the third square.

For which type of triangle is Beth's statement always true?

(A) right triangles
 (B) acute triangles
 (C) scalene triangles
 (D) isosceles triangles

2

A researcher surveys 60 employees at a company about their highest education level and the number of years of experience they have. The results are shown.

- 40 employees have a bachelor's degree.
- 20 employees have at least 5 years of experience and a bachelor's degree.
- 15 employees have at least 5 years of experience and a master's degree.

Complete the table to show the results of the survey.

	Bachelor's Degree	Master's Degree	Total
At Least 5 Years Experience	<input type="text"/>	<input type="text"/>	<input type="text"/>
Less Than 5 Years Experience	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total	<input type="text"/>	<input type="text"/>	60

3

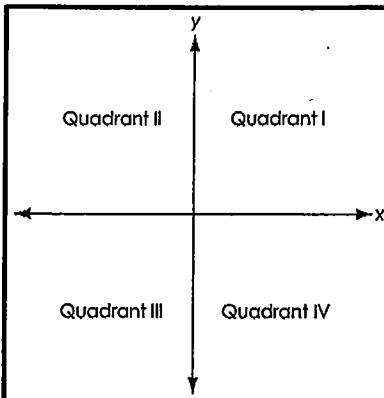
An equation is given.

$$3(2x + 2) + 3x = 10$$

Which equation is equivalent to the given equation?

(A) $5x + 5 + 3x = 10$
 (B) $6x + 2 + 3x = 10$
 (C) $5x + 2 + 3x = 10$
 (D) $6x + 6 + 3x = 10$

4



The coordinate plane is shown.

Ted draws triangle MNO in Quadrant III of the coordinate plane. He then applies two transformations to the triangle.

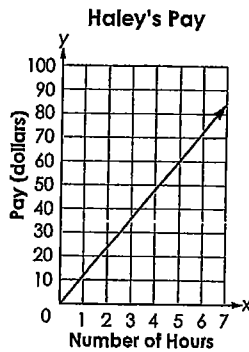
- First, the triangle is reflected across the x-axis.
- Then, the triangle is dilated by a factor of $\frac{1}{3}$ about point M' to create triangle PQR.

Which statement is true about triangle PQR?

- (A) Triangle PQR is congruent to triangle MNO and is in Quadrant IV.
- (B) Triangle PQR is congruent to triangle MNO and in Quadrant II.
- (C) Triangle PQR is similar to triangle MNO and in Quadrant IV.
- (D) Triangle PQR is similar to triangle MNO and in Quadrant II.

5

The graph models the amount of money Haley is paid, y , in dollars, for working x hours at her job.



Estimate Haley's hourly pay rate.

\$

6

An expression, where x represents a whole number, is shown.

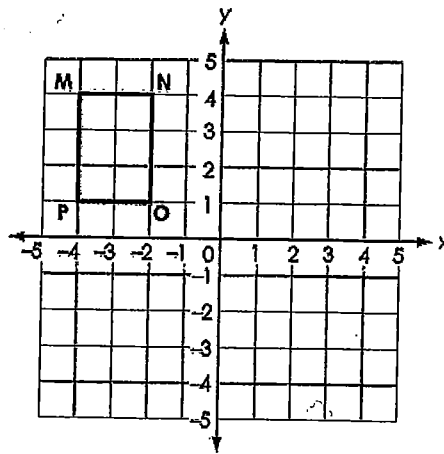
$$\sqrt{8} + \sqrt{x}$$

The value of the expression is between 4 and 5.

What is a possible value of x ?

7

Rectangle MNOP is shown.



Rectangle MNOP is translated 3 units down.

What are the coordinates of P'?

- (A) (-4, -2)
- (B) (-4, 1)
- (C) (-4, 4)
- (D) (-1, 1)

8

A runner tracks his distance in miles, y , traveled over time in hours, x . He uses the equation shown as a model for his data.

$$y = 8.2x$$

What does the 8.2 represent in this situation?

- (A) the runner's average speed
- (B) the total time the runner travels
- (C) the total distance the runner travels
- (D) the distance traveled by the runner at any time

9

An equation is shown.

$$x^2 = 16$$

Select all of the solutions to the equation.

- 256
- 8
- 4
- 4
- 8
- 256

10

Four functions are shown.

Which function is linear?

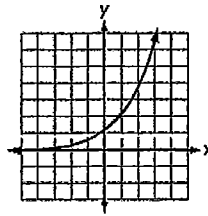
A $y = -\frac{1}{2}x^2 + 1$

C $\{(-2, 5), (0, 1), (2, 5)\}$

B

x	y
-3	-1
0	1
3	3

D



11

Which expression is equivalent to 0.0005?

A 5×10^4

B 5×10^{-4}

C 5×10^{-3}

D 5×10^3

12

Which table represents a nonlinear function?

A.

x	y
-1	3
1	5
4	8
10	14

B.

x	y
0	0
4	12
6	18
9	27

C.

x	y
2	-3
5	-9
7	-13
11	-21

D.

x	y
2	5
4	17
8	65
10	101

14

The value of \sqrt{k} lies between 2.2 and 2.3.

~~Which of the following values of k are possible?~~ select all possible values of k.

- A. 1.49
- B. 4.8
- C. 5
- D. 5.04
- E. 5.3
- F. 6

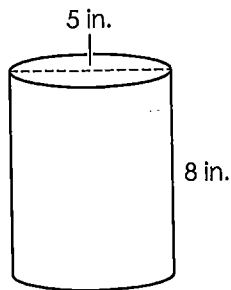
15

~~15. Which of the following~~ select all of the equations that represent a nonlinear function.

- A. $y = 3x^2 + 9x + 6$
- B. $y = 3x - 10$
- C. $y = 2x + 9 + x$
- D. $y = x(3x + 10)$
- E. $y = \frac{x}{3} + 10$

16

A candle in the shape of a cylinder has the dimensions shown, in inches (in.).



What is the volume, in cubic inches (in.^3), of the candle? Round your answer to the nearest hundredth.

17

An expression is shown.

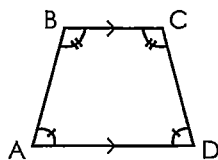
$$2.1 \times 10^5 + 4.3 \times 10^4$$

Which expression is equivalent?

- A. 2.53×10^4
- B. 2.53×10^5
- C. 6.4×10^5
- D. 6.4×10^9

18

Isosceles trapezoid ABCD is shown. It is rotated to create trapezoid EFGH.

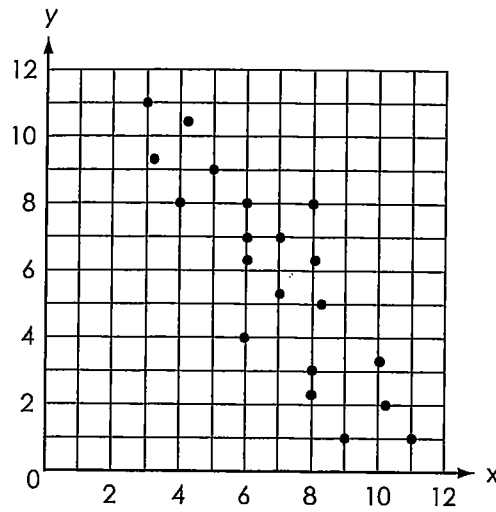


Which statement is true?

- A. $\overline{EF} \parallel \overline{HG}$
- B. $\angle A \cong \angle F$
- C. $\angle B \cong \angle H$
- D. $\overline{FG} \parallel \overline{EH}$

19

A scatterplot is shown.

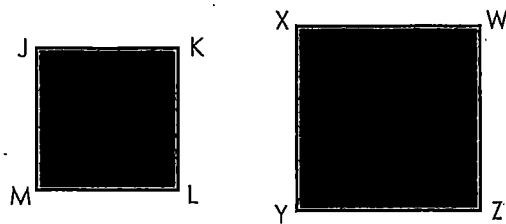


Which statement about the scatterplot is true?

- A. There is no association between x and y .
- B. There is a positive, linear association between x and y .
- C. There is a negative, linear association between x and y .
- D. There is a nonlinear association between x and y .

26

Two quadrilaterals are shown.



Brian uses two transformations to show that quadrilateral JKLM is similar to quadrilateral WXYZ.

Which transformations did Brian use?

- A. rotation and dilation
- B. dilation and reflection
- C. dilation and translation
- D. reflection and translation