

## 8<sup>th</sup> Grade PSSA Review

1. Approximately  $7.5 \times 10^5$  gallons of water flow over a waterfall each second. There are  $8.6 \times 10^4$  seconds in 1 day. Select the approximate number of gallons of water that flow over the waterfall in 1 day.

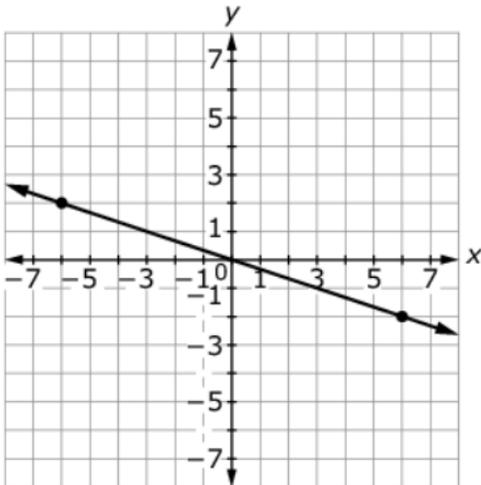
- A  $6.45 \times 10^{21}$
- B  $6.45 \times 10^{20}$
- C  $6.45 \times 10^{10}$
- D  $6.45 \times 10^9$

2. A square with side lengths  $s$  has an area of 324 square centimeters. This equation shows the area of the square.

$$s^2 = 324$$

What is the side length of the square in centimeters?

3. Consider this graph of a line. What is the equation for the line? \_\_\_\_\_

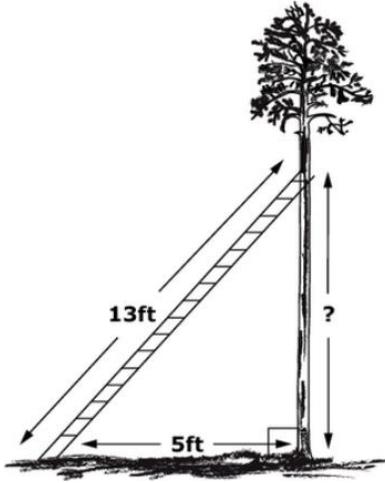


4. Which equation has the same solution as  $4 - 2(x - 5) = x - 19$  ?

- A.  $2(x + 5) = -8$
- B.  $3(x - 3) = 9$
- C.  $x + 2 = 2x - 3$
- D.  $3x - 4 = 2x + 7$

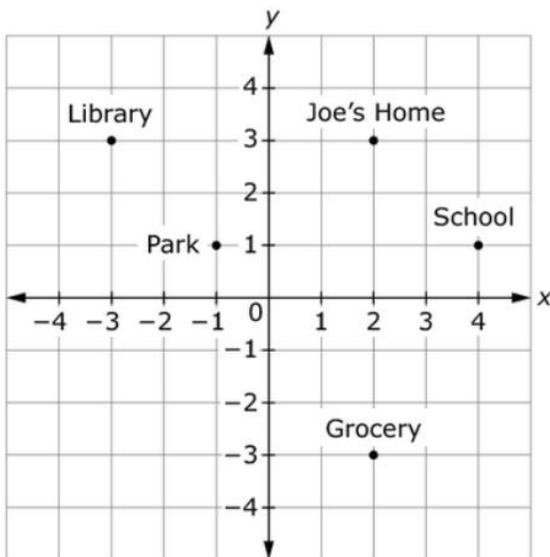
5. A 13-foot ladder is leaning on a tree. The bottom of the ladder is on the ground at a distance of 5 feet from the base of the tree. The base of the tree and the ground form a right angle as shown.

What is the distance, in feet, between the ground and the top of the ladder? Show your work.



6. The points show different locations in Joe's town. Each unit represents 1 mile.

**Places in Joe's Town**



Find the shortest distance, in miles, between Joe's home and the park.

7. Joe solved this linear system correctly.

$$6x + 3y = 6$$

$$y = -2x + 2$$

These are the last two steps of his work.

$$6x - 6x + 6 = 6$$

$$6 = 6$$

Which statement about this linear system must be true?

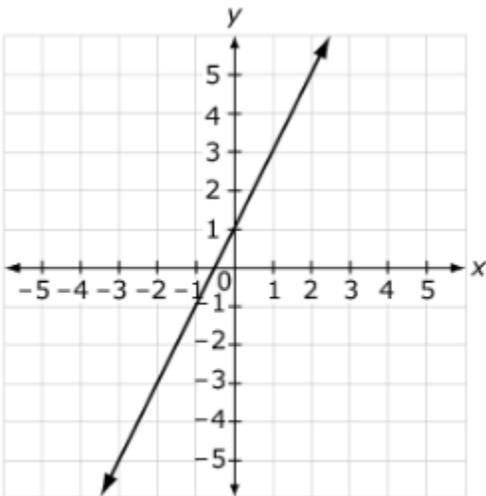
- (A)  $x$  must equal 6
- (B)  $y$  must equal 6
- (C) There is no solution to this system.
- (D) There are infinitely many solutions to this system.

8. Segment  $FG$  begins at point  $F(-2, 4)$  and ends at point  $G(-2, -3)$ . The segment is translated by  $(x-3, y+2)$  and then reflected across the  $y$ -axis to form segment  $F'G'$ .

How many units long is segment  $F'G'$ ?

- a. 0
- b. 2
- c. 3
- d. 7

9. Consider the graph of a line.



Which equation has a greater rate of change than the rate of change of the line shown?

a.  $y = 3x - 1$

b.  $y = \frac{x}{2} + 4$

c.  $y = 2x + 2$

d.  $y = \frac{x}{3} - 3$

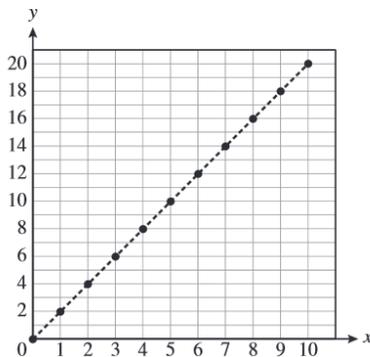
10. The graph shows a proportional relationship between the amount of money in Jack's savings account and the number of weeks Jack has been saving money.



Select the statement that correctly reflects what is shown in the graph.

- A. The slope of the line is  $\frac{6}{1}$ , so Jack's savings rate is \$6 every week.
- B. The slope of the line is  $\frac{6}{1}$ , so Jack's savings rate is \$1 every 6 weeks.
- C. The slope of the line is  $\frac{1}{6}$ , so Jack's savings rate is \$6 every week.
- D. The slope of the line is  $\frac{1}{6}$ , so Jack's savings rate is \$1 every 6 weeks.

11. A function is represented in the graph below.



Which of the following could best be represented by the function shown in the graph?

- a. For every girl ( $y$ ) in the class, there are twice as many boys ( $x$ ).
- b. The Philadelphia Airport has 3 planes landing ( $y$ ) for every 6 planes taking off ( $x$ ).
- c. For every raffle ticket sold ( $x$ ), the cost is one dollar ( $y$ ).
- d. The total amount of Carol's mortgage ( $x$ ), is one-half of Sam's rent ( $y$ ).

12.

**Solve:**         $3(x + 5) = 2x + 35$

**Step 1:**         $3x + 15 = 2x + 35$

**Step 2:**         $5x + 15 = 35$

**Step 3:**         $5x = 20$

**Step 4:**         $x = 4$

Which is the first *incorrect* step in the solution shown above?

**A** Step 1

**B** Step 2

**C** Step 3

**D** Step 4

13. What is the equation of the line that has a slope of 4 and passes through the point (3, -10)?

**A**  $y = 4x - 22$

**B**  $y = 4x + 22$

**C**  $y = 4x - 43$

**D**  $y = 4x + 43$

14. What is the solution to this system of equations?

$$y = -3x - 2$$

$$6x + 2y = -4$$

- a. (6, 2)
- b. (1, -5)
- c. No solution
- d. Infinitely many solutions

15. The table shows a relation.

| Input | Output |
|-------|--------|
| -1    | 2      |
| 3     | -1     |
| 1     | 2      |
| -2    | 3      |
| -1    | 1      |

Which statement about the relation is correct?

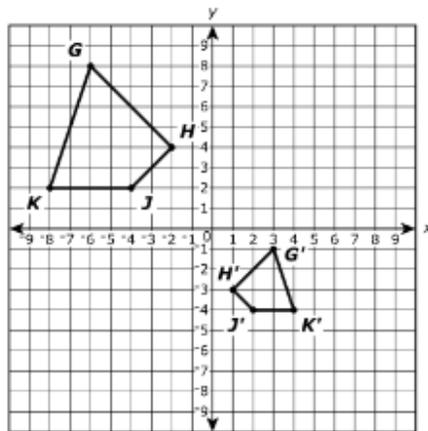
- The relation is a function because each input has exactly one output.
- The relation is a function because each output has exactly one input.
- The relation is not a function because one input has more than one output.
- The relation is not a function because one output has more than one input.

16. The length of the diagonal of a rectangle is  $\sqrt{181}$  inches.

Which statement describes the length of the diagonal?

- The length is between 12 and 13 inches.
- The length is between 13 and 14 inches.
- The length is between 14 and 15 inches.
- The length is between 15 and 16 inches.

17. Which describes a possible sequence of transformation that transforms polygon GHJK into polygon G'H'J'K'?



Part A

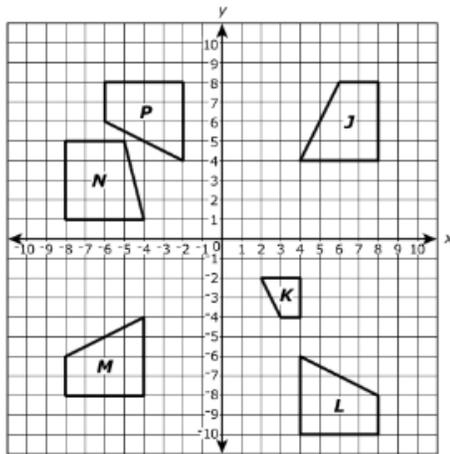
- A 180 degree rotation about the origin, followed by a dilation at the origin with a scale factor of  $\frac{1}{2}$ .
- A reflection across the line  $y=x$ , followed by a dilation centered at the origin with a scale factor of 2.
- A reflection across the  $y$ -axis, followed by a reflection across the  $x$ -axis, followed by a dilation centered at the origin with a scale factor of 2.
- A reflection across the  $y$ -axis, followed by a translation down 9 units, followed by a dilation centered at the origin with a scale factor of  $\frac{1}{2}$ .

Part B

Which best describes the relationship between polygon GHJK and polygon G'H'J'K'?

- a. They are similar because polygon G'H'J'K' can be obtained from polygon GHJK by a sequence of transformations.
- b. They are similar because the area of polygon GHJK is the same as the area of polygon G'H'J'K'.
- c. They are NOT similar because polygon G'H'J'K' cannot be obtained from polygon GHJK in a single transformation.
- d. They are NOT similar because the orientation of polygon GHJK is not the same as the orientation of polygon G'H'J'K'.

18. Figures J, K, L, M, N and P are shown on the coordinate plane.



Part A

Which figure can be transformed into Figure P by a translation 2 units to the right followed by a reflection across the x-axis?

- a. Figure J
- b. Figure K
- c. Figure L
- d. Figure M

Part B

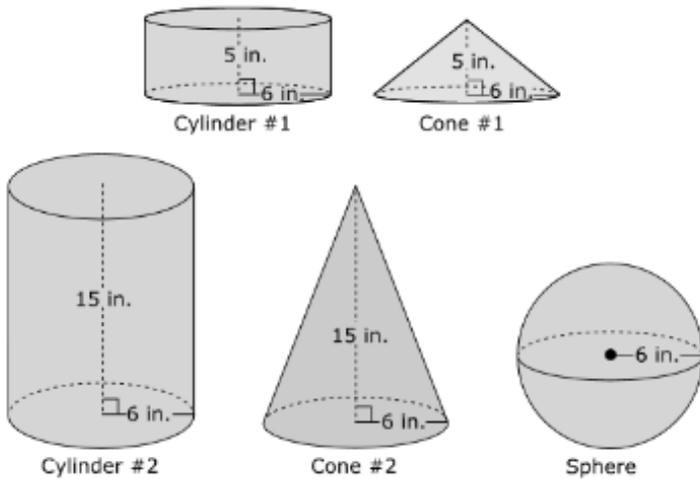
Which figure can be transformed into Figure L by a 90° rotation clockwise about the origin followed by a translation 2 units down?

- a. Figure J
- b. Figure M
- c. Figure N
- d. Figure P

20. A system of two linear equations is graphed on a coordinate plane. If the system of equations has infinitely many solutions, which statement must be true?

- A. On the graph, there are no points  $(x, y)$  that satisfy both equations.
- B. On the graph, there is exactly one point  $(x, y)$  that satisfies both the equations.
- C. On the graph, any point  $(x, y)$  that satisfies one of the equations cannot satisfy the other equation.
- D. On the graph, any point  $(x, y)$  that satisfies one of the equations must also satisfy the other equation.

21. Consider the figures shown.



Part A

Which figures have a volume greater than 600 cubic inches? Choose all that apply.

- Cylinder #1
- Cone #1
- Cylinder #2
- Cone #2
- Sphere

Part B

How many times greater is the volume of the sphere than the volume of Cone #1? Round your answer to the nearest tenth.

22. A tank of water was drained at a constant rate. The table shows the number of gallons of water left in the tank after being drained for two amounts of time.

| Draining Time (minutes) | Water in Tank (gallons) |
|-------------------------|-------------------------|
| 10                      | 450                     |
| 30                      | 330                     |

Part A

What is the rate at which the water was drained from the tank?

- 6 gallons of water per minutes
- 11 gallons of water per minute
- 45 gallons of water per minute
- 120 gallons of water per minute

Part B

What was the total amount of water in the tank before it was drained?

- 450 gallons
- 510 gallons
- 560 gallons
- 570 gallons

23. A history club sold rolls of wrapping paper as a fundraiser. The wrapping paper was sold in small rolls and large rolls.

- The club earned \$3.00 for every small roll sold
- The club earned \$4.50 for every large roll sold
- The club sold 10 more large rolls than small rolls
- The club collected \$135.00 more from sales of large rolls than from small rolls.

The equation  $3s + 135 = 4.5(s + 10)$  can be used to represent this situation, where  $s$  represents the number of small rolls the club sold.

Part A. In the equation  $3s + 135 = 4.5(s + 10)$ , what does the expression  $3s$  represent?

- The total number of small rolls sold
- The total number of large rolls sold
- The total number of dollars earned from selling small rolls
- The total number of dollars earned from selling large rolls.

Part B

In the equation  $3s + 135 = 4.5(s + 10)$ , what does the expression  $(s + 10)$  represent?

- The total number of small rolls sold
- The total number of large rolls sold
- The total number of dollars earned from selling small rolls
- The total number of dollars earned from selling large rolls

24. Tim has \$20 to buy snacks for 12 people in an office. Each person will get on snack. Tim is buying bags of pretzels that cost \$1.50 per bag and bags of crackers that cost \$2.00 per bag.

Part A

Tim is buying  $x$  bags of pretzels and  $y$  bags of crackers. Which system of equations can be used to find the value of  $x$  and  $y$ ?

a.  $x + y = 20$   
 $1.5x + 2y = 12$

b.  $x + y = 20$   
 $2x + 1.5y = 12$

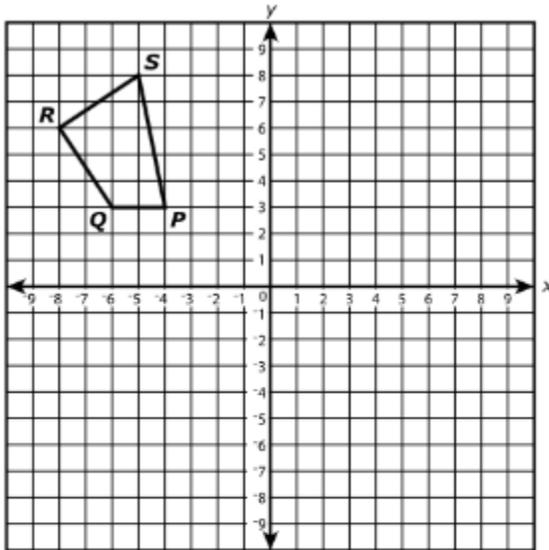
c.  $x + y = 12$   
 $1.5x + 2y = 20$

d.  $x + y = 12$   
 $2x + 1.5y = 20$

Part B

How many bags of pretzels does Tim buy?

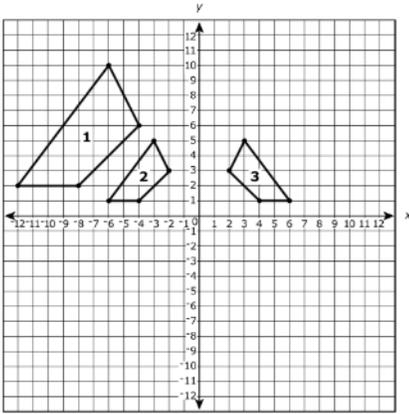
25. Polygon  $KLMN$  is the image of polygon  $PQRS$  after a  $180^\circ$  rotation.



Which angle of polygon  $KLMN$  is congruent to  $\angle S$ ?

- A.  $\angle K$
- B.  $\angle L$
- C.  $\angle M$
- D.  $\angle N$

26. On the coordinate plane shown, Figure 1 is transformed into Figure 2, which is transformed into Figure 3. Figure 1 and Figure 3 are similar by a sequence of transformations.



Part A

What type of transformation was used to transform Figure 1 into Figure 2?

- a. Dilation
- b. Reflection
- c. Translation
- d. Rotation

Part B

Which statement describes the transformation from Figure 2 to Figure 3?

- a. Reflection across the x-axis
- b. Reflection across the y-axis
- c. Translation 4 units to the right
- d. Translation 6 units to the right

27. The distance from Mars to the sun is  $1.416 \times 10^8$  miles. The distance from Earth to the Sun is  $9.296 \times 10^7$  miles.

How many more miles is the distance from Mars to the Sun than the distance from Earth to the Sun?

- a.  $4.864 \times 10^1$  miles
- b.  $7.880 \times 10^1$  miles
- c.  $4.864 \times 10^7$  miles
- d.  $7.880 \times 10^7$  miles