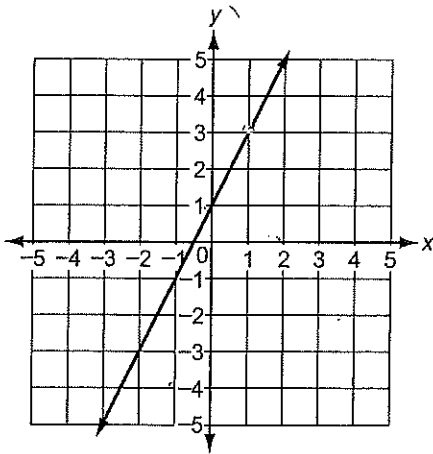


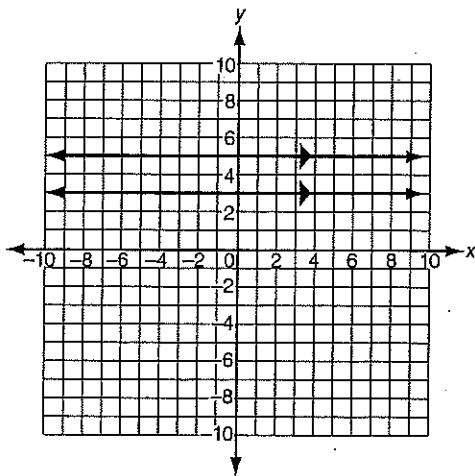
Name _____

- 1** What is the slope-intercept form of the equation of the line shown in the graph?



- (A) $y = \frac{1}{2}x + 1$
- (B) $y = x + \frac{1}{2}$
- (C) $y = x + 2$
- (D) $y = 2x + 1$

- 2** Two lines are translated to the right 8 units and then rotated 270° clockwise. The result of their transformation is shown on the graph.



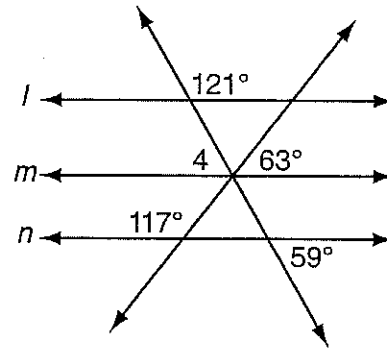
Which statement is true about the original lines before they were transformed?

- (A) They were skew.
- (B) They were parallel to each other.
- (C) They were perpendicular to each other.
- (D) They intersected each other, but they were not perpendicular.

- 3** Amber earns \$150 a week plus \$10 for each tree she sells. The equation $y = 25x + 75$ represents the amount Jorge earns each week in dollars for selling x trees. Which statement is true?

- (A) If Amber and Jorge each sell 5 trees in one week, they will earn the same amount.
- (B) If Amber and Jorge each sell 10 trees in one week, Amber will earn \$75 more than Jorge.
- (C) Jorge always earns more money each week than Amber, regardless of how many trees he sells.
- (D) Amber always earns more money each week than Jorge, regardless of how many trees she sells.

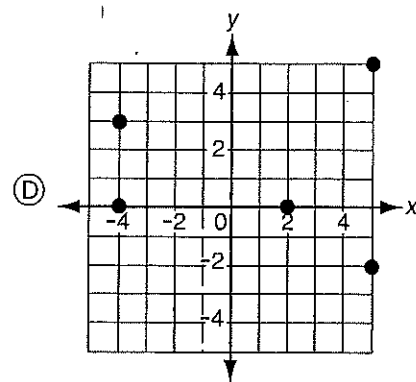
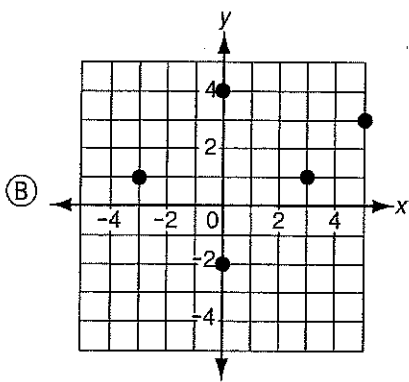
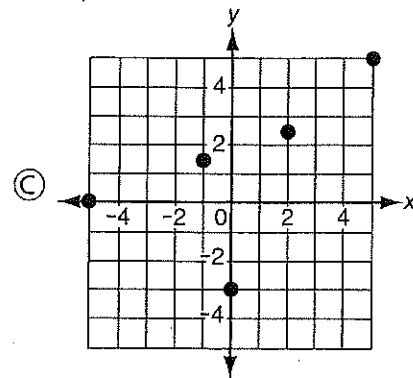
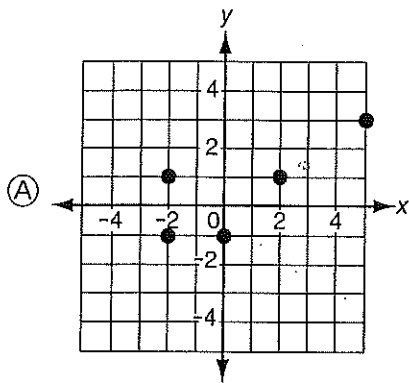
- 4** In the diagram below, lines l , m , and n are parallel.



What is the measure of $\angle 4$?

- (A) 59°
- (B) 63°
- (C) 117°
- (D) 121°

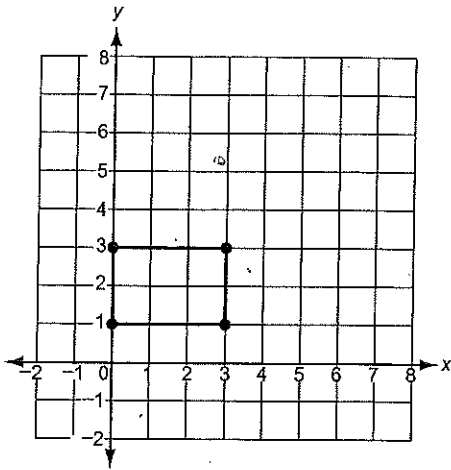
5 Which graph is a function?



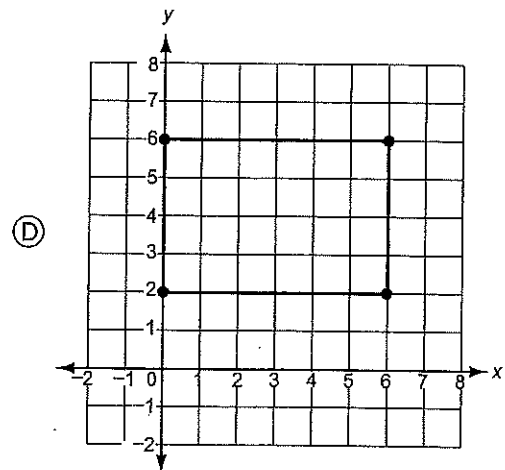
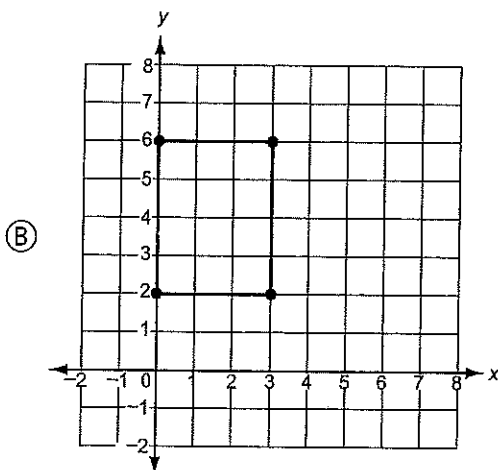
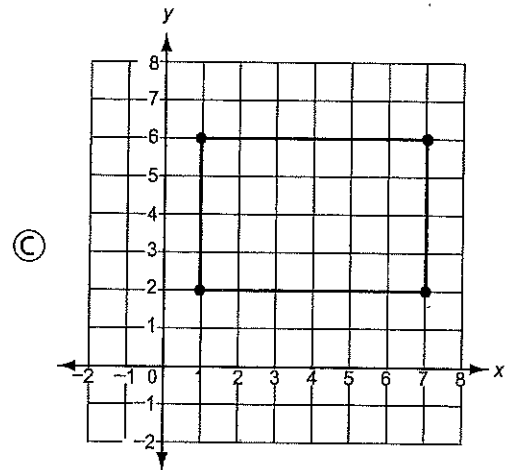
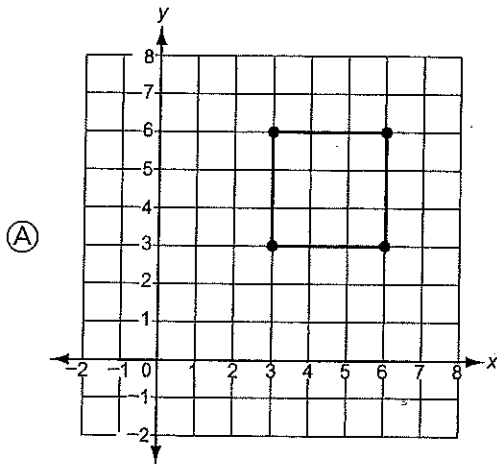
6 For every performance, Jim's band charges a \$35 setup fee plus \$20 for each hour they play. They charged \$120 for their last performance. For how many hours did Jim's band play?

- (A) 4 hours
- (B) $4\frac{1}{4}$ hours
- (C) 6 hours
- (D) $7\frac{3}{4}$ hours

- 7** A rectangle is shown.



Which graph shows the image for a dilation with a scale factor of 2 centered at the origin?



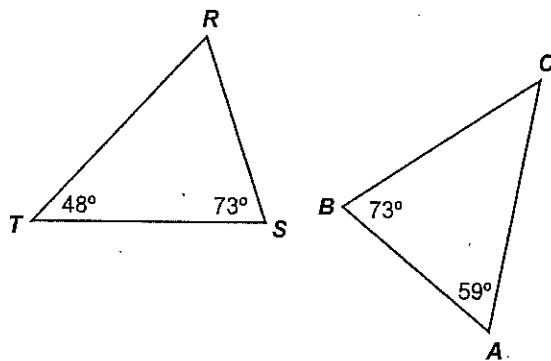
- 8** West Elena Middle School sent home order forms for picture day. The photographer offered two different packages.

West Elena Middle School	
Picture Order Form	
Basic Package <input type="checkbox"/>	
24 wallet-sized photos	
1 8 x 10 photo	
\$19.50	
Deluxe Package <input type="checkbox"/>	
32 wallet-sized photos	
3 8 x 10 photos	
\$28.50	

If the price of each size photo is the same in both packages, what is the cost of one 8 x 10 photo?

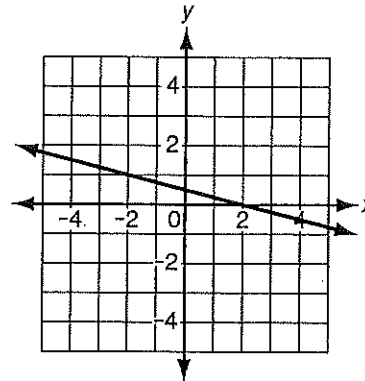
- (A) \$0.75 (C) \$1.50
 (B) \$1.20 (D) \$3.75

- 9** Which statement explains how to determine if triangle *ABC* is similar to triangle *RST*?



- (A) The triangles are similar because two pairs of angles are congruent.
 (B) The triangles are not similar because only two pairs of angles are congruent.
 (C) The triangles are similar because angles *S* and *B* are congruent.
 (D) The triangles are not similar because only angles *S* and *B* are congruent.

- 10** Which description BEST fits this functional relationship?

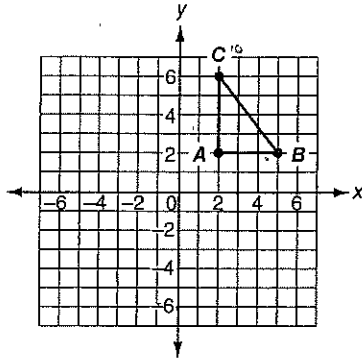


- (A) increasing and linear
 (B) decreasing and linear
 (C) increasing and nonlinear
 (D) decreasing and nonlinear

- 11** Robert's uncle owns a 510-acre farm. He grows only squash and pumpkins on his farm. This year he wants to plant 190 more acres of pumpkins than acres of squash. How many acres of pumpkins does Robert's uncle need to plant?

- (A) 160
 (B) 320
 (C) 350
 (D) 700

- 12** Triangle ABC is drawn on the coordinate plane with $A(2, 2)$, $B(5, 2)$, and $C(2, 6)$. The triangle is translated down 5 units and to the right 1 unit to form triangle $A'B'C'$.



What is the length of $\overline{A'C'}$?

- (A) 1 (C) 4
 (B) 3 (D) 5

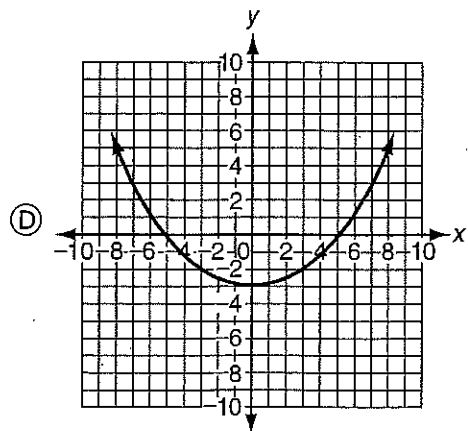
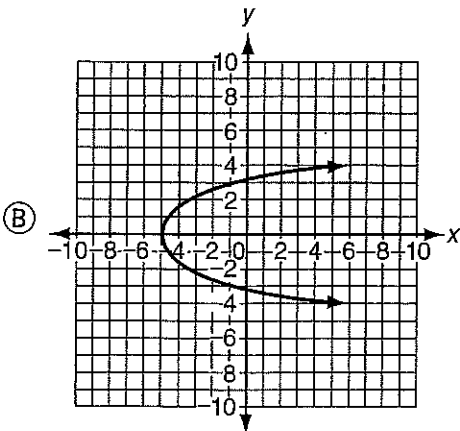
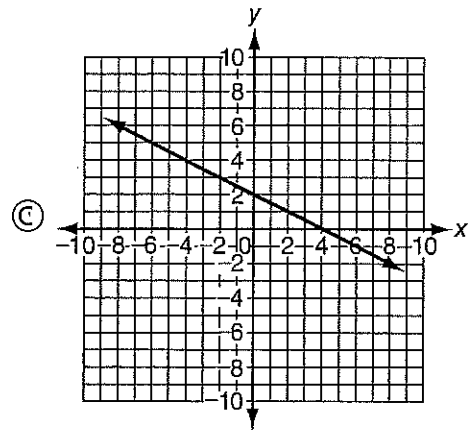
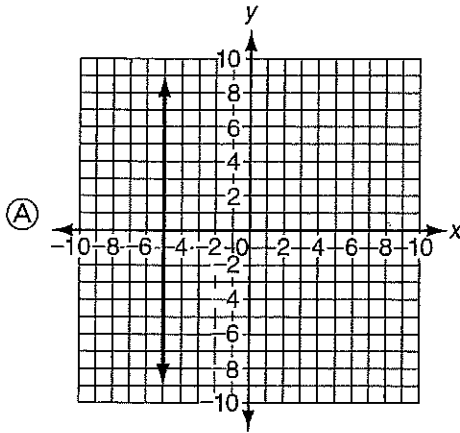
- 13** Solve the system of equations.

$$\begin{cases} x = y - 8 \\ 5x + y = -4 \end{cases}$$

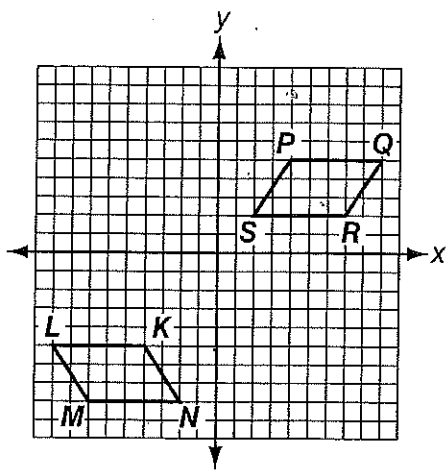
What are the coordinates of the solution?

- (A) $(\frac{2}{3}, -7\frac{1}{3})$
 (B) $(-7\frac{1}{3}, \frac{2}{3})$
 (C) $(-2, 10)$
 (D) $(-2, 6)$

- 14** Which graph represents a nonlinear function?



- 15** Which set of transformations is needed to help determine whether parallelogram $KLMN$ is congruent to parallelogram $PQRS$?



- (A) a rotation 180 degrees about the origin
- (B) a reflection across the y -axis and then a translation 10 units up
- (C) a reflection across the x -axis and then a translation 10 units to the right
- (D) a reflection across the x -axis and then a rotation 90 degrees clockwise about the origin

- 16** What is the value of x in the equation below?

$$3(x + 2) - 4(2 - x) = -2 + 7x$$

- (A) $x = 0$
- (B) $x = 1$
- (C) There is no solution.
- (D) There are infinitely many solutions.

- 17** Jonas and Michelle each purchased a plant that was $\frac{1}{2}$ inch tall. They used their plants in an experiment that required them to measure and record the height of their plants each week. Michelle found that her plant's growth could be modeled with the equation $h = \frac{7}{4}w + \frac{1}{2}$, where h represents the height of the plant in inches after w weeks. Jonas recorded his plant's growth in the table shown.

Plant Growth

Week	Height of Plant (in inches)
1	2 in.
2	3.5 in.
3	5 in.
4	6.5 in.
5	8 in.
6	9.5 in.

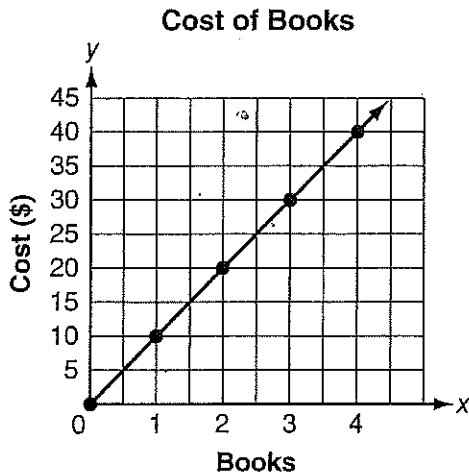
Which statement is true about the two plants?

- (A) Michelle's plant grew $\frac{1}{4}$ inch more than Jonas's plant each week.
- (B) Jonas's plant grew $\frac{1}{4}$ inch more than Michelle's plant each week.
- (C) Michelle's plant grew 1 inch more than Jonas's plant over 6 weeks.
- (D) Jonas's plant grew 1.5 inches more than Michelle's plant over 6 weeks.

- 18** If a figure drawn on the coordinate plane is dilated by a scale factor of 3 and then translated 6 units down, what will be the relationship of the original figure to the transformed figure?

- (A) congruent and similar
- (B) congruent, but not similar
- (C) similar, but not congruent
- (D) neither similar nor congruent

- 19** A bookstore owner created a graph to show the cost in dollars per book.



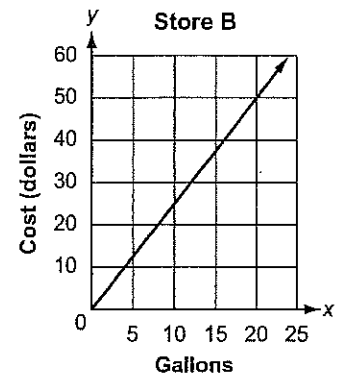
What does the slope of the line represent?

- (A) \$0.10 per book
 (B) \$4.00 per book
 (C) \$10.00 per book
 (D) \$11.25 per book
-
- 20** A valve on a water tank is opened and drains water at a rate of 35 gallons per minute. After 12 minutes, the valve is closed and 350 gallons of water remain in the tank. How much water was in the tank before the valve was opened?
- (A) 420 gallons
 (B) 470 gallons
 (C) 720 gallons
 (D) 770 gallons

- 21** The cost of gasoline at two different stores is shown in the table and graph.

Store A

Gallons	Cost (dollars)
3	7.26
8	19.36
12	29.04



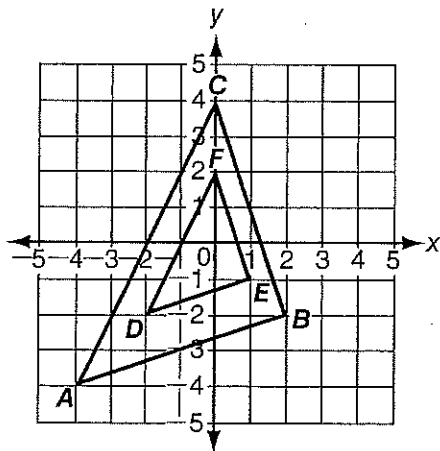
If a customer buys 16 gallons of gasoline, which statement is true?

- (A) Store A will cost about \$1.28 less.
 (B) Store A will cost about \$0.08 less.
 (C) Store B will cost about \$1.28 less.
 (D) Store B will cost about \$0.08 less.
-
- 22** The angle formed by two spokes meeting at the center of a bicycle wheel is 30° . After the wheel rotates 540° , what will be the angle formed by the two spokes?
- (A) 18°
 (B) 30°
 (C) 45°
 (D) 54°

23 The school dance committee wants to earn money for the eighth grade class trip. The cost of a ticket to the dance includes \$5 for refreshments and \$2.50 for entertainment. If the DJ's cost is \$120 for the night and refreshments cost half the price of the DJ, which equation represents the amount of money the dance committee earns, y , based on the number of students who purchase tickets, x ?

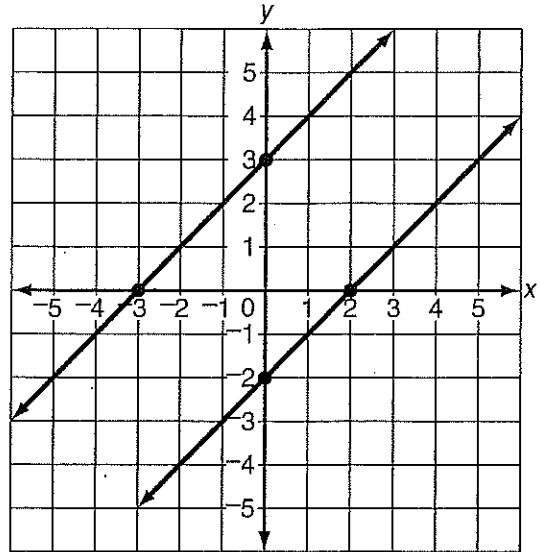
- (A) $y = 5x + 180$
- (B) $y = 5x + 120$
- (C) $y = 7.50x - 180$
- (D) $y = 7.50x - 120$

24 What transformation maps $\triangle ABC$ onto $\triangle DEF$?



- (A) a dilation of $\triangle ABC$ by a factor of $\frac{1}{3}$
- (B) a dilation of $\triangle ABC$ by a factor of $\frac{1}{2}$
- (C) a dilation of $\triangle DEF$ by a factor of $\frac{1}{3}$
- (D) a dilation of $\triangle DEF$ by a factor of $\frac{1}{2}$

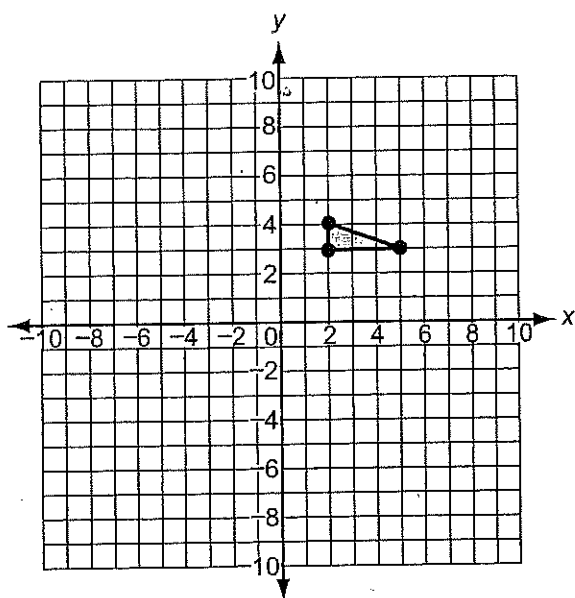
25 A system of equations is graphed below.



Which statement is true about the solution of this system of equations?

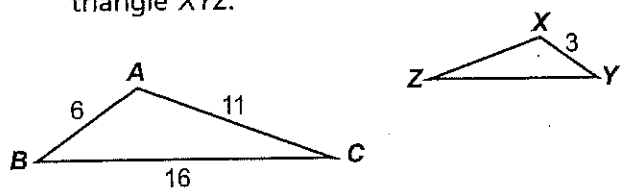
- (A) There are no solutions.
- (B) The solution is a point.
- (C) The solution is a line.
- (D) There are infinitely many solutions.

- 6** Dilate the given preimage by a scale factor of 2 centered at the point (2, 3).
Graph the image on the coordinate plane.



- 7** Quadrilateral $PQRS$ has vertices $P(-4, 4)$, $Q(2, 2)$, $R(4, -2)$, and $S(-2, -4)$. It is dilated by a scale factor of 5 with a center of dilation at $(0, 0)$. What are the coordinates of the image $P'Q'R'S'$?

- 8** Triangle ABC is transformed to produce triangle XYZ .



What are the missing side lengths in units of triangle XYZ ?

$XZ =$ _____

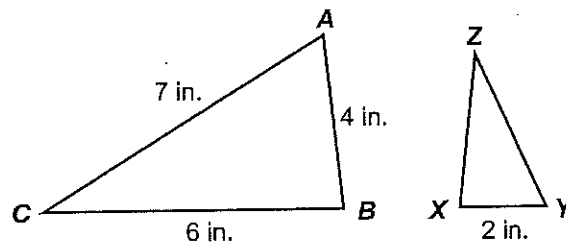
$ZY =$ _____

- 9** Triangle QRS has vertices $Q(0, 8)$, $R(8, -8)$, and $S(-7, 1)$. It is dilated with a center at $(0, 0)$ to produce triangle $Q'R'S'$ with vertices $Q'(0, 56)$, $R'(56, -56)$, and $S'(-49, 7)$. What is the scale factor of the dilation?

- 10** Triangle DEF has side lengths of 30 m, 42 m, and 24 m. Which side lengths could represent a dilation of triangle DEF ?

- (A) 120 m, 168 m, 86 m
(B) 37 m, 49 m, 31 m
(C) 24 m, 36 m, 18 m
(D) 5 m, 7 m, 4 m

- 11** Triangle ABC is similar to triangle YXZ .



Part A

Which sequence of transformations could be used to produce triangle YXZ ?

- (A) dilation and then clockwise rotation
(B) dilation and then horizontal translation
(C) horizontal translation and then clockwise rotation
(D) reflection across a vertical line and then across a horizontal line

Part B

What is the perimeter of triangle YXZ in inches?

- 1** Which identity or property is used during the first step when solving the equation $\frac{2}{3} - 8x = \frac{1}{6}(4x - 1)$?

(A) Additive Identity
(B) Associative Property
(C) Distributive Property
(D) Multiplicative Identity

- 2** What is the solution to the equation $\frac{1}{5}(2x - 15) = \frac{1}{10}(4x - 30)$?

(A) There is no solution.
(B) There is only one solution: $x = 2$.
(C) There are infinitely many solutions.
(D) There is only one solution: $x = -2$.

- 3** Which could be a step used when solving the equation $5x + 10 = 7.5x$?

(A) distribute 5
(B) distribute 10
(C) add 10 to both sides
(D) subtract $5x$ from both sides

- 4** Lindsey solves the equation $4x = 2\left(3x + \frac{2}{3}\right)$, where x represents the length of the side of a square and $2\left(3x + \frac{2}{3}\right)$ is the perimeter of a rectangle. Which statement about the equation is true?

(A) There is one solution because there is one variable.
(B) There is no solution because length cannot be negative.
(C) There is one solution because all sides of a square are equal.
(D) There are infinitely many solutions because there are infinite lengths.

- 5** Hailey solves the equation shown.

$$\frac{1}{4}(2 - x) = 5 + 3x$$

In which step does Hailey make her first error?

(A) Step 1: $\frac{1}{2} - x = 5 + 3x$
(B) Step 2: $\frac{1}{2} = 5 + 4x$
(C) Step 3: $-\frac{9}{2} = 4x$
(D) Step 4: $-\frac{9}{8} = x$

- 6** Denver is planting strawberry seedlings in a new garden. He can plant 3 rows of a certain length with 2 seedlings left over or 4 rows of the same length with 3 seedling spots left empty. What is the length, x , of each row in meters?

The equation used to solve for x is _____

Each row is _____ meters long.

- 7** Place an X in the table to show whether each equation has no solution, one solution, or infinitely many solutions.

	No Solution	One Solution	Infinitely Many Solutions
$0.5(x - 3) = 3x - 2.5$			
$4(x - 3) = \frac{1}{2}\left(\frac{x}{2} + 5\right)$			
$3x - 4 = 2x - 2 + x$			
$3(4 - 2x) = 6(-x + 2)$			

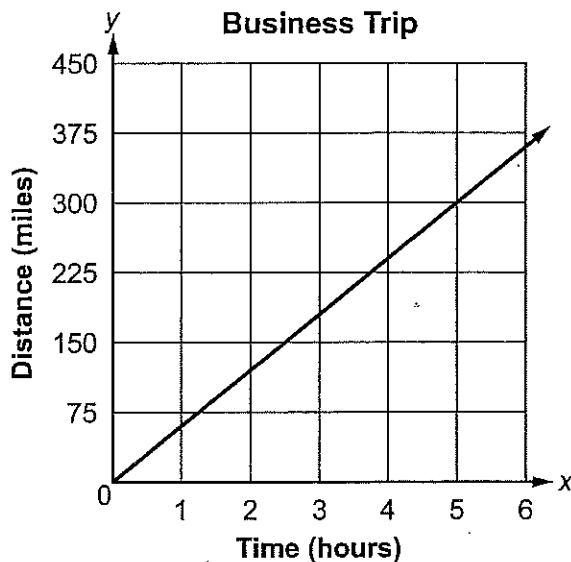
- 1 A line passes through the origin and (4, 5). Which point is also on the line?

- (A) (1, 2) (C) (6, 10)
(B) (2, 3) (D) (8, 10)

- 2 A drill is used to dig down into the earth. After 2 hours, the drill is 12 meters below the surface. After 5 hours, the drill is 30 meters below the surface. Which equation represents the depth of the drill in meters, y , after x hours of drilling?

- (A) $y = -x$ (C) $y = -12x$
(B) $y = -6x$ (D) $y = -30x$

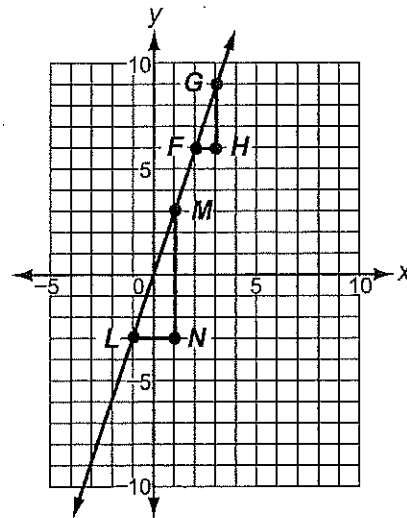
- 3 The graph shows the time and distance Mr. Patel has driven while on a business trip.



What is the unit rate in miles per hour he has driven?

- (A) 60 (C) 300
(B) 75 (D) 450

- 4 Triangles LMN and FGH are shown.

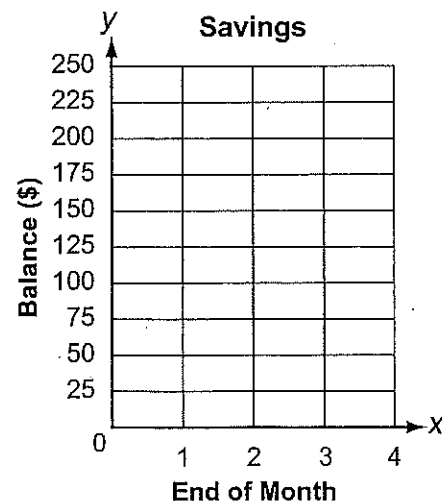


Place an X in the table to show whether each statement is true or false.

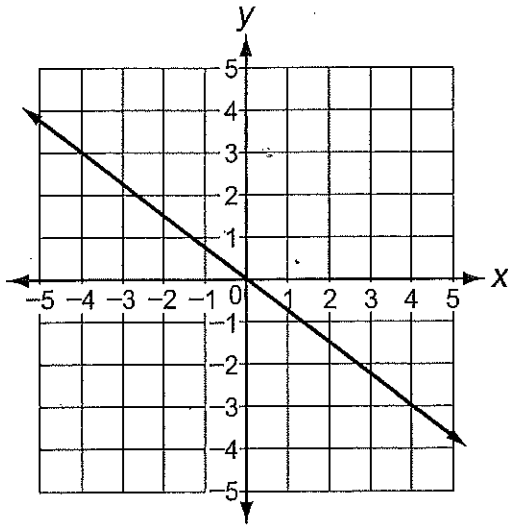
	True	False
$\frac{MN}{NL} = \frac{GH}{HF}$		
$LM + MN + NL = FG + GH + HF$		
Triangle LMN is similar to triangle FGH .		

- 5 Javier keeps a savings jar and deposits \$50 in it at the end of each month. What is his balance at the end of months 1, 2, 3, and 4?

Graph the points that represent the relationship.



- 6 Write an equation for the line.



- 7 Triangle ACB with coordinates $A(0, 0)$, $C(2, 0)$, and $B(2, 4)$ is similar to triangle BED . If vertex D has coordinates $(6, 12)$, what are the coordinates of vertex E ?

- 8 The depth of an underwater camera on a cable anchored to the sea floor is proportional to the time. The table records the time in seconds (s) and depth in meters (m) of the camera. What are the missing values in the table?

Camera

Time (s)	Depth (m)
0	0
	-1
60	
100	-5
240	

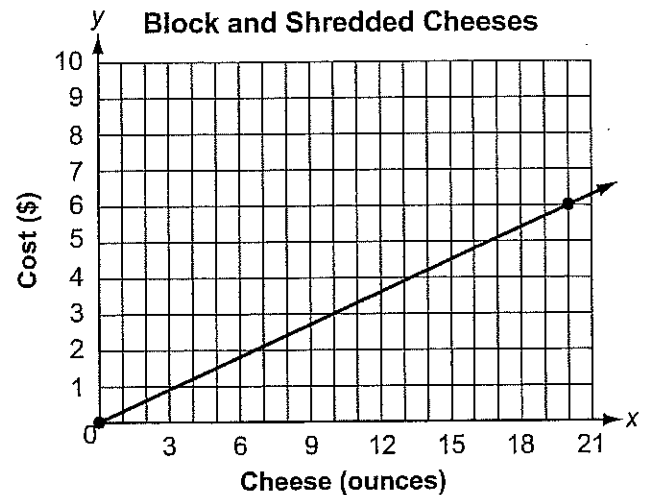
- 9 One pet store charges \$51 to groom a cat. Another pet store's grooming costs in dollars, g , are modeled by the equation $g = 65.5c$, where c is the number of cats. How much more would it cost to groom 3 cats at the more expensive store?

- 10 Valerie is comparing the cost of block and shredded cheeses. The cost of 8 ounces of shredded cheese is \$3.00.

Part A

The cost of block cheese is shown in the graph.

Graph the line that models the cost of shredded cheese on the graph below.



Part B

What is the equation of the line representing the cost of the shredded cheese?

Part C

Valerie purchases 16 ounces of the less expensive cheese. How much does the cheese cost?

Name _____

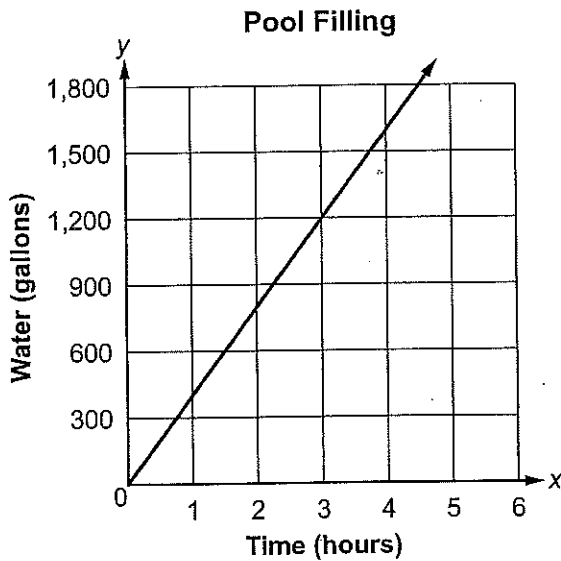
- 1** A line passes through the origin and (3, 6). Which point is also on the line?

- (A) (6, 3) (C) (2, 4)
(B) (4, 6) (D) (1, 4)

- 2** An escalator descends at a constant rate. After 15 seconds, the escalator is 10 feet below its original position. After 45 seconds, it is 30 feet below its original position. Which equation represents the change in height in feet, y , after x seconds of riding the escalator?

- (A) $y = -\frac{2}{3}x$ (C) $y = -10x$
(B) $y = -\frac{3}{2}x$ (D) $y = -30x$

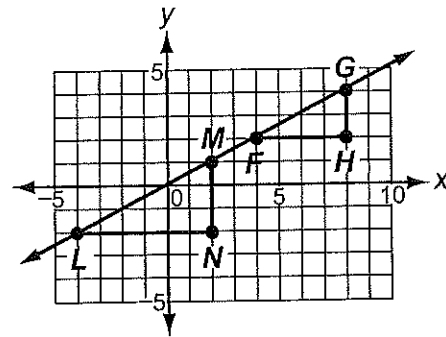
- 3** Jorge is filling the pool in his backyard with water. The graph shows the amount of water in the pool over time.



What is the unit rate in gallons per hour by which Jorge is filling the pool?

- (A) 300 (C) 1,200
(B) 400 (D) 1,800

- 4** Triangles LMN and FGH are shown.

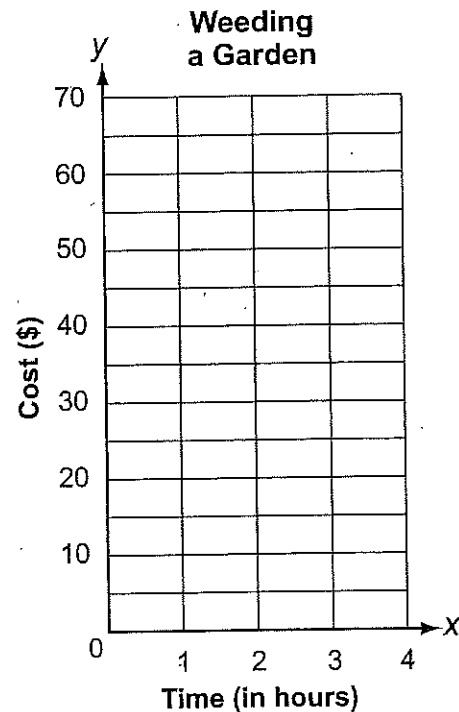


Place an X in the table to show whether each statement is true or false.

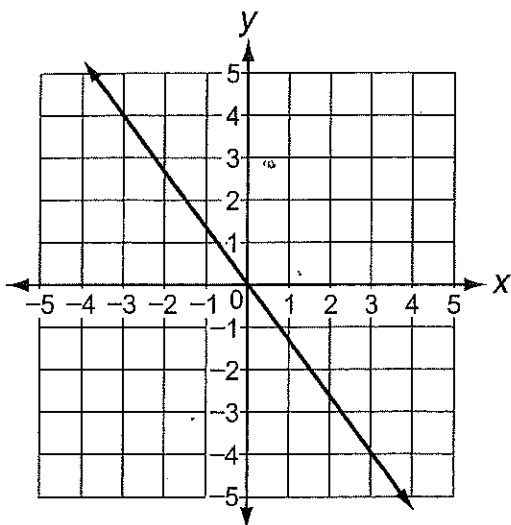
	True	False
$\frac{NM}{LN} = \frac{FH}{HG}$		
$LM + MN + NL = FG + GH + HF$		
Triangle LMN is similar to triangle FGH .		

- 5** Davina charges \$15 an hour to weed gardens. What does she charge to weed a garden for 1, 2, 3, and 4 hours?

Graph the points that represent the relationship.



- 6 Write an equation for the line.



- 7 Triangle DFE with coordinates $D(0, 0)$, $F(3, 0)$, and $E(3, 1)$ is similar to triangle EHG . If vertex G has coordinates $(9, 3)$, what are the coordinates of vertex H ?

- 8 The balance of an overdue movie fee is proportional to the number of days the movie is overdue. The table records the time in days (d) and balance in dollars. What are the missing values in the table?

Movie Fee

Time (d)	Balance (\$)
0	0
	-1
12	
40	-10
360	

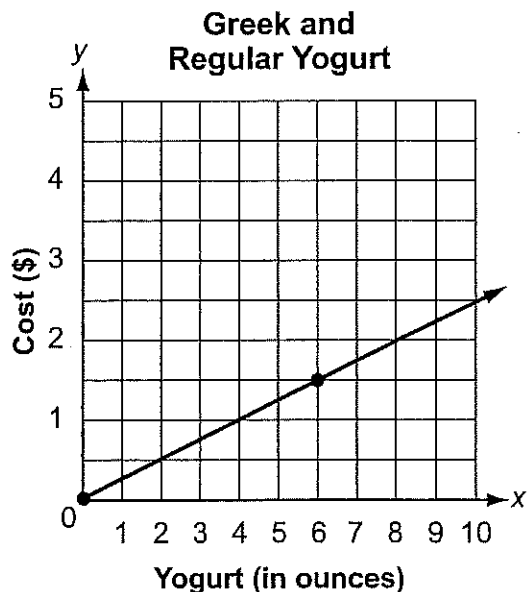
- 9 Company A charges \$3.25 per spirit banner. The equation $C = 2.45x$ represents the cost in dollars, C , for x spirit banners at Company B. How much more would it cost to purchase 80 spirit banners from the more expensive company?

- 10 Lucas is comparing the cost of regular and Greek yogurt. The cost of 4 ounces of regular yogurt is \$0.50.

Part A

The cost of Greek yogurt is shown in the graph.

Graph the line that models the cost of regular yogurt on the graph below.



Part B

What is the equation of the line representing the cost of the regular yogurt?

Part C

Lucas purchases 32 ounces of the less expensive yogurt. How much does the yogurt cost?