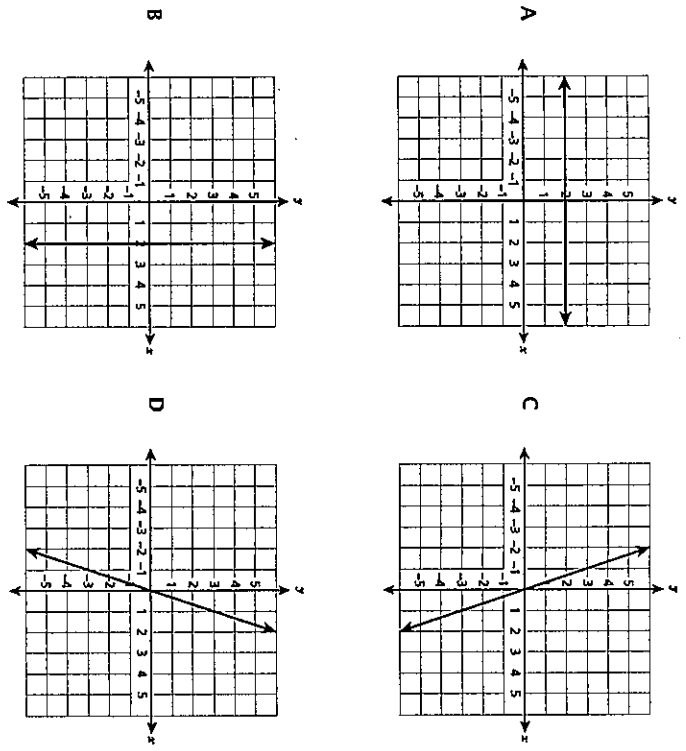


1 Which graph represents a function that is increasing?



2 What is the solution to the equation shown below?
 $2.5(x + 5) = 7.5x - 0.5$

- A $x = 2.6$
- B $x = 1.1$
- C $x = -2.6$
- D $x = -1.1$

3 There are two boxes of cereal in the shape of rectangular prisms on a shelf. The dimensions of each box of cereal are listed below.

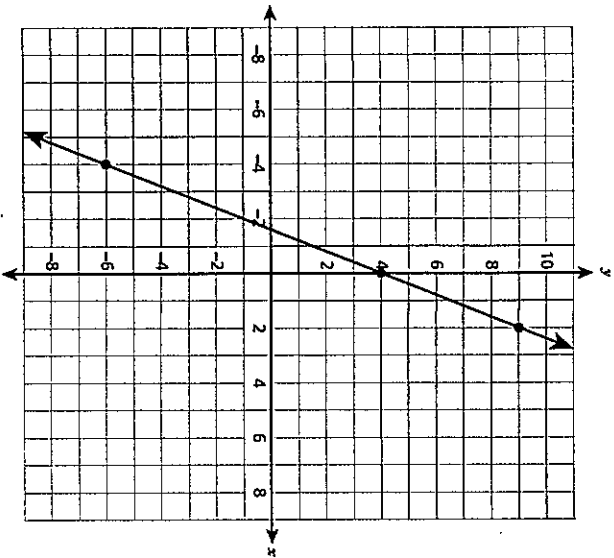
- Box A has a height of 25 centimeters, a length of 20 centimeters, and a width of 9 centimeters.
- Box B has a height of 25 centimeters, a length of 19 centimeters, and a width of 6 centimeters.

What is the difference in volume, in cubic centimeters, between the two boxes of cereal?

- A 1,650
- B 3,900
- C 4,500
- D 7,350

4

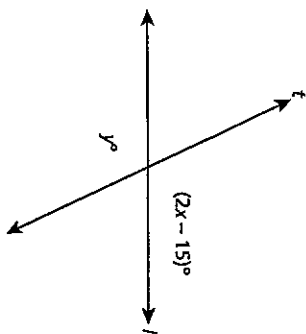
Which equation represents the line shown on the coordinate plane below?



- A $y = \frac{2}{5}x + 4$
- B $y = \frac{2}{3}x + 4$
- C $y = \frac{3}{2}x + 4$
- D $y = \frac{5}{2}x + 4$

5

Two intersecting lines, l and t , are shown in the diagram below.



If $y = 115$, what is the value of x ?

- A 40
- B 50
- C 65
- D 115

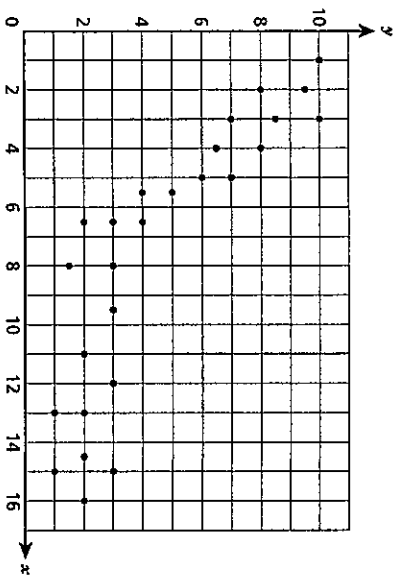
6

Triangle P undergoes a sequence of transformations resulting in triangle Q. Which sequence of transformations could be used to show that triangle Q is similar but not congruent to triangle P?

- A a reflection followed by a translation
- B a rotation followed by a reflection
- C a reflection followed by a rotation
- D a translation followed by a dilation

7

A scatter plot is shown below.

Which statement **best** explains why these data can or cannot be modeled using a line of best fit?

- A A line would not be appropriate because there is a negative association.
- B A line would not be appropriate because the points follow a nonlinear pattern.
- C A line would be appropriate because there is a positive association.
- D A line would be appropriate because the points follow a nonlinear pattern.

8

What is the solution, if any, to the equation $3(x - 2) + 4 = 3x + 6$?

- A $x = 0$
- B $x = 8$
- C There is no solution.
- D There are an infinite number of solutions.

14

Which expression is equivalent to $(15^3)(15^{-7})$?

- A 15^{-21}
- B -15^4
- C $\frac{1}{15^4}$
- D $\frac{1}{15^{-4}}$

15

Alex opened a savings account with an initial deposit of \$50. Each month, he deposits the same amount of money. He uses the equation $t = 50 + 25m$ to determine t , the total amount of money in his savings account in m months. What is the unit rate and what is the meaning of the unit rate?

- A 25; the amount of money Alex deposits each month
- B 50; the amount of money Alex deposits each month
- C 25; the amount of money Alex initially deposited
- D 50; the amount of money Alex initially deposited

16

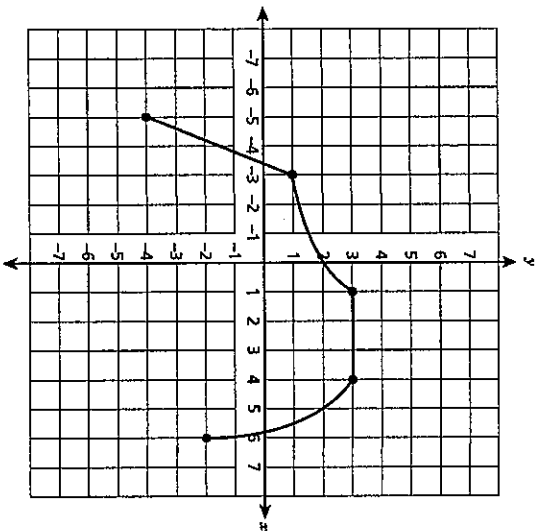
What is the solution to the equation shown below?

$$-\frac{1}{3}(6y + 6) + 21 = 3y$$

- A $y = \frac{19}{5}$
- B $y = \frac{27}{5}$
- C $y = -\frac{9}{5}$
- D $y = -\frac{23}{5}$

19

The graph of a function is shown on the coordinate plane below.

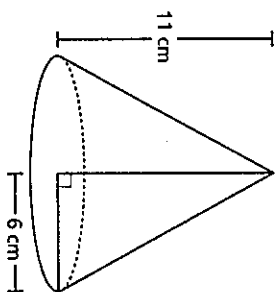


Between which two values of x is the function nonlinear and increasing?

- A -5 and -3
- B -3 and 1
- C 1 and 4
- D 4 and 6

23

The dimensions of a cone are shown in the figure below.

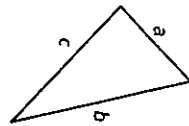


What is the approximate volume, in cubic centimeters, of the cone?

- A 138
- B 415
- C 622
- D 1,244

24

A triangle with side lengths a , b , and c is shown below.



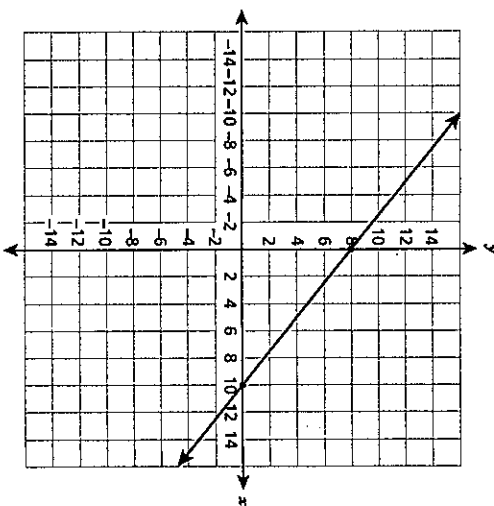
Which statement about the side lengths must be true?

- A $a+b > c$
- B $b+c < a$
- C $a+b < c$
- D $a+c < b$

GO ON

25

A line is graphed on the coordinate plane shown below.



What is the equation of the line?

- A $y = -\frac{4}{5}x + 8$
- B $y = \frac{4}{5}x + 10$
- C $y = -\frac{5}{4}x + 8$
- D $y = \frac{5}{4}x + 10$

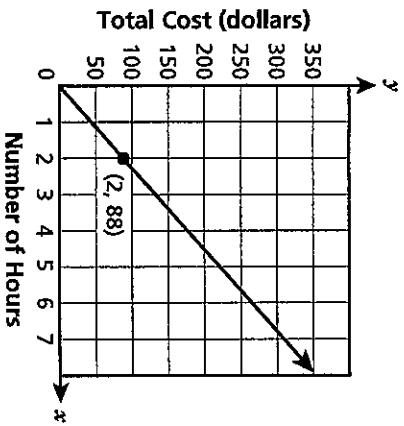
GO ON

25

There are two mechanics who work on cars. For each mechanic, the relationship between x , the number of hours worked, and y , the total cost, in dollars, is described below.

- The equation $y = 36x$ represents the total cost charged by Mechanic A for the number of hours worked.
- The graph shown below represents the total cost charged by Mechanic B for the number of hours worked.

MECHANIC B CHARGES



Based on the information, which statement is true?

- A Mechanic A charges \$8.00 more per hour than Mechanic B.
- B Mechanic B charges \$8.00 more per hour than Mechanic A.
- C Mechanic A charges \$52.00 more per hour than Mechanic B.
- D Mechanic B charges \$52.00 more per hour than Mechanic A.

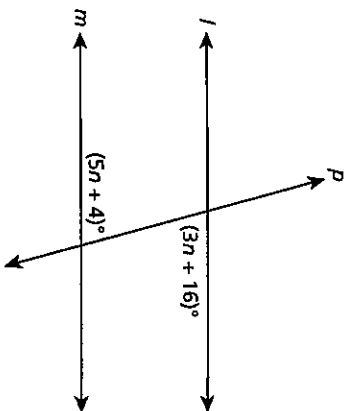
- 34 Cory drinks water from a bottle during a bike ride. The average amount of water, in ounces, in his water bottle can be represented by the equation $y = -8x + 32$, where y is the amount of water remaining after x hours. Based on the equation, what amount of water, in ounces, will remain in the bottle after Cory rides for $2\frac{1}{2}$ hours?

- A 8
- B 12
- C 20
- D 32

- 35 Which expression is equivalent to $4^{-5} \times 4^8$?

- A $\frac{4^{-2}}{4^{-1}}$
- B $(4^3)^{-1}$
- C $\frac{4^2}{4^{-1}}$
- D $(4^{-1})^3$

- 36 Lines l and m are parallel and intersect transversal p , as shown in the diagram below.

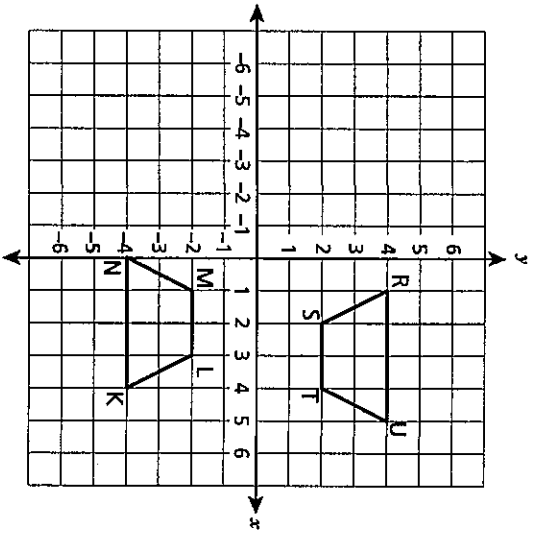


What is the value of n ?

- A 6
- B 10
- C 20
- D 24

57

Trapezoid RSTU and trapezoid NMLK shown on the coordinate plane are congruent.



Which sequence of transformations will map trapezoid RSTU onto trapezoid NMLK?

- A a reflection over the y -axis, then a translation 1 unit to the right
- B a reflection over the x -axis, then a translation 1 unit to the left
- C a reflection over the y -axis, then a translation 1 unit down
- D a reflection over the x -axis, then a translation 1 unit up

38

Which set of ordered pairs represents a function?

- A $\{(-20, 30), (-40, 0), (-40, 50)\}$
- B $\{(-30, 0), (-30, 20), (-30, 50)\}$
- C $\{(-40, 0), (20, -30), (60, -50)\}$
- D $\{(-50, 0), (20, -30), (-50, 60)\}$

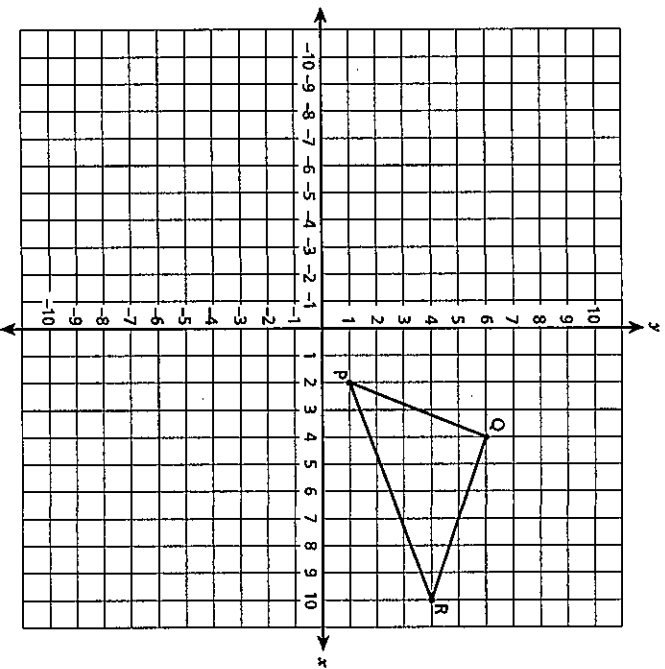
39

What value for the constant n , will result in no solution for the equation shown below?

$$n(5x + 7) = 10x + 12$$

- A 5
- B 2
- C -2
- D -5

- 40 Triangle QPR is graphed on the coordinate plane below.



Triangle QPR is dilated by a scale factor of $\frac{1}{2}$ with a center of dilation at the origin, resulting in triangle Q'P'R'. What are the coordinates of vertex R'?

- A (2, 5)
- B (5, 2)
- C (8, 20)
- D (20, 8)

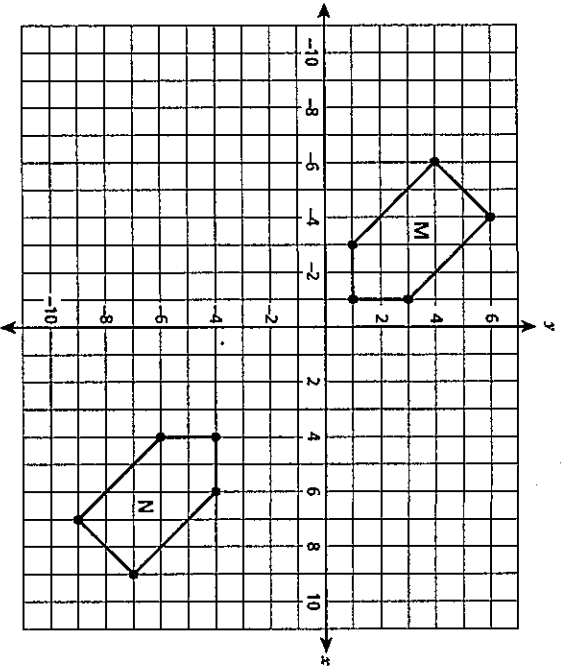
- 41 A camper lights an oil lantern at 12 noon and lets it burn continuously. Once the lantern is lit, the lantern burns oil at a constant rate each hour. At 2 p.m., the amount of oil left in the lantern is 63 ounces. At 5 p.m., the amount of oil left in the lantern is $61\frac{1}{2}$ ounces. Based on the average rate of oil burning per hour, how much oil, in ounces, was in the lantern at 12 noon?

Show your work.

Answer _____ ounces

42

Figure M and its congruent image, figure N, are graphed on the coordinate plane below.

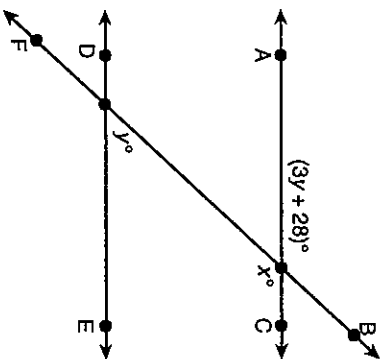


Describe a sequence of transformations that will take figure M onto its congruent image, figure N.

Explain your answer:

43

In the figure shown below, \overline{AC} is parallel to \overline{DE} with transversal \overline{BF} .



Determine the values of x and y .

Show your work.

Answer $x =$ _____
 $y =$ _____

44

The steps a student took to solve an equation are shown below.

$$\frac{3}{4}(-8x + 20) = -8(-x - 3)$$

Step 1: $-6x + 15 = 8x + 24$

Step 2: $15 = 2x + 24$

Step 3: $-9 = 2x$

Step 4: $x = -\frac{9}{2}$

What error did the student make and what is the correct value of x ?

Explain your answer:

Answer $x =$ _____

GO ON

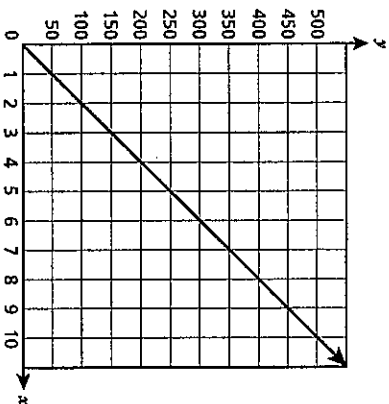
45

Two functions are represented below.

FUNCTION A

$$y = 35x$$

FUNCTION B



What is the difference in the rate of change between Function A and Function B? Be sure to include the rate of change of each function in your answer.

Explain your answer:

GO ON

46 At the beach, a child uses a container in the shape of a cylinder to build a sand castle. The child completely fills the container with sand.

- The container has a height of 10 inches and a diameter of 12 inches.
- There are 231 cubic inches in one gallon of sand.

What is the approximate volume of sand, in gallons, in the container? Round your answer to the nearest gallon.

Show your work.

Answer _____ gallons

GO ON

47 Determine the solution to the equation shown below.

$$3.2 - \frac{1}{2}(x + 4) = 4.8x + 2 - 5.2x$$

Show your work.

Answer $x =$ _____

GO ON

48

Three equations are listed below.

- $y = x(3x + 2)$
- $y = \frac{x}{3} + 2$
- $y = 2 - 3x$

Identify one linear equation and one nonlinear equation from the list. State a reason why each equation you identified is linear or nonlinear.

Linear equation _____

State your reason.

Nonlinear equation _____

State your reason.

STOP