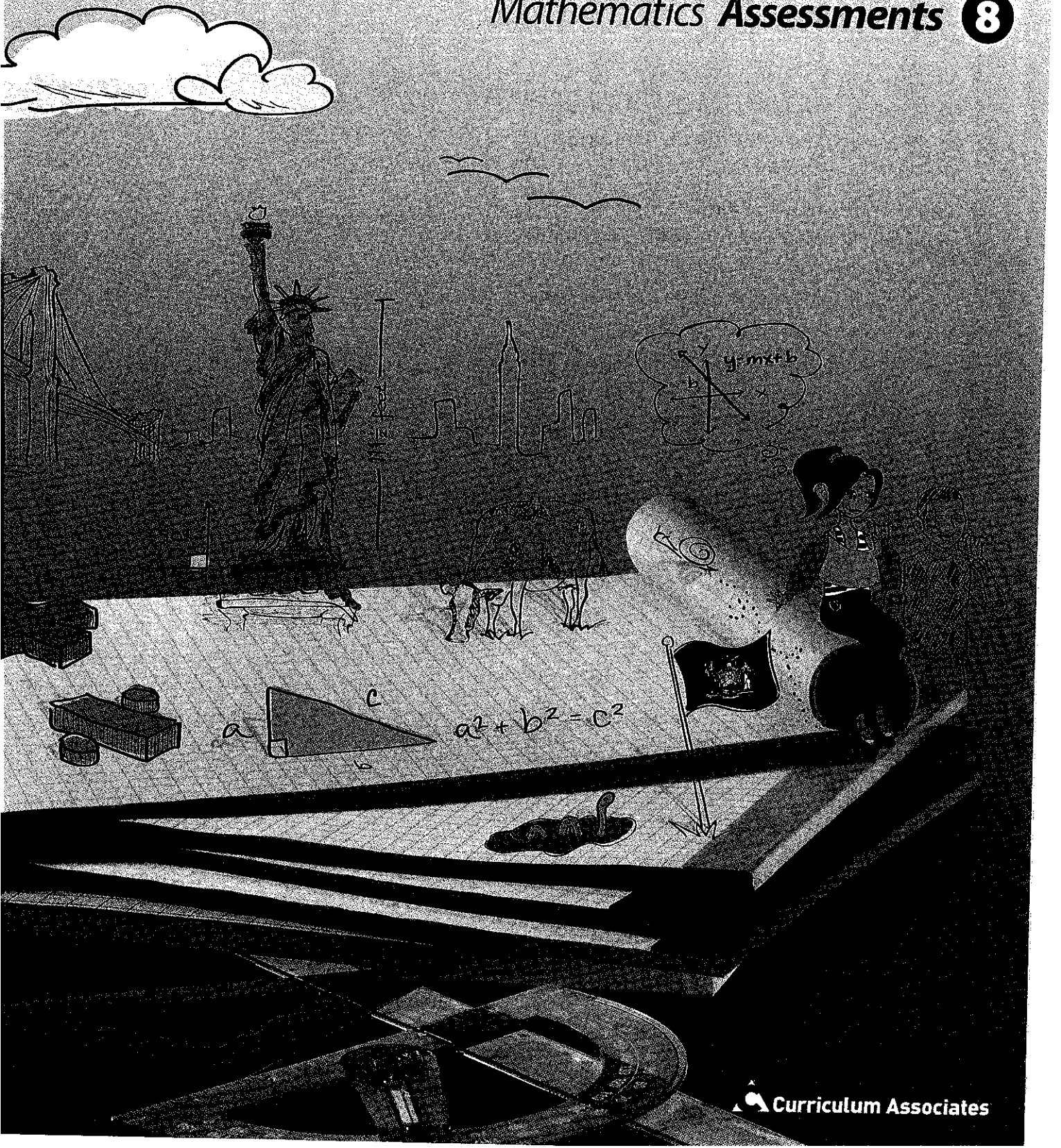


# Ready<sup>®</sup> New York CCLS

## Mathematics Assessments **8**



Answer Form

Name \_\_\_\_\_

Teacher \_\_\_\_\_ Grade \_\_\_\_\_

School \_\_\_\_\_ City \_\_\_\_\_

**Book 1**

1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
3. (A) (B) (C) (D)
4. (A) (B) (C) (D)
5. (A) (B) (C) (D)
6. (A) (B) (C) (D)
7. (A) (B) (C) (D)
8. (A) (B) (C) (D)
9. (A) (B) (C) (D)
10. (A) (B) (C) (D)
11. (A) (B) (C) (D)
12. (A) (B) (C) (D)
13. (A) (B) (C) (D)
14. (A) (B) (C) (D)
15. (A) (B) (C) (D)
16. (A) (B) (C) (D)
17. (A) (B) (C) (D)
18. (A) (B) (C) (D)
19. (A) (B) (C) (D)
20. (A) (B) (C) (D)
21. (A) (B) (C) (D)
22. (A) (B) (C) (D)
23. (A) (B) (C) (D)
24. (A) (B) (C) (D)
25. (A) (B) (C) (D)
26. (A) (B) (C) (D)
27. (A) (B) (C) (D)
28. (A) (B) (C) (D)

**Book 2**

29. (A) (B) (C) (D)
30. (A) (B) (C) (D)
31. (A) (B) (C) (D)
32. (A) (B) (C) (D)
33. (A) (B) (C) (D)
34. (A) (B) (C) (D)
35. (A) (B) (C) (D)
36. (A) (B) (C) (D)
37. (A) (B) (C) (D)
38. (A) (B) (C) (D)
39. (A) (B) (C) (D)
40. (A) (B) (C) (D)
41. (A) (B) (C) (D)
42. (A) (B) (C) (D)
43. (A) (B) (C) (D)
44. (A) (B) (C) (D)
45. (A) (B) (C) (D)
46. (A) (B) (C) (D)
47. (A) (B) (C) (D)
48. (A) (B) (C) (D)
49. (A) (B) (C) (D)
50. (A) (B) (C) (D)
51. (A) (B) (C) (D)
52. (A) (B) (C) (D)
53. (A) (B) (C) (D)
54. (A) (B) (C) (D)
55. (A) (B) (C) (D)

**Book 3**

For questions 56 through 65, write your answers in the book.

56. See page 38.
57. See page 39.
58. See page 40.
59. See page 42.
60. See page 43.
61. See page 45.
62. See page 46.
63. See page 48.
64. See page 49.
65. See page 50.

# Grade 8 Mathematics Reference Sheet\*

## CONVERSIONS

1 inch = 2.54 centimeters

1 kilometer = 0.62 mile

1 cup = 8 fluid ounces

1 meter = 39.37 inches

1 pound = 16 ounces

1 pint = 2 cups

1 mile = 5,280 feet

1 pound = 0.454 kilogram

1 quart = 2 pints

1 mile = 1,760 yards

1 kilogram = 2.2 pounds

1 gallon = 4 quarts

1 mile = 1.609 kilometers

1 ton = 2,000 pounds

1 gallon = 3.785 liters

1 liter = 0.264 gallon

1 liter = 1,000 cubic centimeters

---

## FORMULAS

Triangle

$$A = \frac{1}{2}bh$$

Parallelogram

$$A = bh$$

Circle

$$A = \pi r^2$$

Circle

$$C = \pi d \text{ or } C = 2\pi r$$

General Prisms

$$V = Bh$$

Cylinder

$$V = \pi r^2 h$$

Sphere

$$V = \frac{4}{3}\pi r^3$$

Cone

$$V = \frac{1}{3}\pi r^2 h$$

Pythagorean Theorem

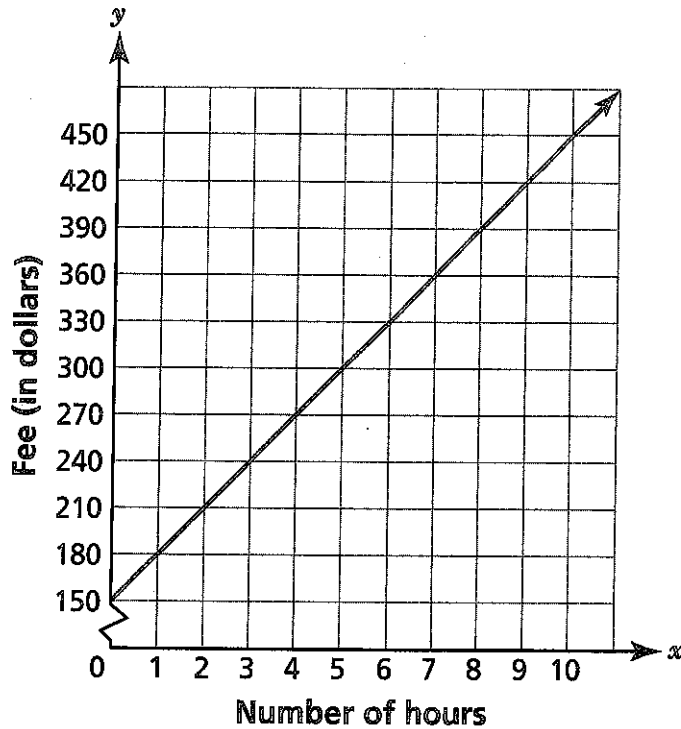
$$a^2 + b^2 = c^2$$

\*Reprinted courtesy of New York State Education Department.

Answer questions 1 through 28. You may NOT use a calculator.



The graph below models the cost of holding a banquet at the Tea Room restaurant.



What is the initial fee and cost per hour to hold a banquet at the Tea Room?

- A fee: \$150, cost per hour: \$30
- B fee: \$30, cost per hour: \$150
- C fee: \$120, cost per hour: \$30
- D fee: \$30, cost per hour: \$120

2 Which set of side lengths can form a triangle?

- A 6 cm, 8 cm, and 16 cm
- B 6 cm, 8 cm, and 10 cm
- C 6 cm, 7 cm, and 14 cm
- D 6 cm, 7 cm, and 20 cm

3 Which step would *not* be a possible first step for solving the following equation algebraically?

$$\frac{3}{4}(8q - 12) + 3\frac{5}{6} = 6 + \frac{1}{4}q$$

- A subtract  $3\frac{5}{6}$  from both sides of the equation
- B subtract 6 from both sides of the equation
- C multiply  $(8q - 12)$  by  $\frac{3}{4}$
- D multiply  $(8q - 12) + 3\frac{5}{6}$  by  $\frac{3}{4}$

**Go On**

4

The temperature in a city began to decrease at a constant rate once a cold front began to move in. The temperature was  $49^{\circ}\text{F}$  after 2 hours and  $39^{\circ}\text{F}$  after 6 hours. Suppose  $x$  is the number of hours since the cold front began to move in, and  $y$  is the temperature in  $^{\circ}\text{F}$ .

Which equation models this situation?

A  $y = -2.5x + 54$

B  $y = -1.25x + 54$

C  $y = -2.5x + 56$

D  $y = -1.25x + 56$

5

Because two ordered pairs are both contained in the following set, they prevent the set from being a function. Which ordered pairs could be removed to make the set a function?

$\{(1, 3), (2, 4), (3, 4), (3, 6), (5, 10), (6, 3)\}$

A  $(3, 4), (2, 4)$

B  $(3, 4), (3, 6)$

C  $(1, 3), (3, 4)$

D  $(3, 6), (6, 3)$

6

Due to plate tectonics, the summit of Mount Everest moves about  $4.5 \times 10^{-3}$  meters northeastward in one year. How many meters does the summit of Mount Everest move in 11 years? Express your answer in scientific notation.

A  $4.09 \times 10^{-3}$  meters

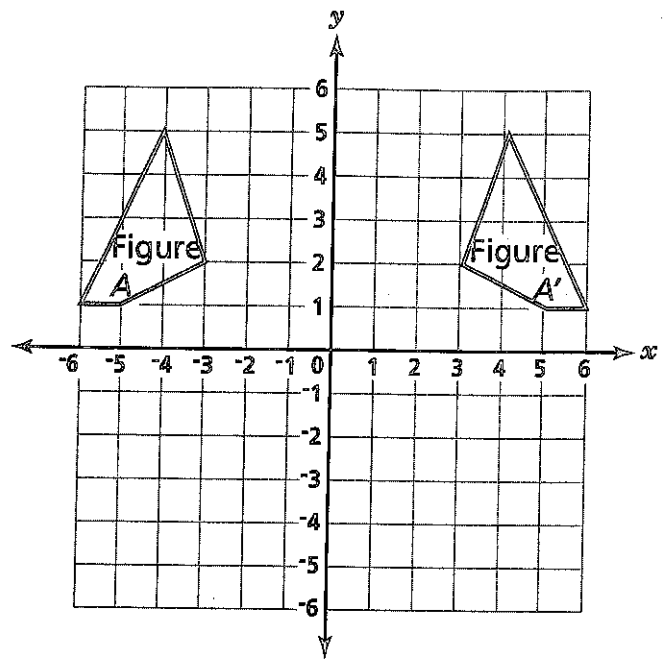
B  $4.95 \times 10^{-3}$  meters

C  $4.09 \times 10^{-2}$  meters

D  $4.95 \times 10^{-2}$  meters

7

Figure A and its image after a transformation, Figure A', are shown on the coordinate plane below. The two figures are congruent.



How was Figure A transformed to create the congruent Figure A'?

- A It was reflected across the x-axis.
- B It was reflected across the y-axis.
- C It was translated 9 units to the right.
- D It was rotated 90° clockwise around the origin.

8

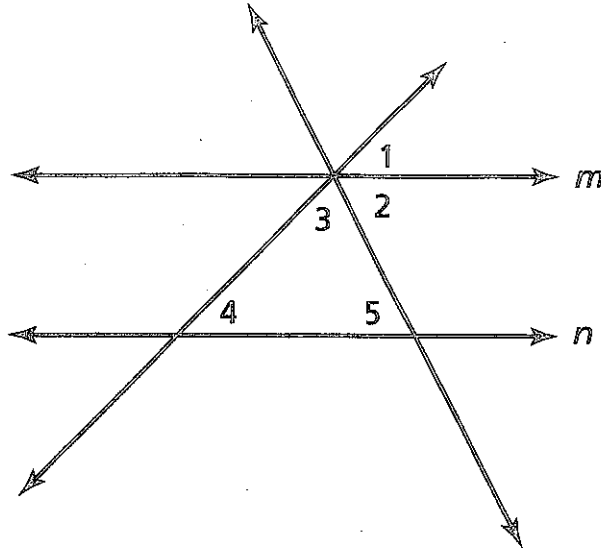
A restaurant that makes deliveries plotted data points on a scatter plot showing the relationship between  $x$ , the number of miles between the restaurant and the point of delivery, and  $y$ , the number of minutes between the time an order is placed and the time it is delivered. The equation of the line of best fit for the data was  $y = 2x + 6$ . About how long does it usually take for the restaurant to prepare an order for delivery?

- A 2 minutes
- B 4 minutes
- C 6 minutes
- D 8 minutes

**Go On**

9

In the figure below, lines  $m$  and  $n$  are parallel,  $m\angle 2 = 62^\circ$ , and  $m\angle 3 = 73^\circ$ .



Which reasoning is completely correct?

- A** Since  $\angle 2$  and  $\angle 5$  are alternate interior angles,  $m\angle 5$  is also  $62^\circ$ . The sum of the measures of  $\angle 3$ ,  $\angle 4$ , and  $\angle 5$  equals  $180^\circ$ , and  $m\angle 2 + m\angle 5 = 124^\circ$ . Therefore,  $m\angle 4 = 56^\circ$ .
- B** Since  $\angle 2$  and  $\angle 5$  are corresponding angles,  $m\angle 5$  is also  $62^\circ$ . The sum of the measures of  $\angle 3$ ,  $\angle 4$ , and  $\angle 5$  equals  $180^\circ$ , and  $m\angle 3 + m\angle 5 = 135^\circ$ . Therefore,  $m\angle 4 = 45^\circ$ .
- C** Since  $\angle 2$  and  $\angle 5$  are corresponding angles,  $m\angle 5$  is also  $62^\circ$ . The sum of the measures of  $\angle 3$ ,  $\angle 4$ , and  $\angle 5$  equals  $180^\circ$ , and  $m\angle 2 + m\angle 5 = 124^\circ$ . Therefore,  $m\angle 4 = 56^\circ$ .
- D** Since  $\angle 2$  and  $\angle 5$  are alternate interior angles,  $m\angle 5$  is also  $62^\circ$ . The sum of the measures of  $\angle 3$ ,  $\angle 4$ , and  $\angle 5$  equals  $180^\circ$ , and  $m\angle 3 + m\angle 5 = 135^\circ$ . Therefore  $m\angle 4 = 45^\circ$ .

10

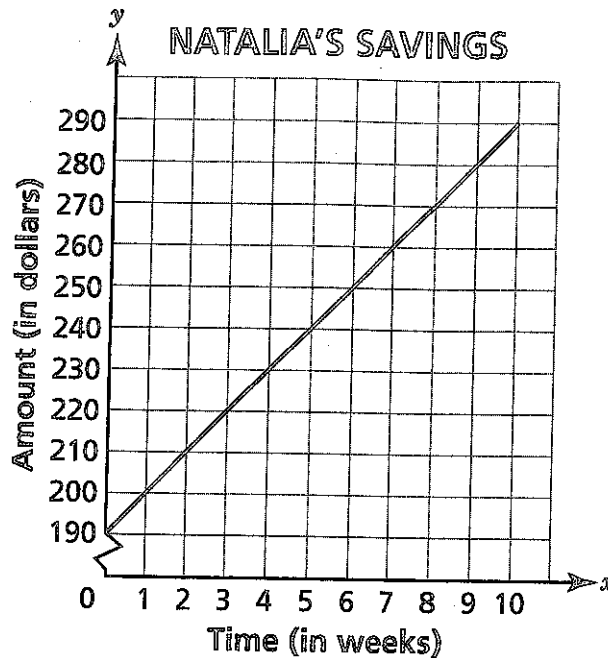
The planet Mercury is approximately  $6 \times 10^7$  miles from the sun. The distance between the sun and Mars is approximately  $2 \times 10^8$  miles. *About* how many times farther from the sun is Mars than Mercury?

- A** 2
- B** 3
- C** 20
- D** 30





The amount of money in both Sasha's and Natalia's bank account can be represented by a linear function. Sasha started with \$170, and after 10 weeks, she had \$290. The graph shows the amount of money in Natalia's account.



Which statement is correct?

- A The rate of change of Natalia's account balance is greater, because  $\frac{290 - 190}{10 - 0}$  is greater than  $\frac{290 - 170}{10 - 0}$ .
- B The rate of change of Natalia's account balance is greater, because  $\frac{10 - 0}{290 - 190}$  is greater than  $\frac{10 - 0}{290 - 170}$ .
- C The rate of change of Sasha's account balance is greater, because  $\frac{290 - 170}{10 - 0}$  is greater than  $\frac{290 - 190}{10 - 0}$ .
- D The rate of change of Sasha's account balance is greater, because  $\frac{10 - 0}{290 - 170}$  is greater than  $\frac{10 - 0}{290 - 190}$ .

**Go On**

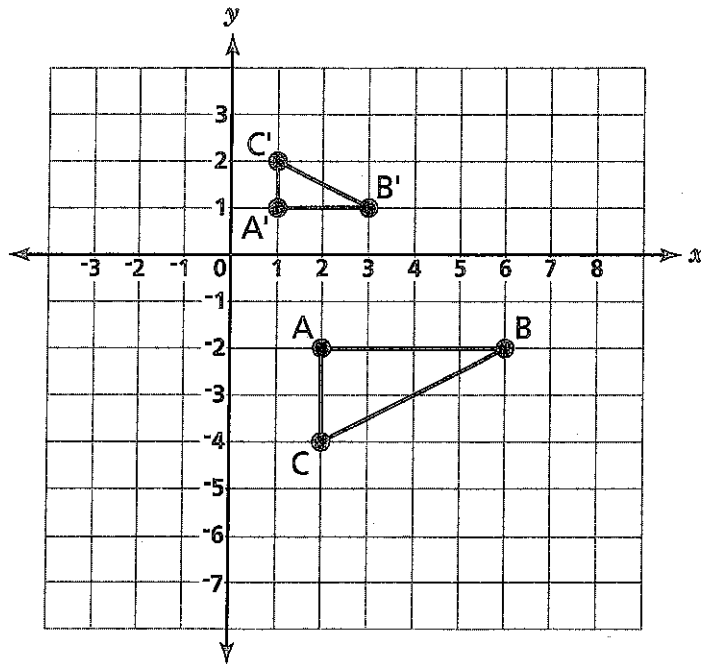
12

In April 2011, an online social networking site had approximately 200 million registered accounts. In August, the number of registered accounts had risen to  $3.62 \times 10^8$ . In scientific notation, how many more users were there in August than in April?

- A  $1.62 \times 10^8$
- B  $1.62 \times 10^7$
- C  $1.62 \times 10^6$
- D  $1.62 \times 10^5$

13

The two triangles shown are similar.



Which series of transformations could have been used to transform triangle  $ABC$  into the similar triangle  $A'B'C'$ ?

- A a dilation about the origin with a scale factor of 0.25 and a reflection across the  $x$ -axis
- B a dilation about the origin with a scale factor of 0.25 and a reflection across the  $y$ -axis
- C a dilation about the origin with a scale factor of 0.5 and a reflection across the  $x$ -axis
- D a dilation about the origin with a scale factor of 0.5 and a reflection across the  $y$ -axis

14

For each week of work, Aaron gets paid a base amount of \$500 plus 25% of his total sales. If  $y$  represents his base pay each week and  $x$  represents his total sales, which equation models this relationship?

- A  $y = 500.25x$
- B  $y = 500.25 + x$
- C  $y = 0.25 + 500x$
- D  $y = 500 + 0.25x$

15

The table below shows the hours worked last week by employees at an insurance company.

	< 30 hours	30–40 hours	> 40 hours
Managers	5	15	8
Office Staff	35	15	8

Of all the employees, what is the approximate relative frequency of managers who worked more than 40 hours?

- A 8%
- B 9.3%
- C 28.8%
- D 40%

**Go On**

16 A pair of lines intersect at the point  $(-3, 4)$ . Which pair of equations could represent these lines?

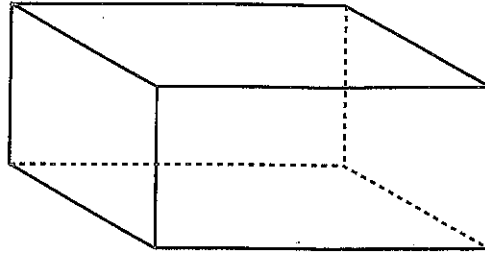
A  $2x + 3y = 6$   
 $y = x - 7$

B  $2x + 3y = 6$   
 $y = -3x + 4$

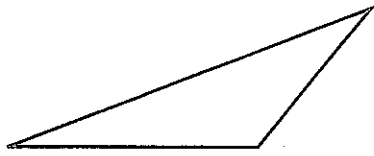
C  $2x + 3y = 6$   
 $y = -\frac{5}{3}x - 1$

D  $2x + 3y = 6$   
 $y = \frac{4}{3}x + 4$

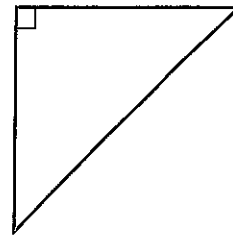
A rectangular prism is shown below.



Faith drew a plane to slice the prism diagonally from the top front edge to the back bottom edge. Which figure was formed by the intersection of the prism and the plane?



A



C



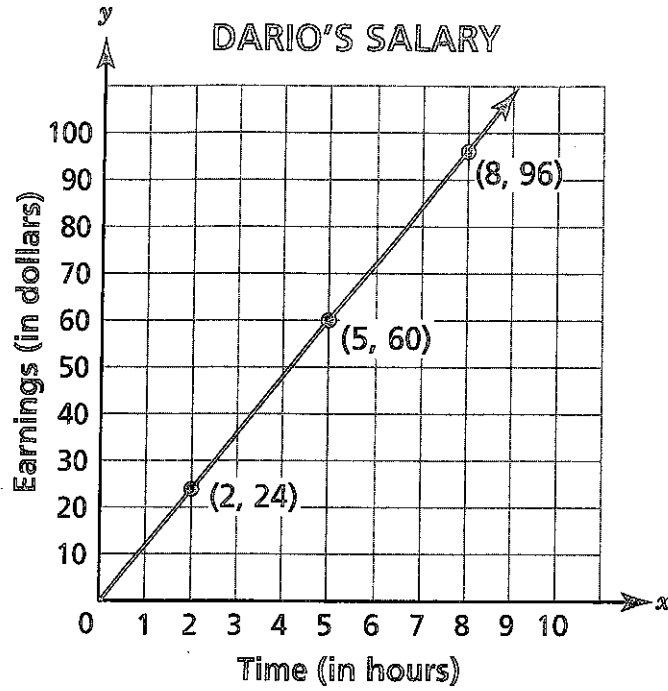
B



D

**Go On**

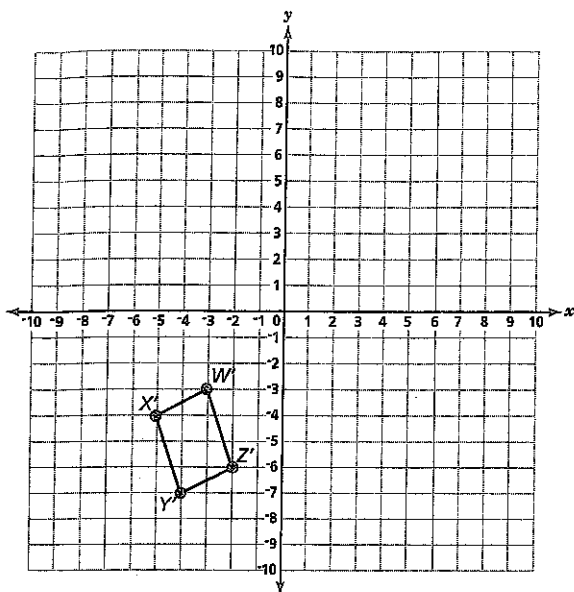
18 The graph below shows the number of hours Dario worked and the amount he earned.



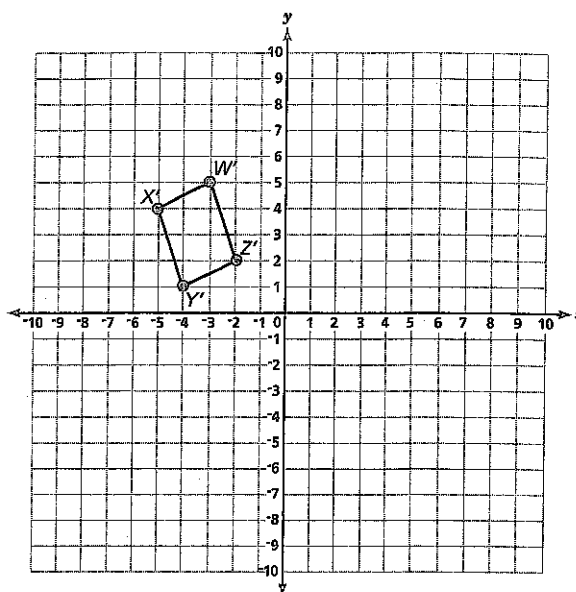
What is Dario's hourly wage?

- A \$10
- B \$12
- C \$24
- D \$54

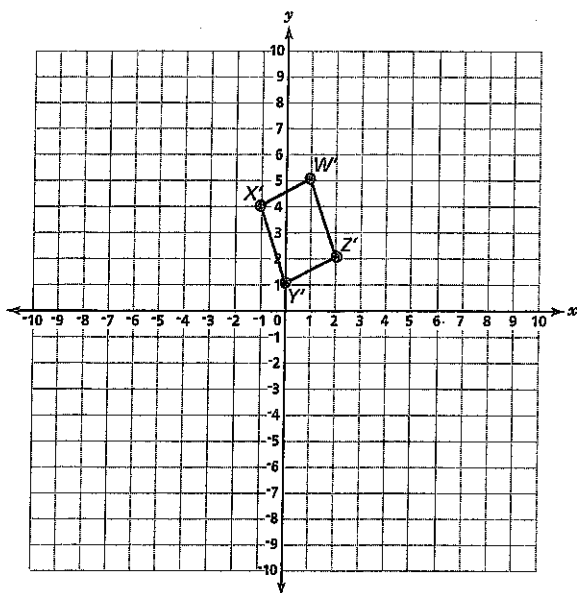
The vertices of parallelogram  $WXYZ$  are  $W(-1, 1)$ ,  $X(-3, 0)$ ,  $Y(-2, -3)$ , and  $Z(0, -2)$ . Which figure is the result of parallelogram  $WXYZ$  being translated 2 units to the left and 4 units down?



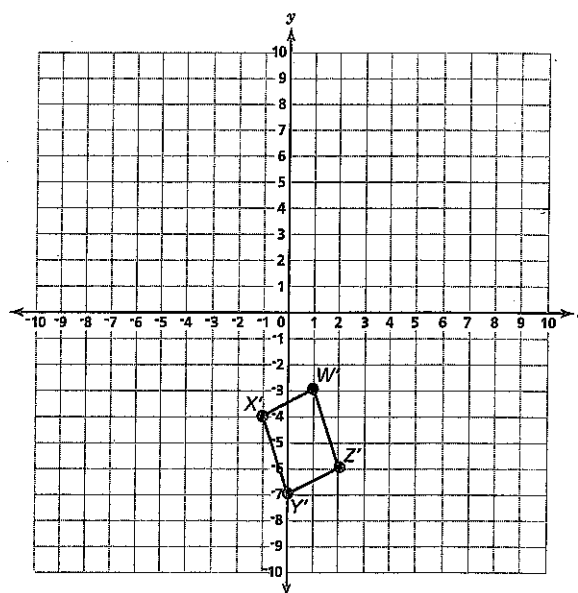
A



C



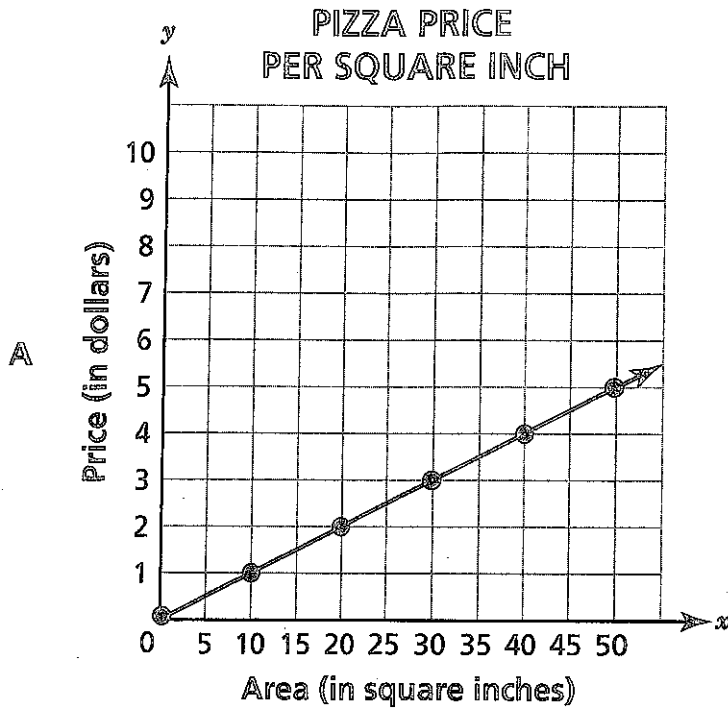
B



D

Go On

The price of a cheese pizza with no toppings is based on the area of the pizza. If  $P$  represents the price of the pizza, in dollars, and  $A$  represents the area of the pizza, in square inches, which function represents the lowest price per square inch?



**B**  $P = \$0.16 \times A$

**C**

Area	Price
50 in. <sup>2</sup>	\$4.00
100 in. <sup>2</sup>	\$8.00
150 in. <sup>2</sup>	\$12.00
200 in. <sup>2</sup>	\$16.00

**D** A cheese pizza with no toppings costs \$0.13 per square inch.



21 The graph of a function contains the points (1, 3) and (2, 5).

Which statement is correct?

- A The graph could be that of a linear function if it also contains the point (3, 7).
- B The graph could be that of a linear function if it also contains the point (4, 8).
- C The graph must be that of a linear function, because (1, 3) and (2, 5) both lie on the line  $y = 2x + 1$ .
- D The graph must not be that of a linear function, because (1, 3) and (2, 5) do not both lie on the line  $y = 2x + 1$ .

22 Melinda transformed the equation  $3x - 2 + x + 8 = \frac{1}{2}(9x + 7 - x + 5)$  into a simpler form as shown.

$$3x - 2 + x + 8 = \frac{1}{2}(9x + 7 - x + 5)$$

$$4x + 6 = \frac{1}{2}(8x + 12)$$

$$4x + 6 = 4x + 6$$

$$4x + 6 - 4x - 6 = 4x + 6 - 4x - 6$$

$$0 = 0$$

Which statement is correct?

- A Melinda made a mistake; the equation has no solution.
- B Melinda did everything correctly; the equation has no solution.
- C Melinda made a mistake; the equation has an infinite number of solutions.
- D Melinda did everything correctly; the equation has an infinite number of solutions.

**Go On**

23

LeSean said the graph of a function is a set of ordered pairs consisting of an input and the corresponding output. Beth said that is not true, because a line can be the graph of a function.

Who is *completely* correct, and why?

- A LeSean, because a line is a set of ordered pairs
- B Beth, because a line is not a set of ordered pairs
- C Beth, because a line can be the graph of a function
- D LeSean, because a line cannot be the graph of a function

24

Feng found that the equation  $y = 0.6x + 4$  models the relationship between  $y$ , the weight in pounds, of a puppy, and  $x$ , its age in weeks. According to the equation, what would be the expected weight of a puppy that is 8 weeks old?

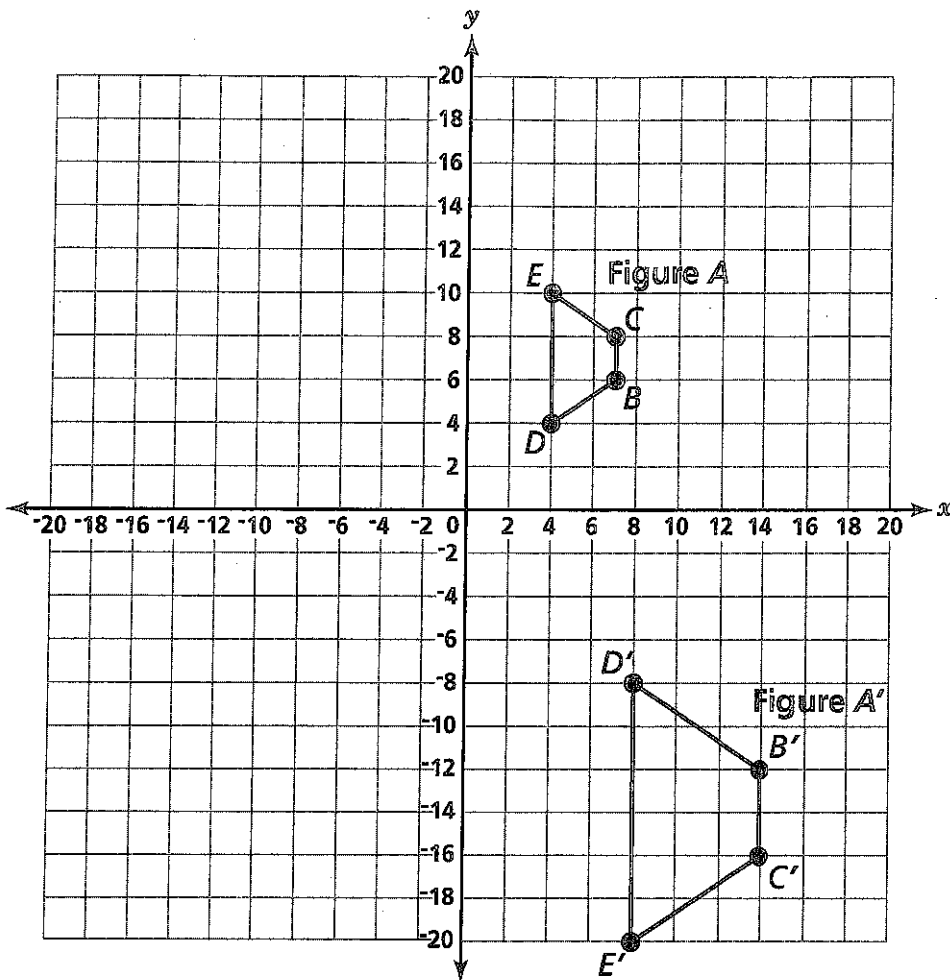
- A 4.8 pounds
- B 5.4 pounds
- C 8.8 pounds
- D 9.4 pounds

25

Which expression is equivalent to  $\frac{2^6 \times 2^{-4}}{2^7}$ ?

- A  $\frac{1}{32}$
- B  $\frac{1}{16}$
- C 16
- D 32

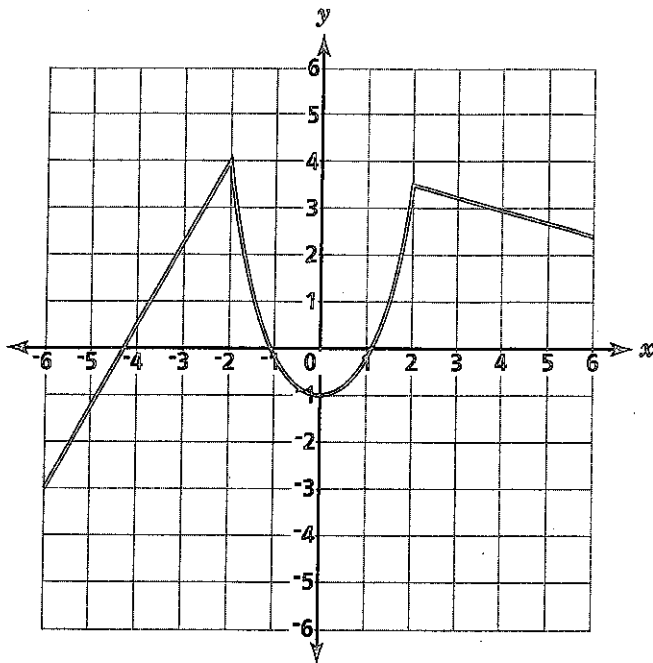
Which sequence of transformations on Figure A will generate the similar image, Figure A', as shown on the coordinate plane below?



- A** Dilate Figure A by a scale factor of 2 and with a center of dilation at the origin, and then reflect it across the  $y$ -axis.
- B** Dilate Figure A by a scale factor of 2 and with a center of dilation at the origin, and then reflect it across the  $x$ -axis.
- C** Dilate Figure A by a scale factor of 4 and with a center of dilation at the origin, and then rotate it  $90^\circ$  clockwise around the origin.
- D** Dilate Figure A by a scale factor of 4 and with a center of dilation at the origin, and then rotate it  $180^\circ$  clockwise around the origin.

**Go On**

In which interval is the graph below linear and increasing?



- A from  $x = -6$  to  $x = -2$
- B from  $x = -2$  to  $x = 0$
- C from  $x = 0$  to  $x = 2$
- D from  $x = 2$  to  $x = 6$

A plant cell is 0.00001267 meter wide. How is this number written in scientific notation?

- A  $1.267 \times 10^{-4}$
- B  $1.267 \times 10^{-5}$
- C  $1.267 \times 10^{-6}$
- D  $1.267 \times 10^{-8}$

**STOP**

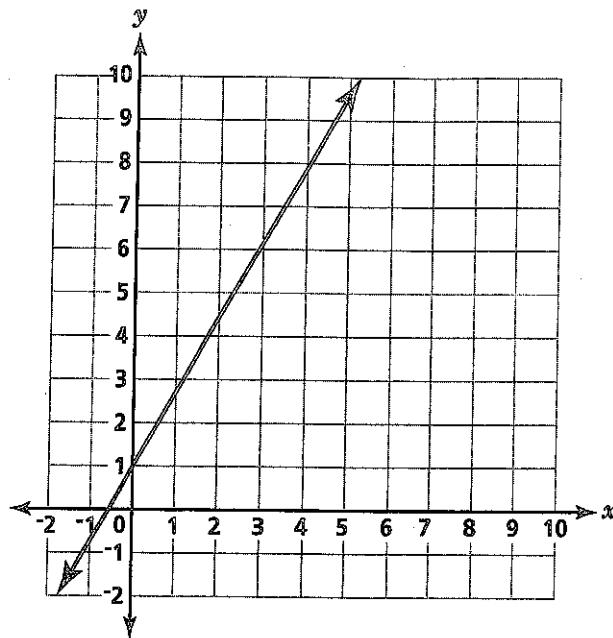
Answer questions 29 through 55. You may use a calculator.

29

Aaron graphed the equation  $x = y^2$  on a coordinate plane, while Jody graphed the equation  $y = x^2$ . The ordered pair  $(1, 1)$  satisfies both equations. Which statement about the ordered pair  $(1, -1)$  is correct?

- A It shows that Jody did not graph a function.
- B It shows that Aaron did not graph a function.
- C It satisfies both equations.
- D It satisfies neither equation.

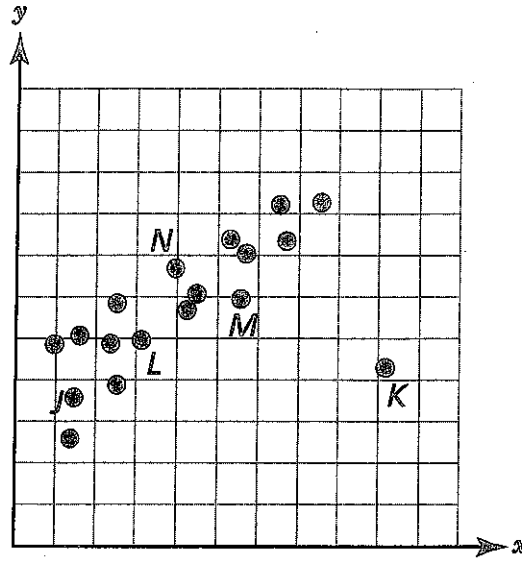
The equation  $y = 1.8x + 1.1$  is graphed below.



Which ordered pair comes *closest* to the solution of the system of equations that includes the above equation and the equation  $y = 0.25x + 3.9$ ?

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

Look at the scatter plot below. Liza used points  $J$  and  $K$  to draw a line of best fit for the data. Derek used points  $J$  and  $M$  to draw a line of best fit.



Which reason *best* explains why Derek's line is a better model for the data?

- A Since point  $J$  is close to the other points, Derek's line would also be close.
- B Since Derek's line has a positive slope, it can be used as the line of best fit.
- C Since point  $K$  is a data point, Liza's line can pass through it and still fit the data.
- D Since point  $K$  is an outlier, Liza's line would be far from most of the other data points.



Of the three linear functions represented below, which has the greatest rate of change?

Function 1:  $y = 2x + 6$

Function 2:

$x$	$y$
-1	3
1	15
2	21

Function 3: a number,  $y$ , is 2 less than half of a number  $x$ .

- A Function 3 has the greatest rate of change.
- B Function 2 has the greatest rate of change.
- C Function 1 has the greatest rate of change.
- D All three functions have the same rate of change.

A system of equations is shown below.

$$-y + 2x = 4$$

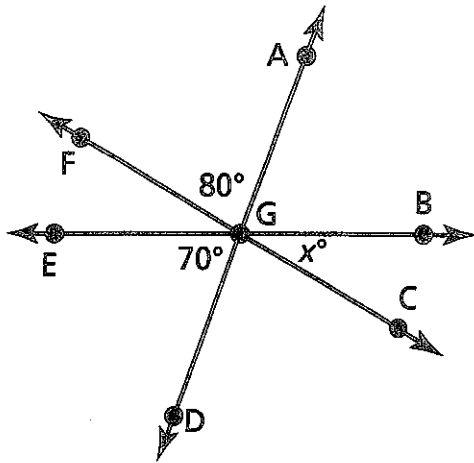
$$2x - y = -4$$

Without doing any calculations, what is the solution to the system of equations?

- A There are infinitely many solutions, because the two equations are the same.
- B There is no solution, because  $2x - y$  cannot be 4 and  $-4$ .
- C The solution is  $(0, 4)$ .
- D The solution is  $(4, 0)$ .

34

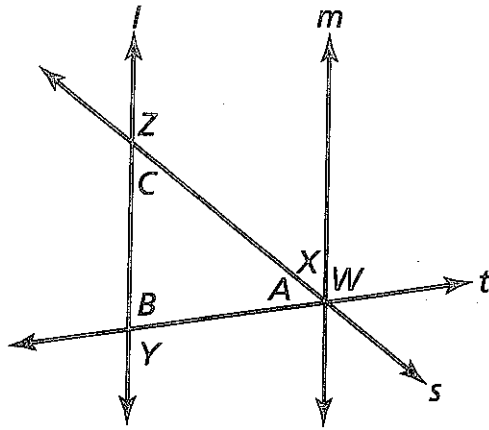
$\overleftrightarrow{AD}$ ,  $\overleftrightarrow{BE}$ , and  $\overleftrightarrow{CF}$  intersect at point  $G$ .



What is the value of  $x$ ?

- A 10
- B 20
- C 30
- D 40

Lines  $l$  and  $m$  are parallel and intersected by transversals  $t$  and  $s$  as shown in the figure below.



What is  $m\angle W + m\angle X + m\angle Y + m\angle Z$ ?

- A  $180^\circ$
- B  $360^\circ$
- C  $540^\circ$
- D  $720^\circ$

**Go On**

36

A cylindrical water tank near the town library is 15 meters high and has a circumference of 85 meters. What is the *approximate* volume, to the nearest whole number, of the water tank? Use 3.14 for  $\pi$ .

- A 1,275 m<sup>3</sup>
- B 2,875 m<sup>3</sup>
- C 8,629 m<sup>3</sup>
- D 34,497 m<sup>3</sup>

37

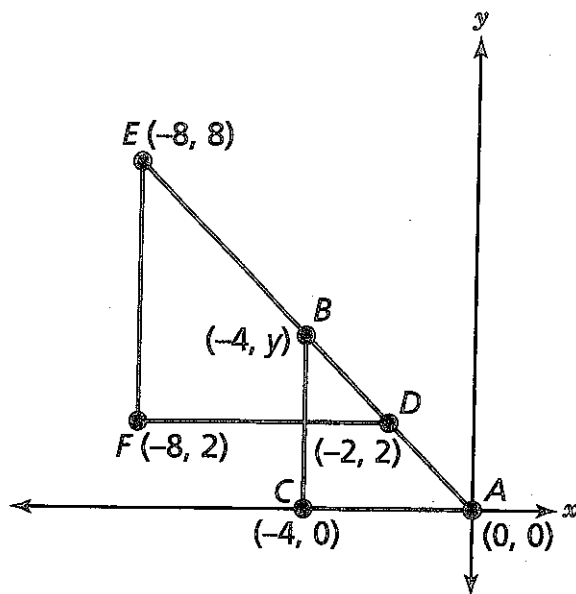
Marta surveyed educators about their ages and whether or not they had a doctorate degree. She created the table below to summarize their responses.

	Have Doctorate	Do Not Have Doctorate
30 or Younger	5	17
Older than 30	12	30

How many educators older than 30 had a doctorate degree?

- A 5
- B 12
- C 17
- D 30

8 In the coordinate plane below,  $\triangle ABC$  is similar to  $\triangle DEF$ .



What is the value of  $y$ ?

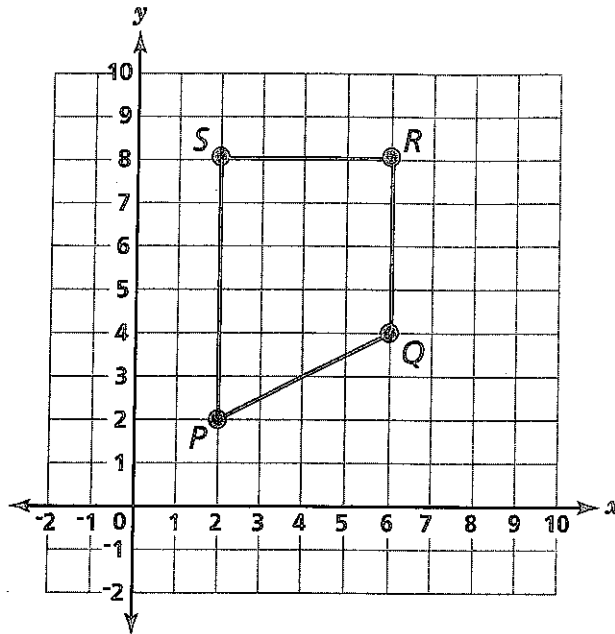
- A 3
- B 4
- C 5
- D 6

9 Where do the lines modeled by the equations  $y = -\frac{7}{8}x + \frac{1}{4}$  and  $y = -\frac{3}{4}x + \frac{1}{2}$  intersect?

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

**Go On**

Look at figure  $PQRS$  below.

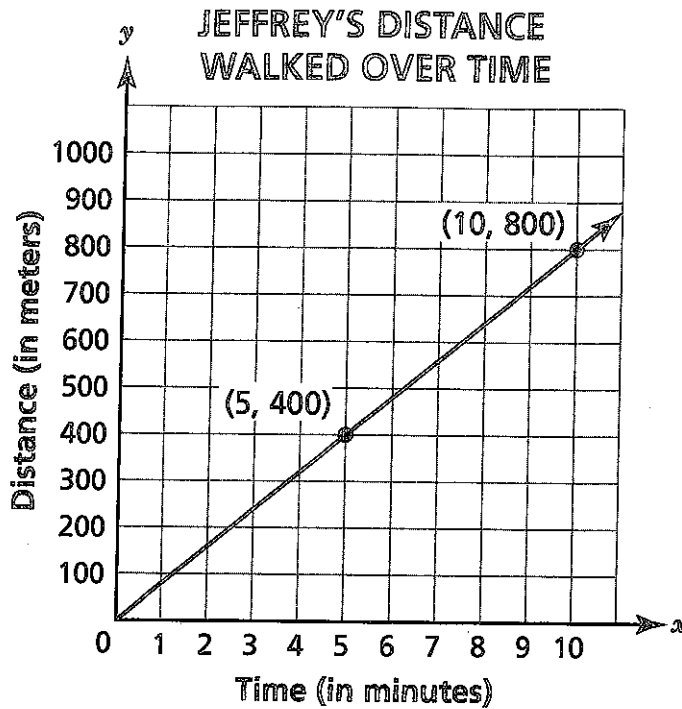


If figure  $PQRS$  is dilated using a scale factor of 0.5 with the center of dilation at  $(0, 0)$ , what are the coordinates of the points of the image  $P'Q'R'S'$ ?

- A  $P'(1.5, 1.5)$ ,  $Q'(2.5, 1.5)$ ,  $R'(2.5, 3.5)$ ,  $S'(0.5, 3.5)$
- B  $P'(2.5, 2.5)$ ,  $Q'(6.5, 4.5)$ ,  $R'(6.5, 8.5)$ ,  $S'(2.5, 8.5)$
- C  $P'(4, 4)$ ,  $Q'(12, 8)$ ,  $R'(12, 16)$ ,  $S'(4, 16)$
- D  $P'(1, 1)$ ,  $Q'(3, 2)$ ,  $R'(3, 4)$ ,  $S'(1, 4)$



Jeffrey and Fumi walk at different speeds. Fumi's walking speed can be represented by the equation  $y = 85x$ , where  $x$  is the time in minutes and  $y$  is the distance in meters. The distance Jeffrey walked over time is shown in the graph below.



Which statement is true?

- A Jeffrey walks 5 meters per minute faster than Fumi.
- B Jeffrey walks 10 meters per minute faster than Fumi.
- C Jeffrey walks 5 meters per minute slower than Fumi.
- D Jeffrey walks 10 meters per minute slower than Fumi.

**Go On**

42

Every time  $x$  increases by 1,  $y$  decreases by 3, and when  $x$  is  $-6$ ,  $y$  is  $-3$ . Which function models the relationship between  $x$  and  $y$ ?

A  $y = -6x - 21$

B  $y = -6x - 3$

C  $y = -3x - 3$

D  $y = -3x - 21$

43

When the points in a scatter plot are clustered closely around a line of best fit, what *must* this imply about the correlation between the two variables?

A There is a strong correlation.

B There is a weak correlation.

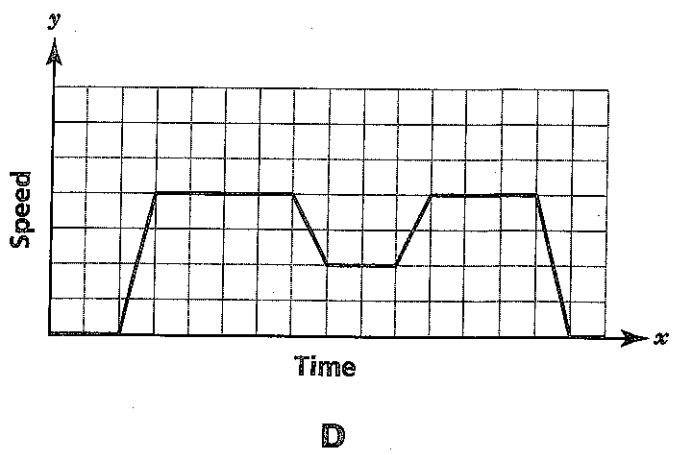
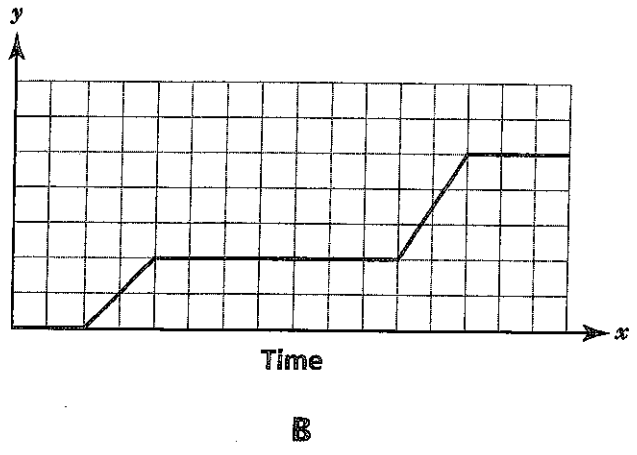
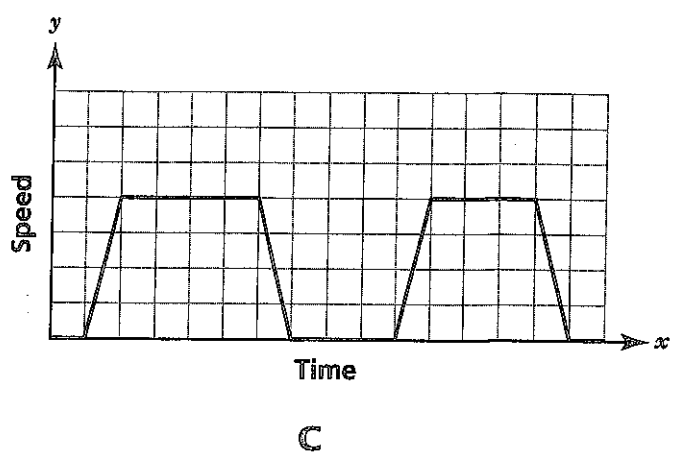
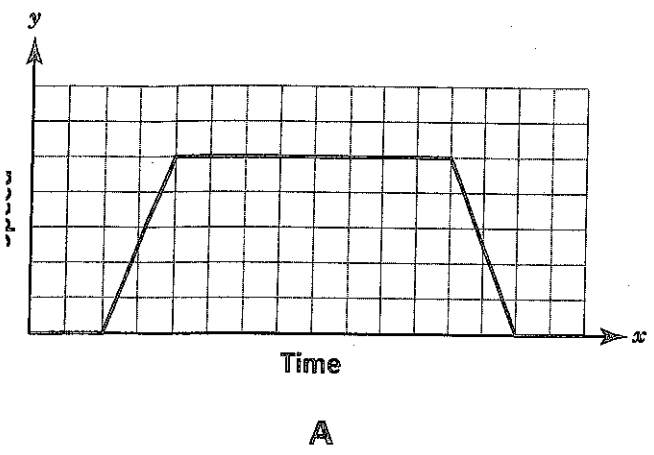
C There is a negative correlation.

D There is a positive correlation.



Kyle got into his car and steadily accelerated to the speed limit. After driving at a constant rate of speed for a while, he slowed to a stop and parked in a store parking lot. Kyle spent a few minutes shopping, and then reentered his car to drive home. He accelerated to the speed limit, continued at that speed for a while, and then slowed to a stop and parked in his driveway.

Which graph *best* represents the scenario described?



45

In the pair of equations  $bx - 6y = 18$  and  $2x - 3y = 9$ ,  $b$  is a constant. The system of two equations has infinitely many solutions. What is the value of  $b$ ?

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

46

Noralie is making a necklace using a total of 48 beads. All of the beads will be either blue or yellow. She plans to use  $\frac{1}{3}$  as many yellow beads as blue beads. How many of each color bead will she use?

- A 16 yellow and 32 blue
- B 32 yellow and 16 blue
- C 12 yellow and 36 blue
- D 36 yellow and 12 blue

47

The function  $C = 2\pi r$  gives the circumference of a circle related to its radius, while the function  $A = \pi r^2$  gives the area of a circle related to its radius.

Which statement is correct?

- A Both  $C = 2\pi r$  and  $A = \pi r^2$  are linear functions, because they both contain  $r$ .
- B Only  $C = 2\pi r$  is a linear function because its graph is a line with a slope of  $2\pi$ .
- C Only  $A = \pi r^2$  is a linear function because its graph is a line with a slope of  $\pi$ .
- D Neither  $C = 2\pi r$  nor  $A = \pi r^2$  are linear functions, because they both contain  $\pi$ .

18

Jacob is twice as old as Sue. The sum of their ages is 69 years. How old is Jacob?

- A 46
- B 35
- C 34
- D 23

9

Consider the table below.

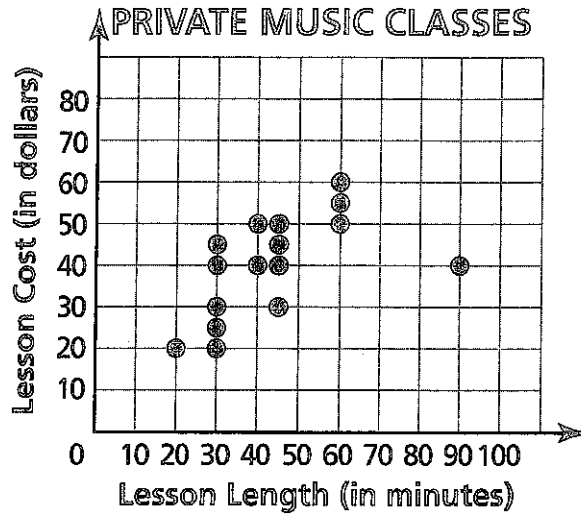
$x$	$y$
0	1
1	2
3	8
4	16
5	32
6	64

If the data were graphed on a coordinate plane, would the graph be linear?

- A Yes, because the rule is  $y = 2x$ .
- B Yes, because the  $y$ -intercept is 1.
- C No, because the graph is only in Quadrant I.
- D No, because the rate of change is not constant.

**Go On**

Which point in the scatter plot below appears to be an outlier?



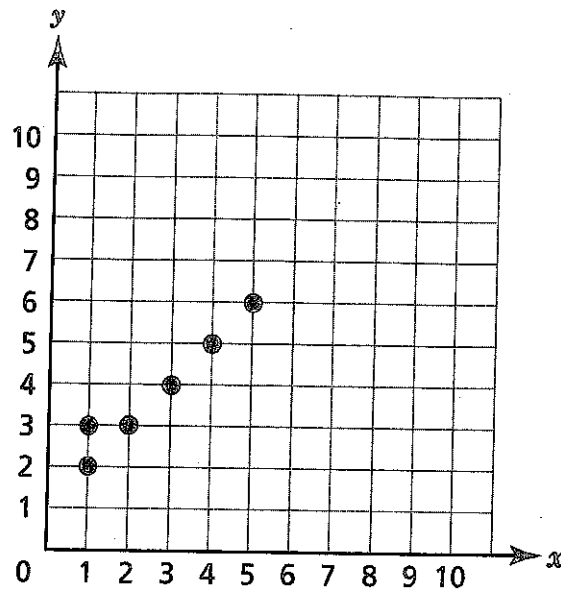
- A the 20-minute lesson that costs \$20
- B the 45-minute lesson that costs \$45
- C the 60-minute lesson that costs \$55
- D the 90-minute lesson that costs \$40

Which equation has an infinite number of solutions?

- A  $-8x + 8 = 0$
- B  $\frac{1}{4}(3x - 12) = -\frac{1}{4}x - 3$
- C  $2x + 8 = 2(x + 8)$
- D  $\frac{1}{2}(6x - 10) = 3x - 5$

2

Royce heard that a function has one output for each input. He concluded that this means the graph shown must be that of a function, because it has the same number of outputs as inputs. The inputs are 1, 2, 3, 4, and 5, and the outputs are 2, 3, 4, 5, and 6.

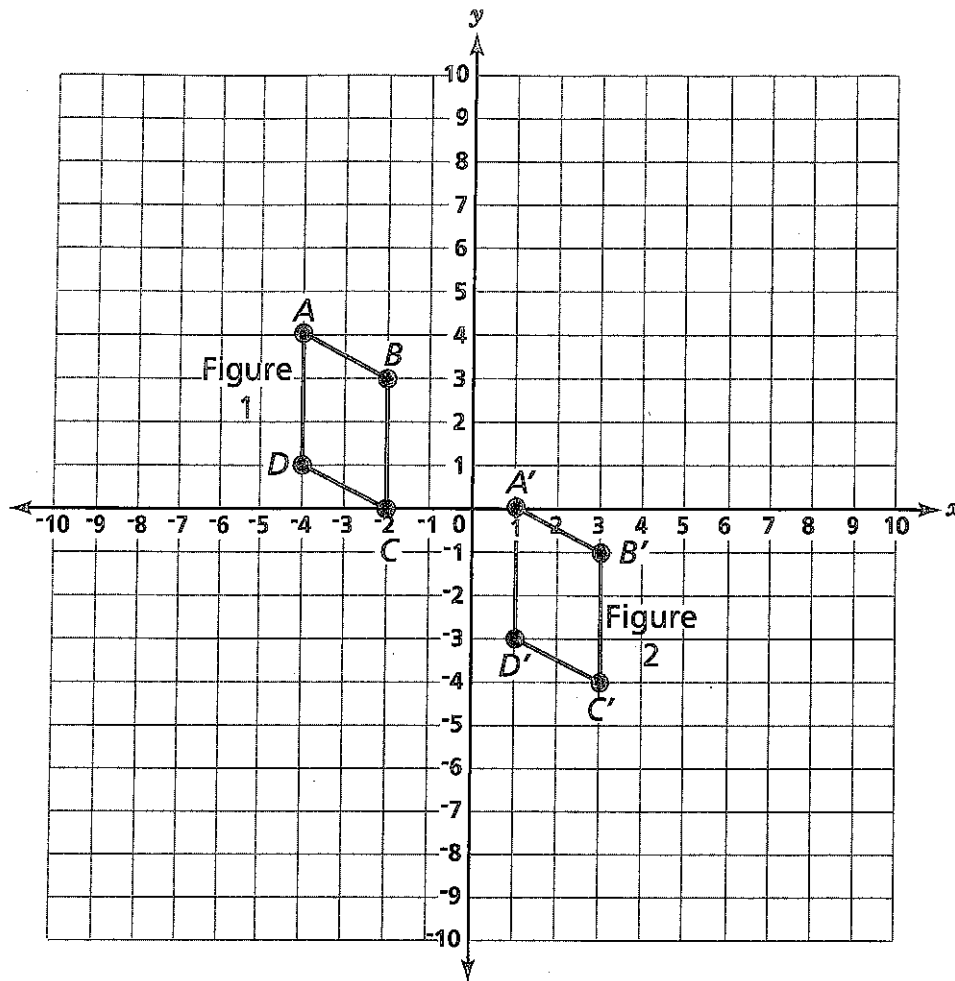


Which *best* describes why Royce's conclusion is wrong?

- A The inputs are actually 2, 3, 4, 5, and 6.
- B The outputs are actually 1, 2, 3, 4, and 5.
- C 2 and 3 are both outputs for the same input.
- D 1 and 2 are both inputs for the same output.

**Go On**

Which sequence of transformations is performed so that Figure 1 is congruent to Figure 2?



- A Figure 1 is translated 3 units up and 4 units to the left.
- B Figure 1 is translated 5 units down and 4 units to the right.
- C Figure 1 is translated 4 units down and 5 units to the right.
- D Figure 1 is translated 4 units up and 5 units to the left.

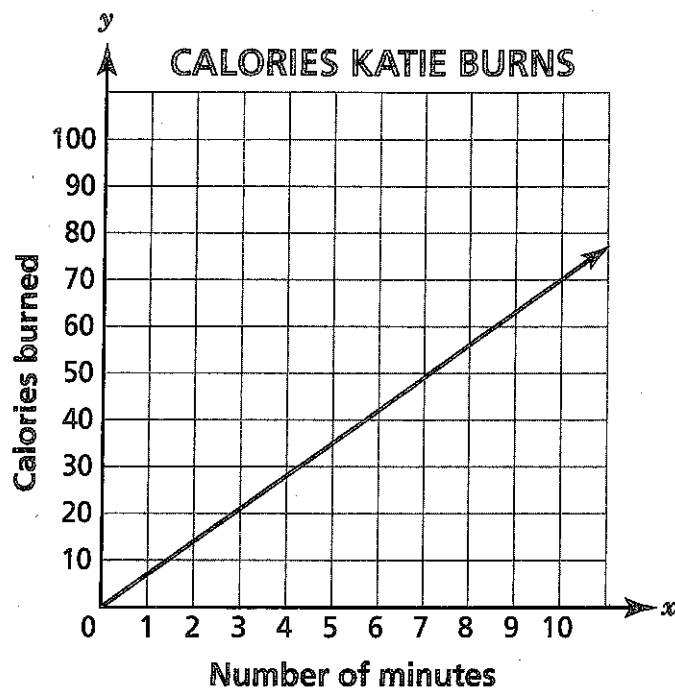
54

Which expression is *not* equivalent to  $\frac{1}{343}$ ?

- A  $7^{-1} \times 7^{-2}$
- B  $7^7 \times 7^{-10}$
- C  $7^{-2} \times 7^{-5}$
- D  $7^{-5} \times 7^2$

55

The graph shows the number of calories Katie burns over time while doing moderate exercise.



Rich burns 8 calories per minute doing the same type of exercise. How do the number of calories Katie and Rich burn per minute compare?

- A Katie burns 1 more calorie per minute than Rich.
- B Rich burns 1 more calorie per minute than Katie.
- C Katie burns 2 more calories per minute than Rich.
- D Rich burns 2 more calories per minute than Katie.

**STOP**

Answer questions 56 through 65. You may use a calculator. Use the  $\pi$  key on your calculator for short- and extended-response questions. The use of  $\frac{22}{7}$  or shortened decimal forms is not acceptable.

**56** The mass of Earth is  $5.97 \times 10^{24}$  kilograms. The mass of the Moon is  $7.34 \times 10^{22}$  kilograms.

**Part A**

What is the combined mass of Earth and the Moon? Express your answer in scientific notation.

*Show your work.*

**Answer** \_\_\_\_\_ kilograms

**Part B**

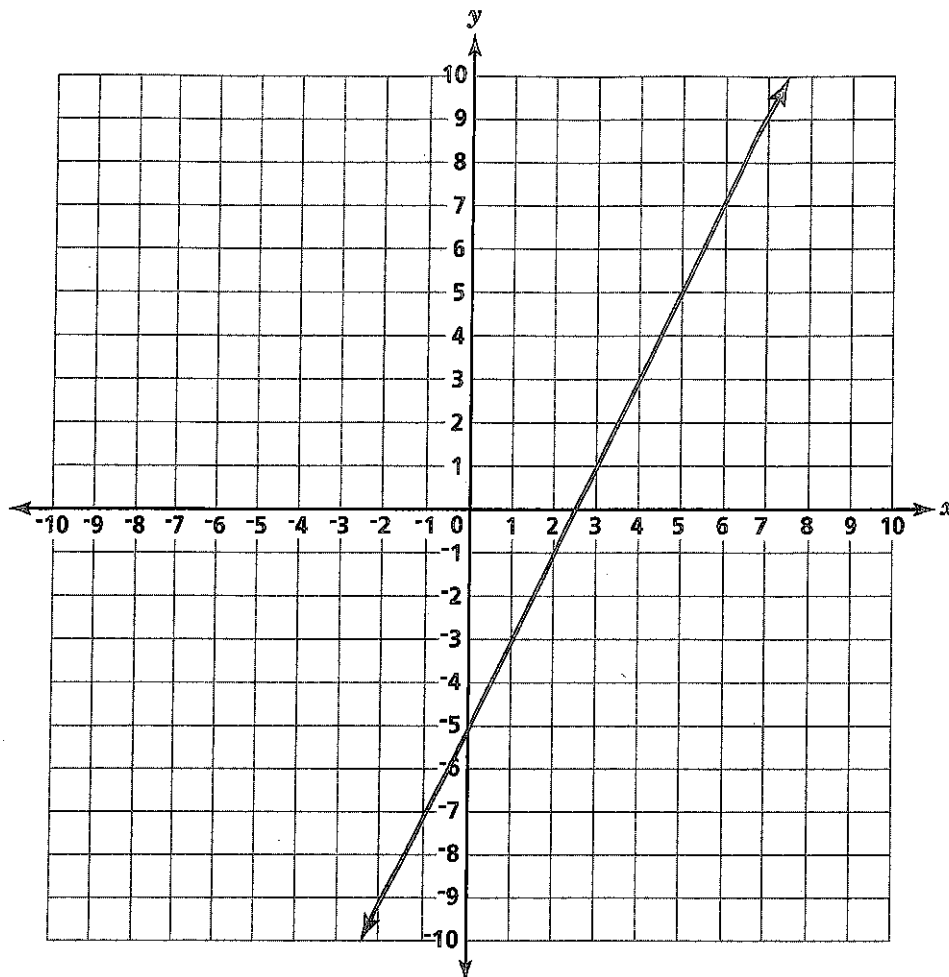
How many times as great is the mass of Earth as the mass of the Moon? Express your answer in scientific notation.

*Show your work.*

**Answer** \_\_\_\_\_



The graph below shows the solutions to  $y = 2x - 5$ .



**Part A**

Graph the solutions to  $y = -\frac{1}{2}x$  on the same coordinate plane.

**Part B**

Using the graph you drew in Part A, what point is the solution to the system of equations

$$y = -\frac{1}{2}x \text{ and } y = 2x - 5?$$

**Answer** \_\_\_\_\_

**Go On**

**58** The function  $F = \frac{9}{5}C + 32$  gives the temperature in degrees Fahrenheit,  $F$ , based on the temperature in degrees Celsius,  $C$ .

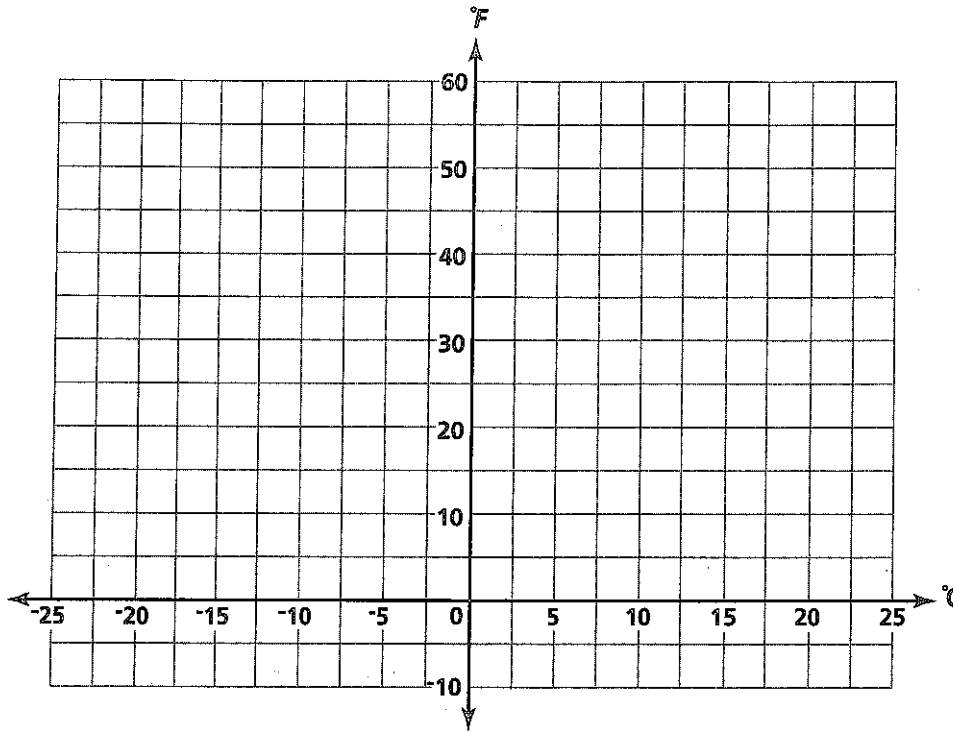
*Part A*

Use the function to fill in the table with the number of degrees Fahrenheit for different numbers of degrees Celsius.

Degrees Celsius, $C$	Degrees Fahrenheit, $F$
-15	
-10	
-5	
0	
5	
10	
15	

*Part B*

Graph the relationship between degrees Celsius and degrees Fahrenheit.



*Part C*

Is  $F = \frac{9}{5}C + 32$  a linear function? Explain your answer.

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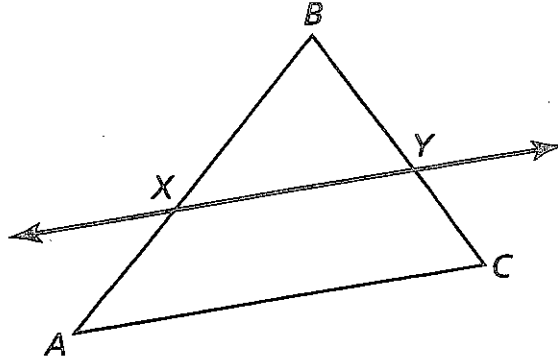
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**Go On**

Line  $XY$  is parallel to line segment  $AC$  as shown in the figure below.



**Part A**

Name two similar triangles shown in the figure.

Answer \_\_\_\_\_

**Part B**

Explain why the triangles are similar.

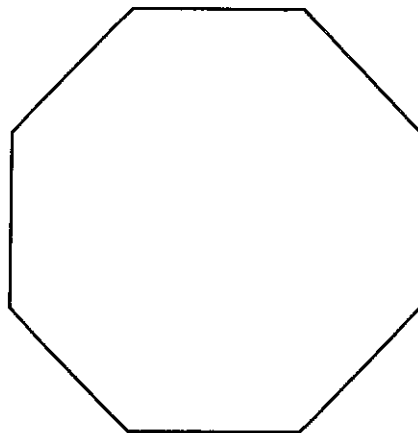
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A stop sign is shown. Each side measures 12.4 inches, and the distance from any side to the opposite side is 30 inches.



**Part A**

Divide the stop sign into one rectangle and two trapezoids. What are the dimensions of the rectangle and each of the trapezoids?

*Show your work.*

**Dimensions of Rectangle**

**Length** \_\_\_\_\_

**Width** \_\_\_\_\_

**Dimensions of Each Trapezoid**

**Shorter Base** \_\_\_\_\_

**Longer Base** \_\_\_\_\_

**Height** \_\_\_\_\_

**Go On**

*Part B*

What is the area of the rectangle? What is the area of each trapezoid?

*Show your work.*

*Area of Rectangle* \_\_\_\_\_ square inches

*Area of Each Trapezoid* \_\_\_\_\_ square inches

*Part C*

What is the area of the stop sign?

*Show your work.*

*Area of Stop Sign* \_\_\_\_\_ square inches

Consider the equation below.

$$\frac{1}{5}(x + 2) + 2x = 6x - 10$$

**Part A**

Which property can be used to simplify the expression  $\frac{1}{5}(x + 2)$ ?

*Answer* \_\_\_\_\_

**Part B**

Collect all  $x$ -terms on one side of the equation and all constants on the other side, and combine like terms.

*Show your work.*

*Answer* \_\_\_\_\_

**Part C**

What is the value of  $x$ ?

*Show your work.*

*Answer* \_\_\_\_\_

**Go On**

The table below shows the daily temperature and sales of lemonade at Cool Lemonade Shop for the past 10 days.

Temperature (°F)	Sales (\$)
64.4	119
68.2	130
62.8	115
71	140
67.8	128
72.6	142
78.8	165
75	154
63.4	118
59.8	112

**Part A**

Sketch a scatter plot to show the relationship between the daily temperature and sales of lemonade shown in the table above.



*Part B*

What type of association does the scatter plot show, linear or nonlinear? Explain your answer.

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*Part C*

What type of association does the scatter plot show, positive or negative? Explain your answer.

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**Go On**



Consider the pair of linear equations below.

$$4x + 6y = 12$$

$$2x + 3y = 6$$

**Part A**

What is the relationship, if any, between the two equations?

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**Part B**

Does the system of equations have one solution, no solution, or infinitely many solutions? Explain.

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**Part C**

How can you verify your answers to Parts A and B by solving algebraically?

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A campground rents canoes for a flat fee of \$25 plus \$5 per hour.

**Part A**

Write a linear function to model the relationship between the number of hours renting a canoe and the total cost of renting one. Let  $x$  represent the number of hours and  $y$  represent the total cost.

Function \_\_\_\_\_

**Part B**

Explain the meaning of slope in the context of the problem.

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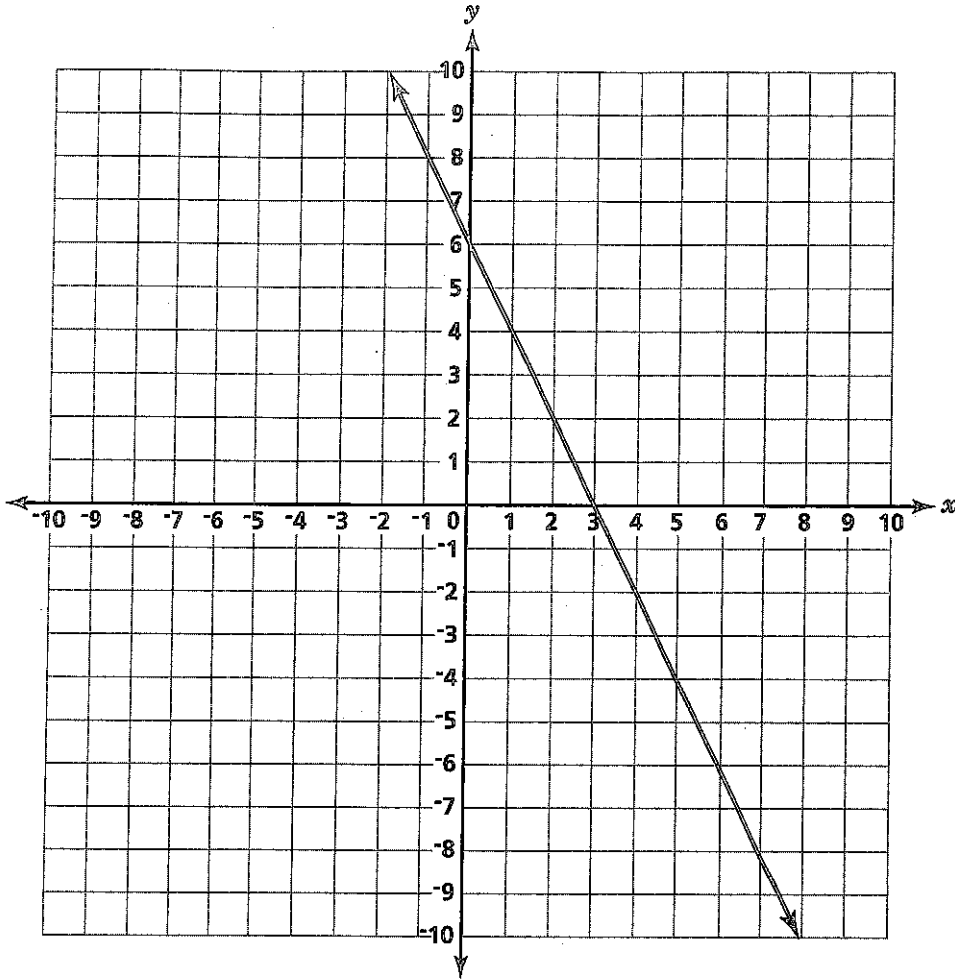
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**Go On**

Consider the graph below.



**Part A**

Find the  $y$ -intercept,  $b$ , and the slope,  $m$ , of the line.

*Show your work.*

**Answer** \_\_\_\_\_

**Part B**

Write the equation of the line.

**Equation** \_\_\_\_\_

**STOP**