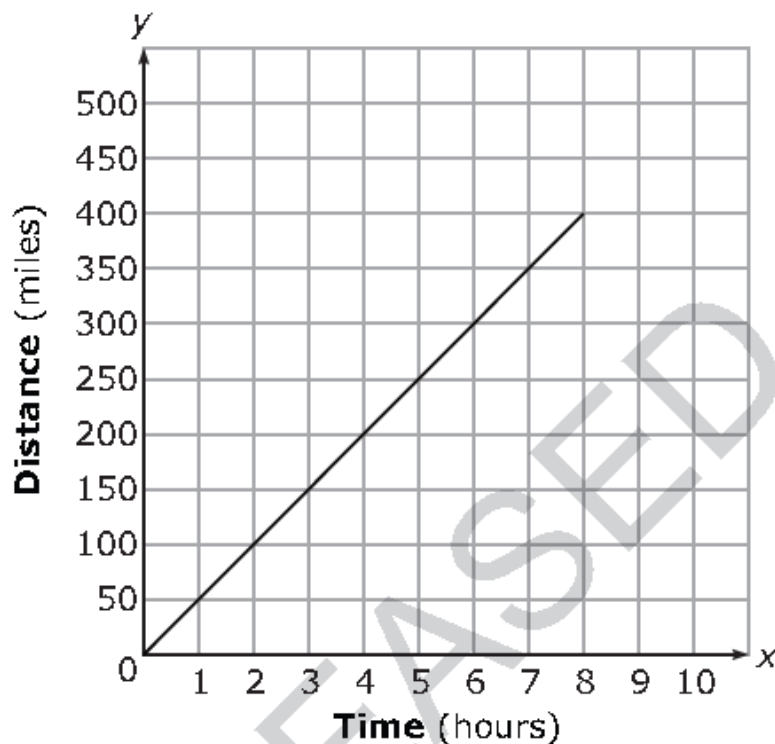


8<sup>th</sup> Grade Math Released Test: Calculator ACTIVE

- 16 Suppose that a scientist estimates that every square mile of the ocean contains an average of  $4.6 \times 10^4$  pieces of trash. The area of the Earth's surface that is covered by oceans is approximately  $1.2 \times 10^8$  square miles. Using the estimate, how many pieces of trash are in the Earth's oceans?

- A  $5.5 \times 10^{12}$
- B  $1.2 \times 10^8$
- C  $3.4 \times 10^4$
- D  $2.6 \times 10^3$

- 17 On Monday, Mr. James made an eight-hour trip to his mother's house in his car. The graph below shows the distance he had traveled at different times.



On Tuesday, he drove home. His speed on Tuesday was 5 miles per hour faster than for the trip on Monday. Which equation would model the distance,  $d$ , that Mr. James had traveled on his return trip after  $t$  hours?

- A  $d = 45t$
- B  $d = 50t$
- C  $d = 55t$
- D  $d = 60t$

18 What value of  $x$  satisfies the equation  $\frac{-4x - 2}{3} = -6$  ?

A -16

B -12

C 0

D 4

19 A company charges \$211.25 for 5 trees and 15 shrubs. The company charges \$15.25 more for a tree than a shrub. How much does each shrub cost?

A \$6.75

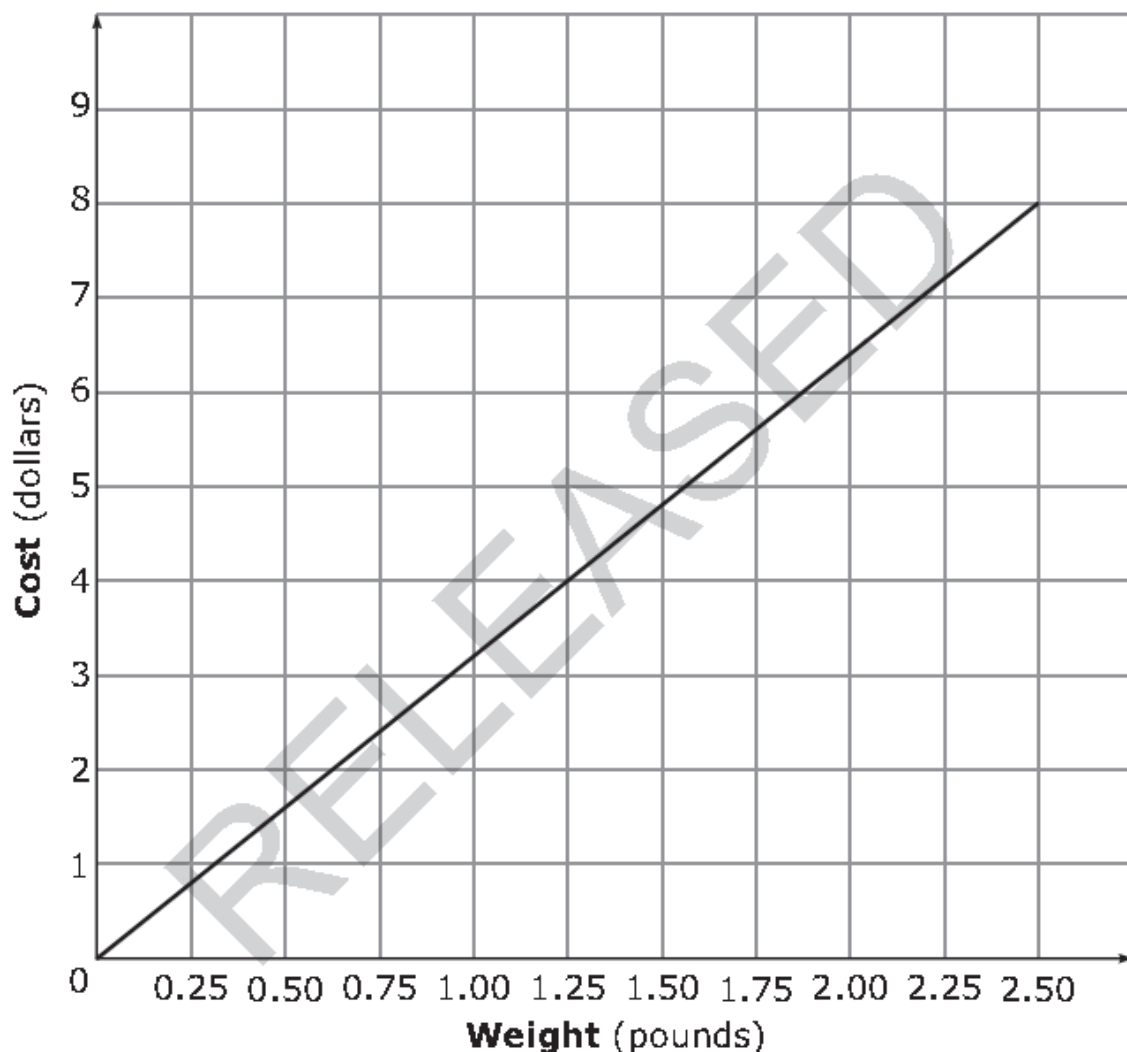
B \$7.75

C \$19.25

D \$22.00

20 Two stores sell cherries at different prices per pound.

- Store P sells 3.5 pounds of cherries for \$13.30.
- The graph below shows the cost to purchase different weights of cherries at Store Q.



Phillip needs to purchase 10 pounds of cherries. Which statement below is true?

- A Phillip will spend \$8.00 less on cherries at Store P than at Store Q.
- B Phillip will spend \$8.00 more on cherries at Store P than at Store Q.
- C Phillip will spend \$6.00 less on cherries at Store P than at Store Q.
- D Phillip will spend \$6.00 more on cherries at Store P than at Store Q.

- 21 Limousine Company P and Company R both charge a rental fee plus an additional charge per hour.
- The equation  $y = 50 + 30x$  models the total cost (in dollars),  $y$ , of renting a limousine from Company P for  $x$  hours.
  - The table below shows the cost to rent a limousine from Company R for different lengths of time.

**Company R**

| <b>Time (hours)</b> | 1     | 2     | 3     | 4     | 5     |
|---------------------|-------|-------|-------|-------|-------|
| <b>Total Cost</b>   | \$100 | \$125 | \$150 | \$175 | \$200 |

Which statement accurately compares the per hour charges of the two companies?

- A Company P charges \$5 less per hour than Company R.
- B Company P charges \$5 more per hour than Company R.
- C Company P charges \$25 less per hour than Company R.
- D Company P charges \$25 more per hour than Company R.

- 22 In which function table do all of the points  $(x, y)$  lie on the line that has a slope of 3 and a  $y$ -intercept of 2?

A

| $x$ | $y$ |
|-----|-----|
| -1  | -1  |
| 2   | 8   |
| 5   | 17  |
| 8   | 26  |

B

| $x$ | $y$ |
|-----|-----|
| -1  | -1  |
| 2   | 7   |
| 5   | 17  |
| 8   | 26  |

C

| $x$ | $y$ |
|-----|-----|
| -1  | -1  |
| 2   | 8   |
| 5   | 18  |
| 8   | 26  |

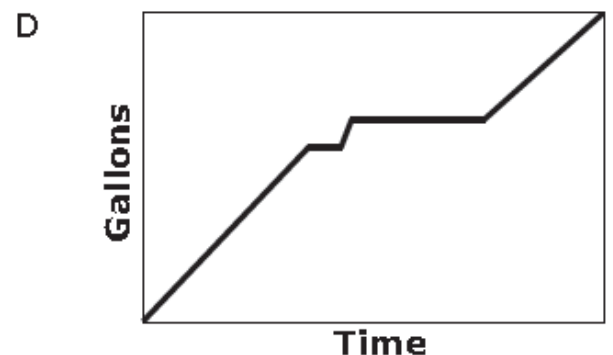
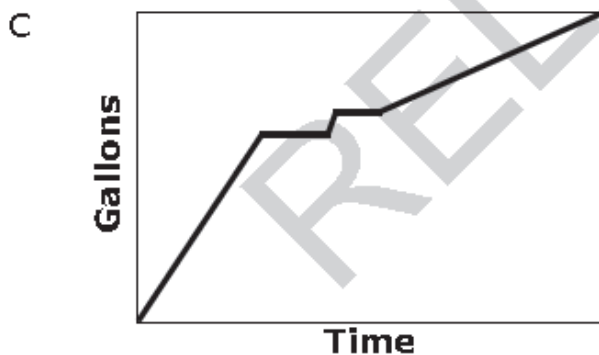
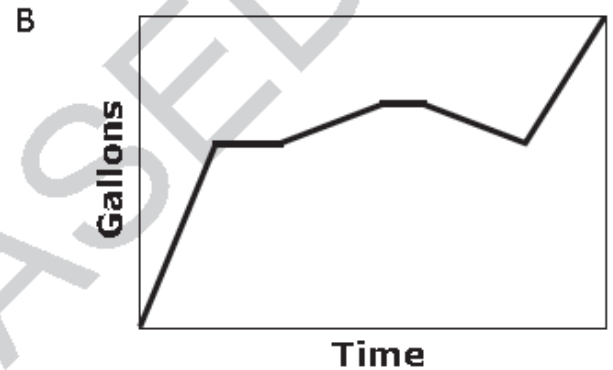
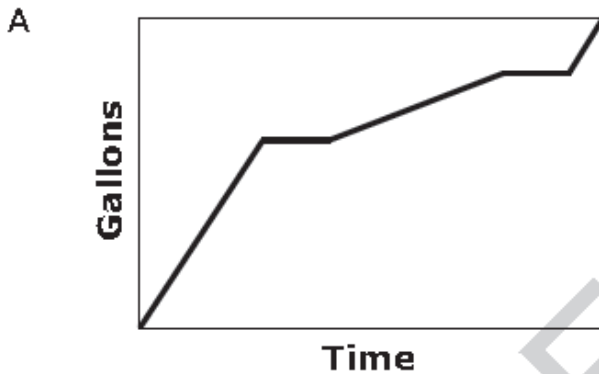
D

| $x$ | $y$ |
|-----|-----|
| -1  | -1  |
| 2   | 8   |
| 5   | 17  |
| 8   | 25  |

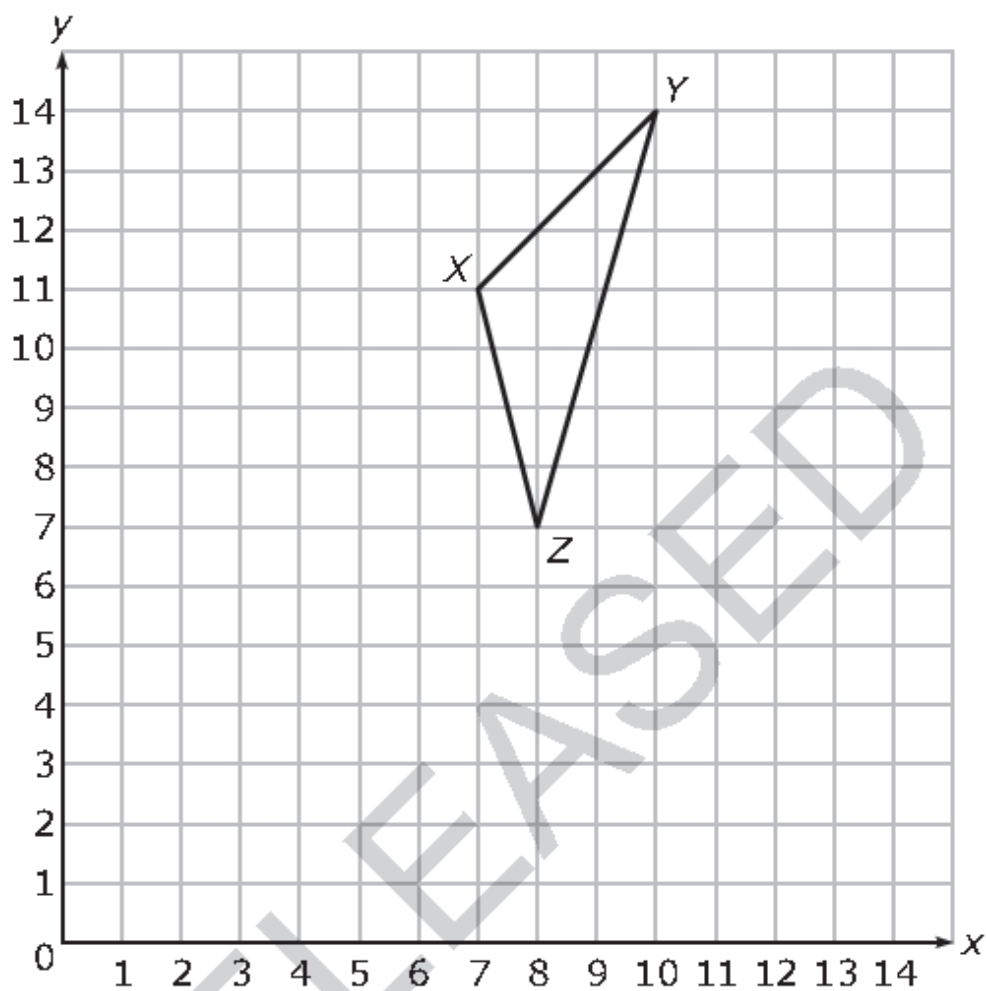
23 Mr. Jones filled his swimming pool with water.

- Mr. Jones began filling the pool at a constant rate.
- He turned off the water for a while.
- He then turned the water back on at a slower constant rate.
- Mr. Jones turned off the water again for a while.
- He then turned the water back on at the first rate.

Which graph *best* represents Mr. Jones filling the pool?



- 24  $\triangle XYZ$  will be translated so that the coordinates of  $X'$  are  $(5, 11)$



What will be the coordinates of  $Z'$ ?

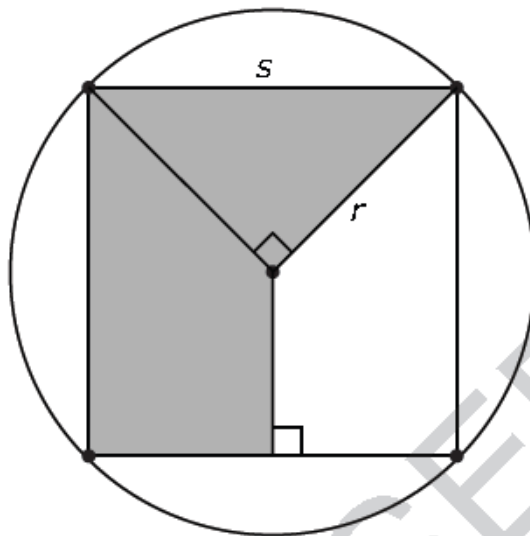
- A  $(5, 8)$
- B  $(6, 7)$
- C  $(7, 6)$
- D  $(8, 5)$

- 25 Kim made soup which contains 75 total ounces of beans.
- The soup has two kinds of beans, black and red.
  - There are 4 times as many ounces of black beans as red beans.

How many ounces of red beans are in the soup?

- A 5  
B 12  
C 15  
D 19

- 26 The figure below shows a square inscribed in a circle. The area of the shaded region is 2.5 square units.

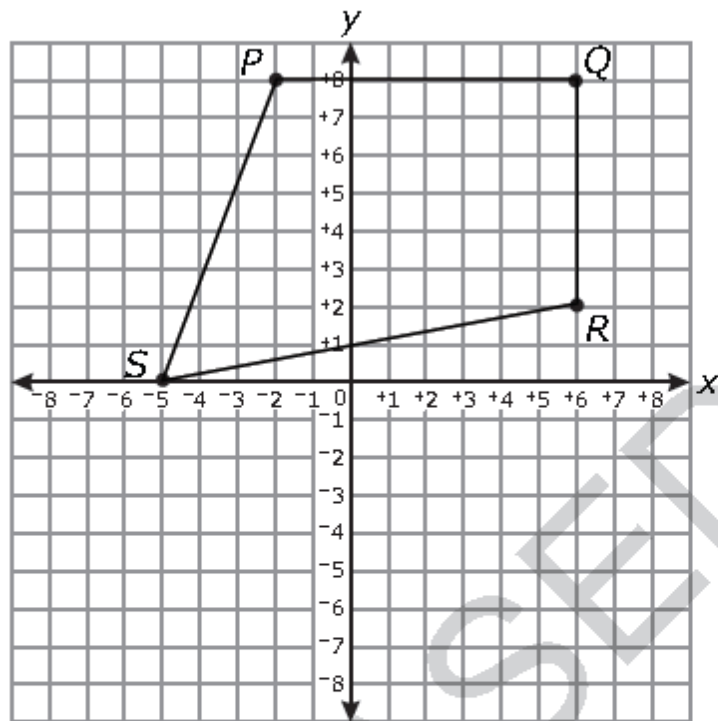


What is the *approximate* area of the circle?

- A 3.1 square units  
B 4.7 square units  
C 6.3 square units  
D 7.9 square units



- 27 Quadrilateral  $PQRS$  is graphed in the coordinate plane.



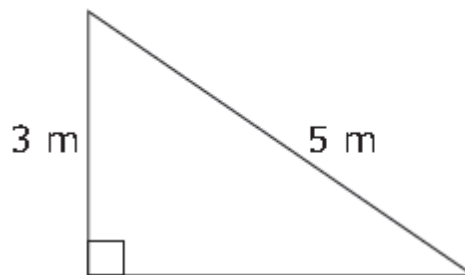
- To the nearest tenth, what is the perimeter of quadrilateral  $PQRS$ ?
- A 33.0 units
  - B 33.7 units
  - C 37.6 units
  - D 48.0 units
- 28 A cylinder is 20 inches long and has a diameter of 10 inches. What is the **approximate** volume of the cylinder?
- A 200 cubic inches
  - B 630 cubic inches
  - C 1,570 cubic inches
  - D 6,280 cubic inches

- 29 The table below displays the number of DVDs sold and rented at a store for 5 weeks.

| Week | DVDs Sold | DVDs Rented |
|------|-----------|-------------|
| 1    | 25        | 50          |
| 2    | 45        | 79          |
| 3    | 40        | 70          |
| 4    | 22        | 48          |
| 5    | 5         | 28          |

Which describes the association between the number of DVDs sold and the number of DVDs rented?

- A no association
  - B weak association
  - C negative association
  - D positive association
- 30 What is the area of the triangle shown below?



- A 4 square meters
- B 6 square meters
- C 12 square meters
- D 15 square meters

- 31 The table shows the air temperatures at different elevations.

| Elevation (feet) | Temperature (°F) |
|------------------|------------------|
| 0                | 75°              |
| 100              | 70°              |
| 200              | 67°              |
| 300              | 64°              |
| 400              | 59°              |
| 500              | 55°              |
| 600              | 50°              |

Which line *best* fits this set of data?

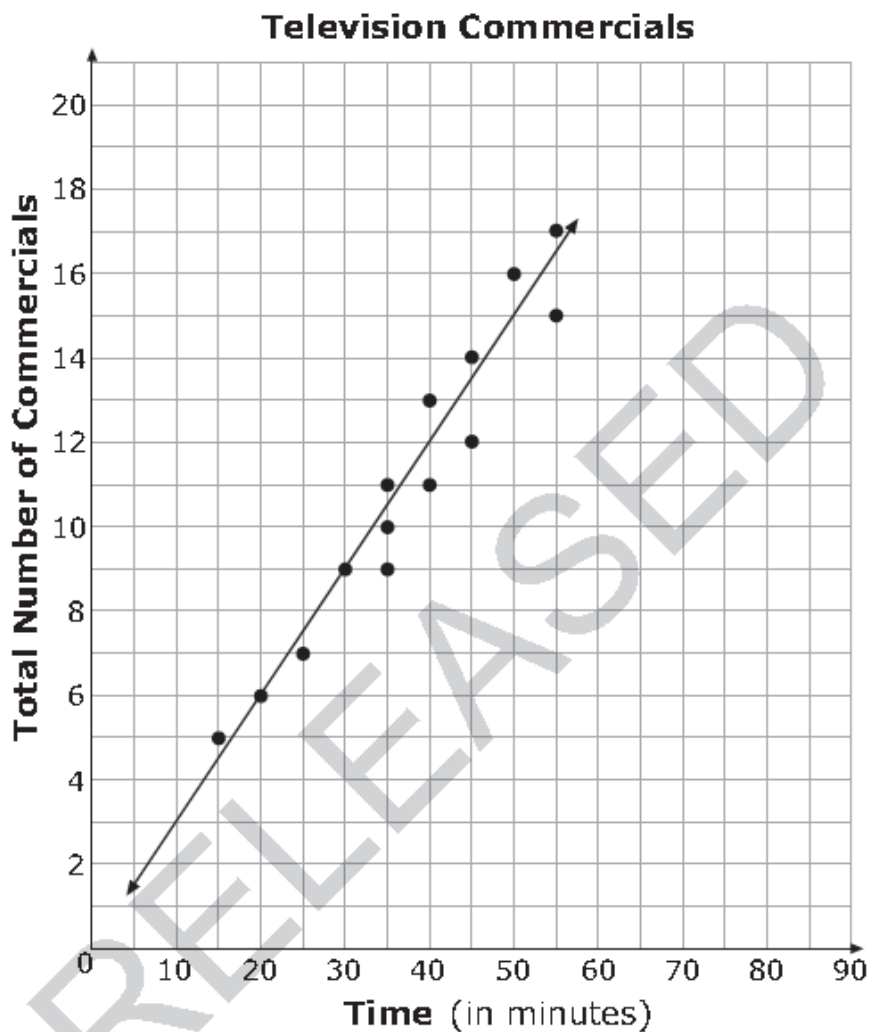
A  $y = -\frac{1}{25}x + 75$

B  $y = \frac{1}{25}x - 75$

C  $y = \frac{1}{25}x + 75$

D  $y = -\frac{1}{25}x - 75$

- 32 Mary collected data each day on how many commercials she saw and how long she watched TV. She displayed her data in a scatterplot.



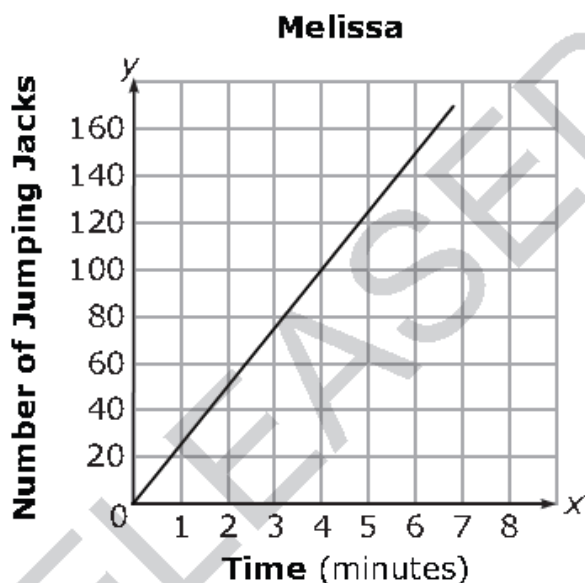
According to the trend line shown in the scatterplot, **about** how many commercials will Mary see if she watches TV for  $1\frac{1}{2}$  hours?

- A 19
- B 27
- C 39
- D 90

- 33 Alicia and Melissa did jumping jacks. The table below shows the number of jumping jacks that Alicia had done in different amounts of time.

| Alicia | Time (minutes) | 1  | 2  | 3  | 4   | 5   | 6   | 7   | 8   |
|--------|----------------|----|----|----|-----|-----|-----|-----|-----|
|        | Jumping Jacks  | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 |

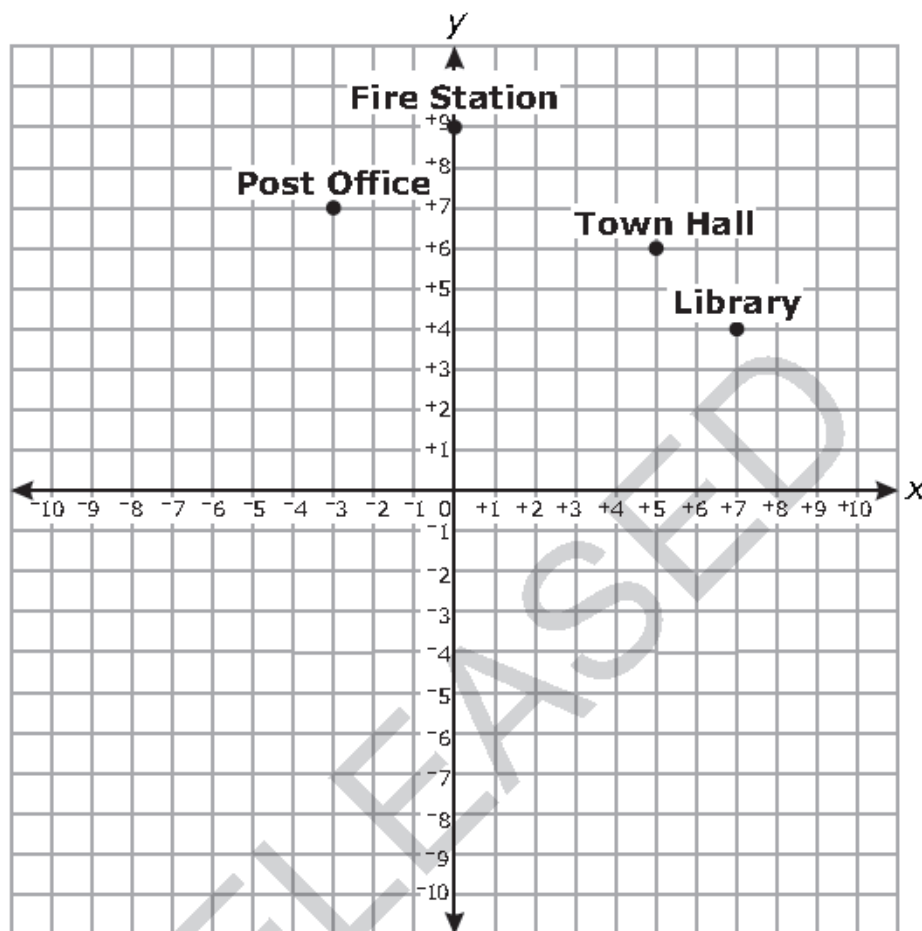
The graph below shows the number of jumping jacks Melissa had done in different amounts of time.



Which choice *best* describes the difference between the rates at which the girls did jumping jacks?

- A Melissa did 6 more jumping jacks per minute than Alicia.
- B Alicia did 6 more jumping jacks per minute than Melissa.
- C Melissa did 5 more jumping jacks per minute than Alicia.
- D Alicia did 5 more jumping jacks per minute than Melissa.

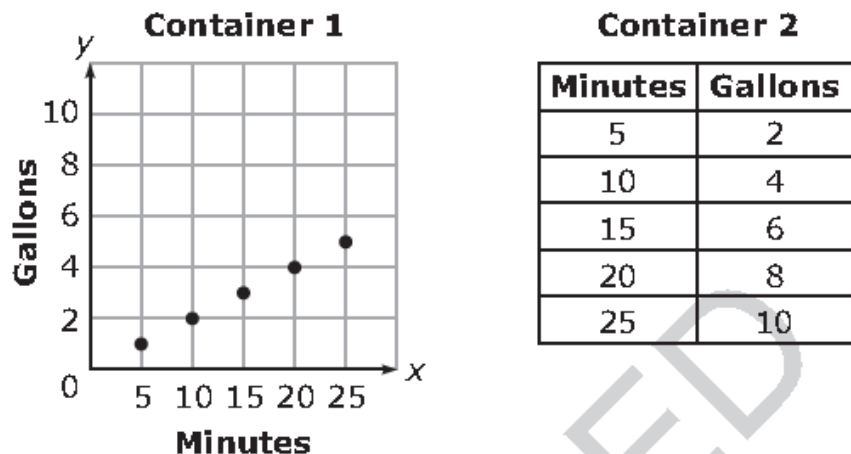
- 34 A town's buildings were graphed on a coordinate grid.



Which equation would represent a line drawn to connect the Town Hall and Post Office?

- A  $y = -\frac{2}{3}x + \frac{28}{3}$
- B  $y = -\frac{1}{8}x + \frac{53}{8}$
- C  $y = \frac{3}{5}x + 9$
- D  $y = \frac{1}{8}x + \frac{59}{3}$

- 35 Rain is flowing into two containers at different rates. The figure below shows the volume of water in each container at different times.



What is the difference in the rate of change between the two containers?

- A  $\frac{1}{5}$  gallon per minute
- B  $\frac{3}{5}$  gallon per minute
- C  $\frac{5}{2}$  gallons per minute
- D  $\frac{15}{2}$  gallons per minute

- 36 A system of equations is shown below.

$$2x + 4y = 0$$
$$y = \frac{1}{2}x - 3$$

What is the  $x$ -value in the solution to the system of equations?

- A  $-3$
- B  $-1.5$
- C  $1.5$
- D  $3$

37 In which table is  $y$  a function of  $x$ ?

A

| $x$ | $y$ |
|-----|-----|
| -3  | 6   |
| 2   | 5   |
| 3   | 2   |
| 2   | 3   |

B

| $x$ | $y$ |
|-----|-----|
| -1  | 0   |
| 5   | 2   |
| 7   | 3   |
| 5   | 4   |

C

| $x$ | $y$ |
|-----|-----|
| 2   | -1  |
| 3   | 0   |
| 4   | -5  |
| 5   | 7   |

D

| $x$ | $y$ |
|-----|-----|
| 0   | 6   |
| -1  | 3   |
| 2   | 4   |
| -1  | 5   |



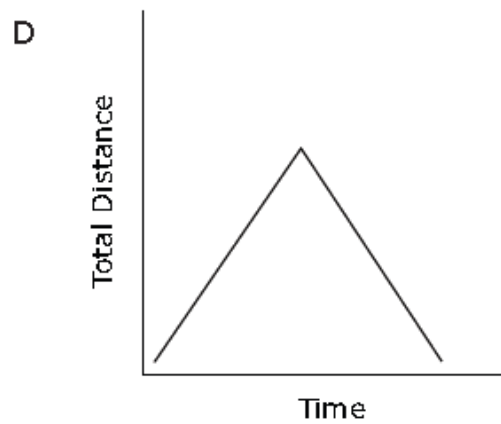
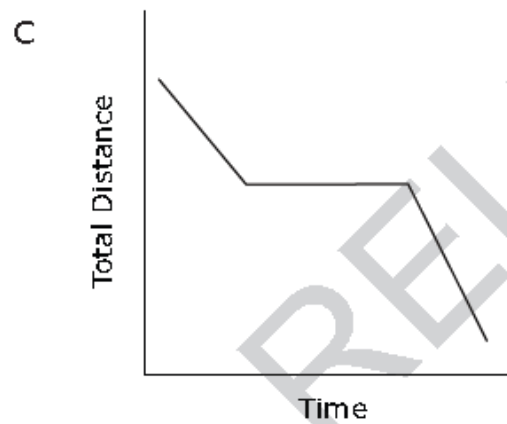
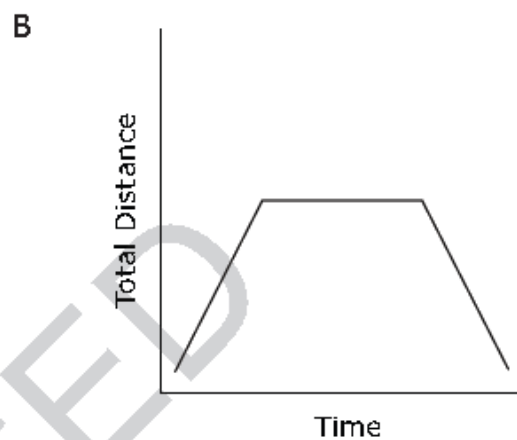
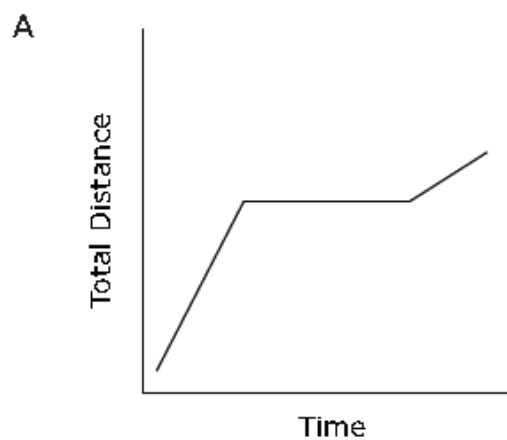
- 38 Which function has a greater rate of change than the function that passes through the points given in the table below?

| x  | y |
|----|---|
| 4  | 2 |
| 6  | 3 |
| 8  | 4 |
| 10 | 5 |
| 12 | 6 |

- A  $3x - 5y = 25$
- B  $7y - 3x = 14$
- C  $y = 1 + \frac{1}{2}x$
- D  $y = -1 + \frac{1}{4}x$

EASED

- 39 Larry started riding his bike at a rapid pace. He got tired and stopped to rest. When he started again, he was going at a slower rate. Which graph *best* shows Larry's trip?



40 Alice compared the graphs of two functions.

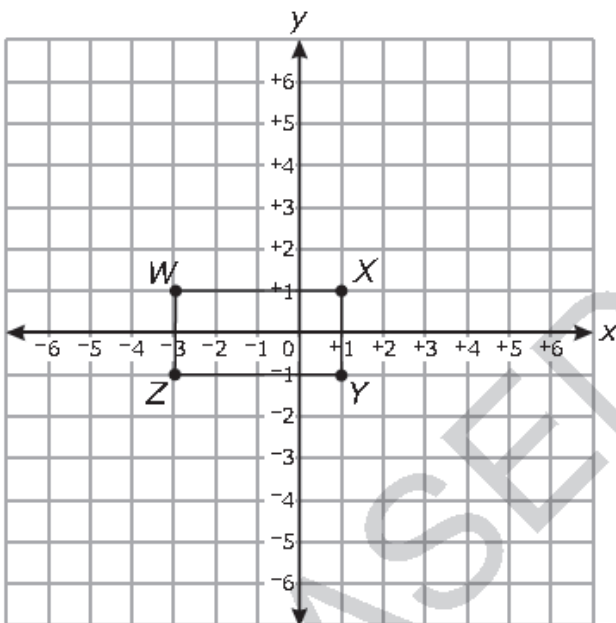
- The first function was  $y = 3x + 4$ .
- The second function fits the values in the table below.

| $x$ | $y$ |
|-----|-----|
| 2   | 17  |
| 5   | 32  |
| 8   | 47  |
| 11  | 62  |

What is the distance between the  $y$ -intercepts of the two functions?

- A 1
- B 2
- C 3
- D 4

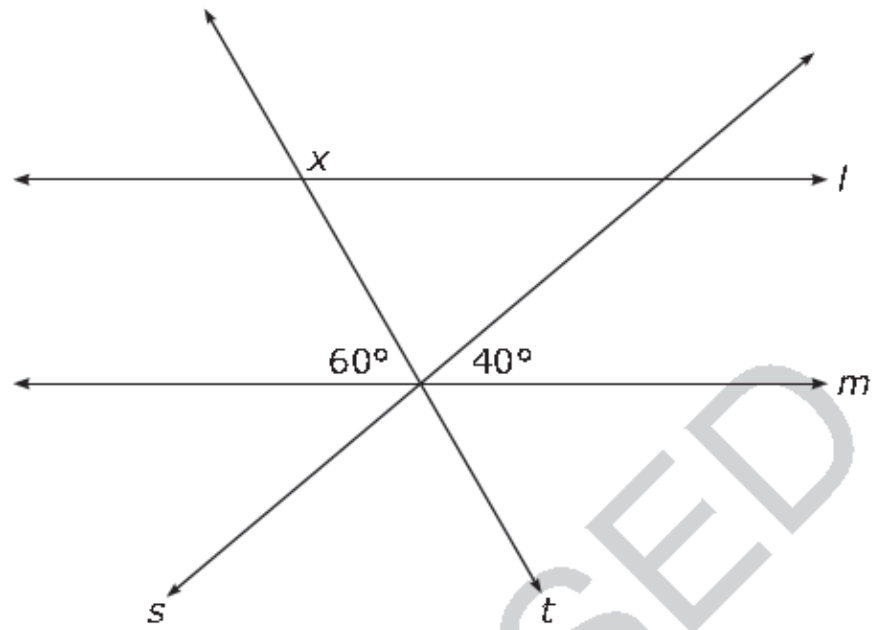
- 41 Rectangle  $WXYZ$  will be dilated by a scale factor of  $\frac{1}{2}$ , creating rectangle  $W'X'Y'Z'$ .



What will be the perimeter of rectangle  $W'X'Y'Z'$ ?

- A 4 units
- B 6 units
- C 12 units
- D 24 units

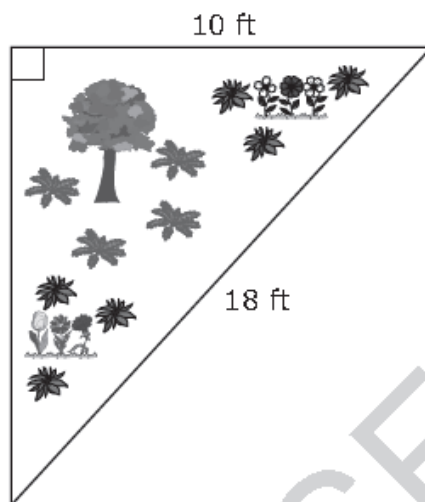
- 42 Lines  $l$  and  $m$  are parallel to one another and cut by transversals  $s$  and  $t$ .



What is the value of  $x$ ?

- A  $40^\circ$
- B  $80^\circ$
- C  $120^\circ$
- D  $140^\circ$

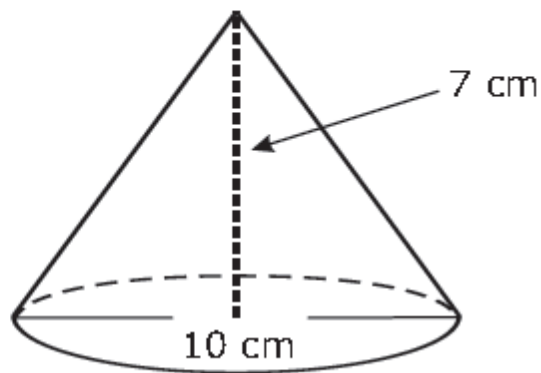
- 43 Molly wants to put a fence around an area. The fence will follow the diagram of the triangle shown below.



**About** how much fencing does Molly need?

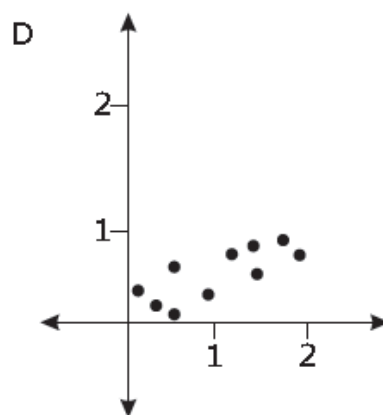
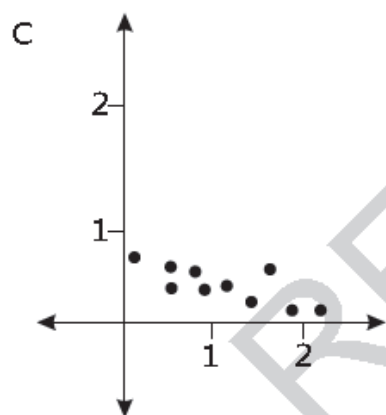
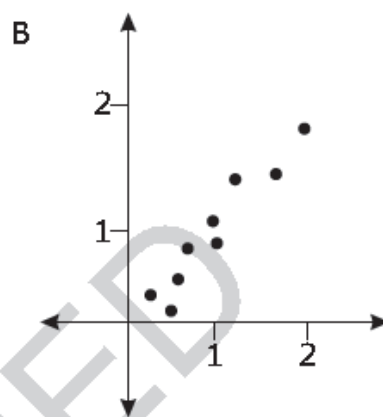
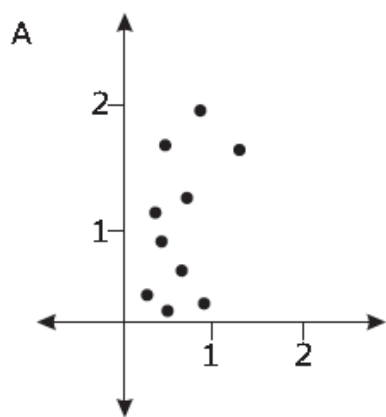
- A 28 ft
- B 38 ft
- C 43 ft
- D 49 ft
- 44 The points  $(-3, -1)$  and  $(-3, 5)$  are adjacent vertices of a rectangle. Two of the sides of the rectangle have a length of 8 units. What is the length of a diagonal of the rectangle?
- A 9 units
- B 10 units
- C 12 units
- D 14 units

- 45 What is the *approximate* volume of the cone below?



- A  $70 \text{ cm}^3$
- B  $183 \text{ cm}^3$
- C  $549 \text{ cm}^3$
- D  $733 \text{ cm}^3$
- 46 The measures of the angles of a triangle are  $50^\circ$ ,  $35^\circ$ , and  $95^\circ$ . What is the measure of the largest exterior angle of the triangle?
- A  $85^\circ$
- B  $130^\circ$
- C  $145^\circ$
- D  $150^\circ$
- 47 Which scenario would *most likely* show a negative association between the variables?
- A the height of a tree,  $x$ , and the amount of time it takes to climb to the top of the tree,  $y$
- B the number of people in the mall,  $x$ , and the number of cars in the parking lot,  $y$
- C miles traveled in a car,  $x$ , and the amount of gasoline used,  $y$
- D time spent reading a book,  $x$ , and the number of pages left to read,  $y$

- 48 James is fitting the linear equation  $y = \frac{1}{2}x$  to a data set. Which scatterplot shows the data set that the linear equation would fit *best*?



- 49 Students were surveyed about book bags. The results are shown below.

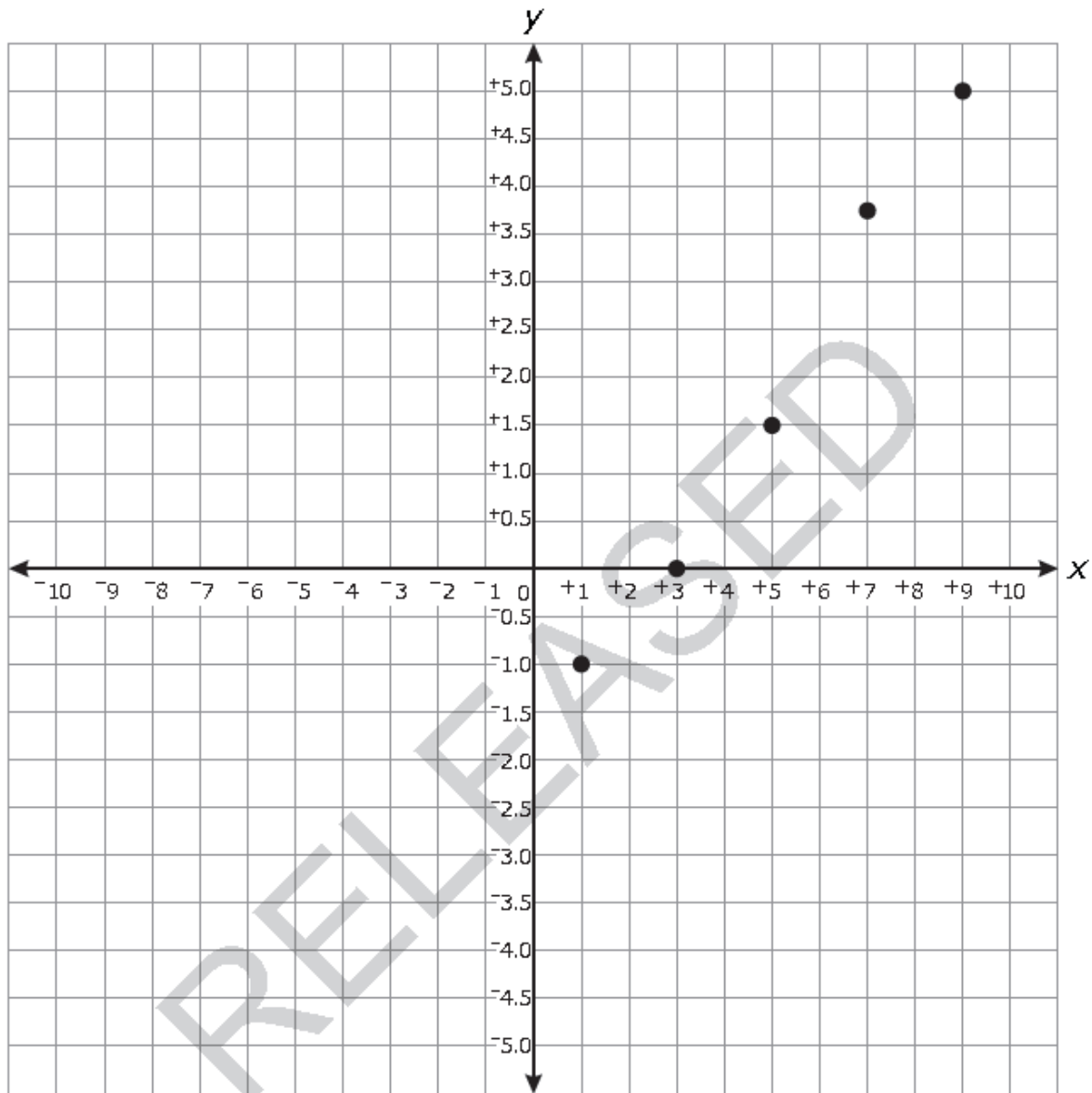
|                         | Male | Female |
|-------------------------|------|--------|
| Carry a Book Bag        | 47   | 57     |
| Do Not Carry a Book Bag | 63   | 48     |

A student concluded that, for those in the survey, females are more likely to carry a book bag than males. Which explanation *best* supports the student's conclusion?

- A For females, 54% carry a book bag, while for males, 43% carry a book bag.
- B For females, 27% carry a book bag, while for males, 22% carry a book bag.
- C For females, 57 carry a book bag, while for males, 47 carry a book bag.
- D For females, 48 do not carry a book bag, while for males, 63 do not.



50 Which equation *best* fits the data shown in the scatterplot below?



- A  $y = \frac{1}{4}x - 1$
- B  $y = \frac{1}{2}x - \frac{1}{2}$
- C  $y = \frac{3}{4}x - 2$
- D  $y = x - 3$