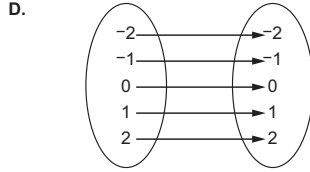
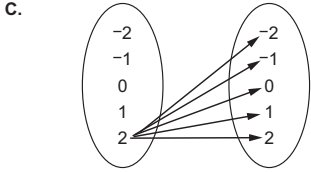
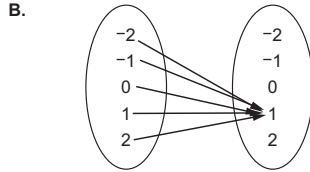
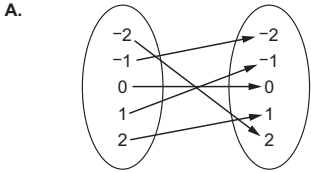
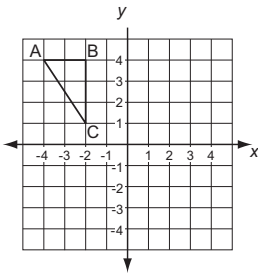




1. Which model is **not** a function?



2. Janet graphed a triangle on the coordinate grid shown.



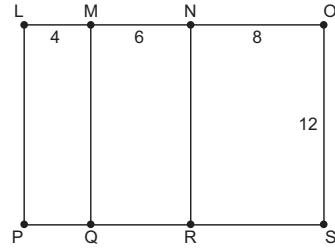
Janet rotated the triangle 90° clockwise about the origin to create figure $A'B'C'$. What are the coordinates of the vertices of the figure $A'B'C'$ after the rotation?

- A. $A'(-4, -4)$
 $B'(-4, -2)$
 $C'(-1, -2)$
- B. $A'(4, 4)$
 $B'(2, 4)$
 $C'(2, 1)$
- C. $A'(-4, -4)$
 $B'(-2, -4)$
 $C'(-2, -1)$
- D. $A'(4, 4)$
 $B'(4, 2)$
 $C'(1, 2)$

3. The choir director set up chairs for the concert with an equal number of rows and columns. The number of chairs in each row and column is represented by the algebraic expression \sqrt{y} , where y is the total number of chairs. What is the number of chairs in each row and column if $y = 81$ chairs?

- A. 3 chairs
- B. 9 chairs
- C. 40.5 chairs
- D. 162 chairs

4. Rectangle LOSP is shown below. The lengths, in units, of some of the line segments are also shown. Line segments MQ and NR are perpendicular to line segment LO.



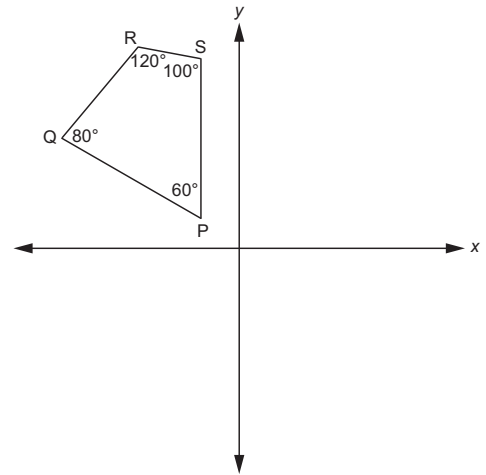
Which shape is similar to rectangle LOSP?

- A. LMQP
- B. LNRP
- C. MNRQ
- D. OSRN

5. Paul creates a scatter plot with a negative association. The x-axis of the scatter plot is titled, "Minutes Spent at Mall". Which label is **most likely** the title of the y-axis of Paul's scatter plot?

- A. Distance Walked
- B. Money Available to Spend
- C. Number of Movies Seen
- D. Number of Stores Visited

6. Use the graph below to answer the question.

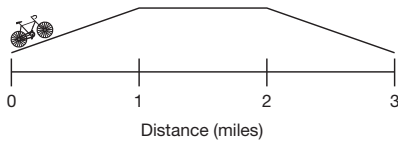


Quadrilateral PQRS will be rotated 90° clockwise about the origin resulting in quadrilateral $P'Q'R'S'$. Which statement is true?

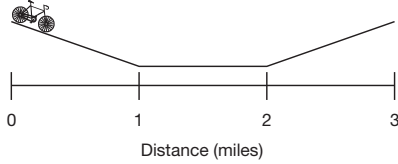
- A. \overline{RS} will be parallel to $\overline{R'S'}$.
- B. \overline{SP} will be parallel to $\overline{R'S'}$.
- C. The measure of $\angle P'$ will be 80° .
- D. The measure of $\angle Q'$ will be 80° .

7. Donna rode her bike for three miles. She traveled 18 miles per hour the first mile, 15 miles per hour the second mile, and 21 miles per hour the third mile. Which diagram shows the most likely landscape of Donna's bike ride?

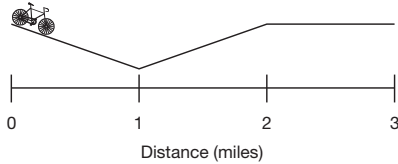
A. Landscape of Donna's Bike Ride



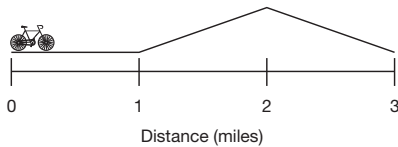
B. Landscape of Donna's Bike Ride



C. Landscape of Donna's Bike Ride



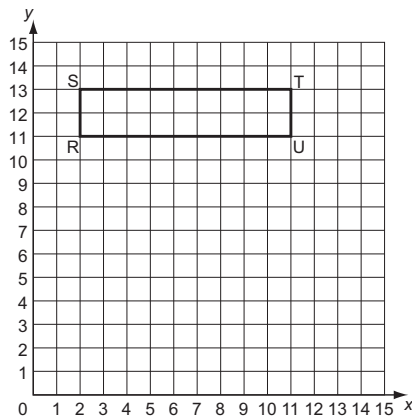
D. Landscape of Donna's Bike Ride



8. Camille placed blocks on a table in rows and columns. All the rows and columns had the same number of blocks in them and formed a square. Which could be the total number of blocks Camille placed on the table?

- A. 111 blocks
- B. 121 blocks
- C. 181 blocks
- D. 222 blocks

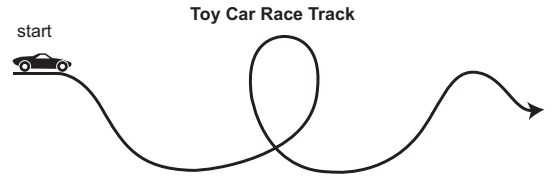
9. Use the grid below to answer the question.



Rectangle RSTU is rotated around point T to create rectangle R'S'T'U'. The x-coordinate of point T' is less than the x-coordinate of point U', and their y-coordinates are equal. What are the coordinates of point R'?

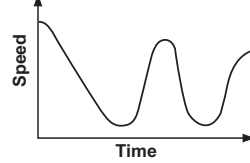
- A. (9, 22)
- B. (11, 4)
- C. (13, 4)
- D. (20, 15)

10. Use the picture to answer the question below.

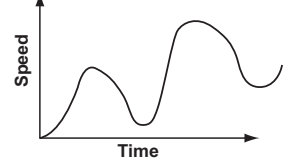


The picture shows the beginning of a racetrack for a toy car. Which graph models the estimated speed of the toy car as it moves through the racetrack?

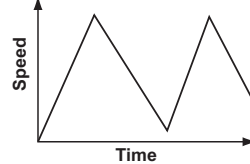
A. Toy Car Speed



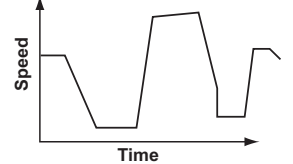
B. Toy Car Speed



C. Toy Car Speed



D. Toy Car Speed



11. The United States exported approximately 30,000,000 metric tons of wheat over an entire year. What is the number of metric tons of wheat written in scientific notation?

- A. 3×10^4
- B. 3×10^5
- C. 3×10^6
- D. 3×10^7

12. Which expression is equivalent to $(9^{-2})^8$?

- A. -81^{32}
- B. $\frac{1}{9^{16}}$
- C. $\frac{1}{9^{10}}$
- D. 81^8

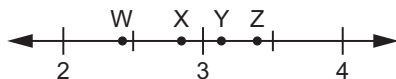
13. What is 5×10^{-4} written in standard notation?

- A. 0.00005
- B. 0.0005
- C. 5,000
- D. 50,000

14. Which statement about $\sqrt{2}$ and $\frac{2}{2}$ is true?

- A. Since half of 2 is 1 and half of 3 is 1.5, then $\sqrt{2} < \frac{2}{2}$.
- B. Since half of 2 is greater than $\frac{1}{2}$ of 3.14, then $\sqrt{2} > \frac{2}{2}$.
- C. Since $\sqrt{2}$ is slightly less than 1.5 and half of 3 is slightly more than 1.5, then $\sqrt{2} < \frac{2}{2}$.
- D. Since $\sqrt{2}$ is slightly greater than 1 and half of 3 is slightly less than 2, then $\sqrt{2} > \frac{2}{2}$.

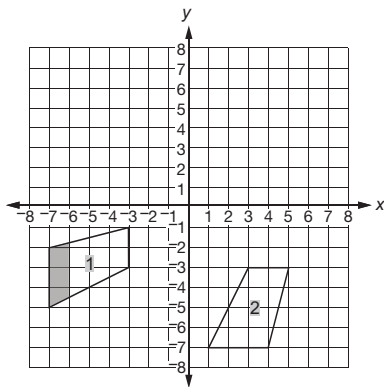
15. Use the number line below to answer the question.



Which point on the number line is the **best** approximation for $\sqrt{6}$?

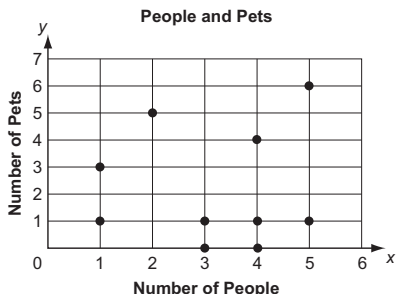
- A. point W
- B. point X
- C. point Y
- D. point Z

16. Use the graph to answer the question.



Which pair of transformations moves quadrilateral 1 to quadrilateral 2?

- A. reflect it over the line $y = -3$, then rotate it 90° counterclockwise about the origin
 - B. reflect it over the x -axis, then rotate it 180° about the origin
 - C. rotate it 90° counterclockwise about point $(-3, -3)$, then translate it 8 units to the right
 - D. translate it 8 units to the right, then reflect it over the line $y = -3$
17. Misha asked ten different coworkers how many people and pets are living in their homes. She used the responses to create the scatter plot shown.



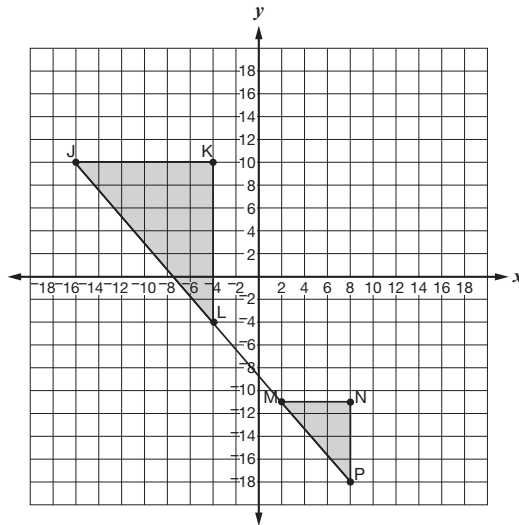
Which statement about the numbers of people and pets living in the homes of Misha's ten coworkers is true?

- A. As the number of people living in the home increases, the number of pets increases.
- B. As the number of people living in the home increases, the number of pets decreases.
- C. As the number of people living in the home decreases, the number of pets decreases.
- D. There is no relationship between the numbers of people and pets living in the home.

18. What is the value of $5^4 \times 5^{-6}$?

- A. -25
- B. $\frac{1}{25}$
- C. $\frac{1}{25}$
- D. 25

19. The diagram below shows $\triangle JKL$ and $\triangle MNP$.



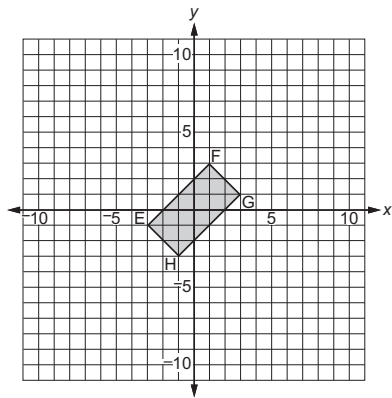
Which statement about the slopes of \overline{JL} and \overline{MP} is true?

- A. The slope of \overline{JL} is the same as the slope of \overline{MP} because $\triangle JKL$ is similar to $\triangle MNP$.
- B. The slope of \overline{JL} is twice the slope of \overline{MP} because the length of \overline{JL} is twice the length of \overline{MP} .
- C. The slope of \overline{JL} is 4 times the slope of \overline{MP} because the area of $\triangle JKL$ is 4 times the area of $\triangle MNP$.
- D. The slope of \overline{JL} is 8 more than the slope of \overline{MP} because the difference between the short legs of the triangles is 6 and the difference between the long legs of the triangles is 7.

20. Which comparison is true?

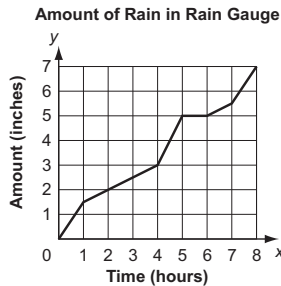
- A. $4 < \sqrt{18} < 4.5$
- B. $4.5 < \sqrt{18} < 5$
- C. $8.5 < \sqrt{18} < 9.5$
- D. $17 < \sqrt{18} < 19$

21. Use the coordinate grid below to answer the question.



Rectangle EFGH is dilated with its center at the origin and a scale factor of 3. The dilation is then rotated 90° clockwise about the origin to create rectangle E'F'G'H'. What are the coordinates of the vertices of rectangle E'F'G'H'?

- A. E' (-4, 6)
F' (6, -4)
G' (4, -6)
H' (-6, 4)
- B. E' (4, -6)
F' (-6, 4)
G' (-4, 6)
H' (6, -4)
- C. E' (-3, 9)
F' (9, -3)
G' (3, -9)
H' (-9, 3)
- D. E' (3, -9)
F' (-9, 3)
G' (-3, 9)
H' (9, -3)
22. A weather station recorded the amount of rain that fell during an 8-hour time frame using a rain gauge. The findings are recorded in the graph below.



Between which hours was the rate at which the rain fell **greater** than the rate at which the rain fell between hours 0 and 1?

- A. between hours 1 and 4
B. between hours 4 and 5
C. between hours 5 and 6
D. between hours 7 and 8
23. Each day of the month, Carl earns an allowance, in cents, equal to the square of that date of the month. Which is a number of cents Carl could earn in a single day?
- A. 21
B. 31
C. 64
D. 111

24. Which set of ordered pairs models a function?

- A. $\{(2, 9), (7, 5), (3, 14), (2, 6)\}$
- B. $\{(5, 10), (5, 15), (5, 20), (5, 25)\}$
- C. $\{(-\frac{1}{2}, -\frac{1}{3}), (\frac{1}{2}, -\frac{1}{4}), (-\frac{1}{2}, -\frac{1}{5}), (\frac{1}{2}, -\frac{1}{6})\}$
- D. $\{(-10, 20), (-20, 30), (-30, 40), (-40, 10)\}$

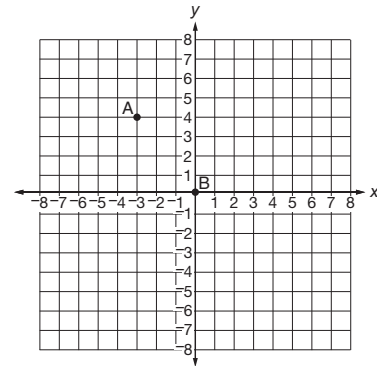
25. A company used about 7.4×10^5 sheets of paper in a month. Of the paper used during the month, the accounting department used about 8.9×10^3 of the sheets. About how many sheets of paper were used by other departments during the month?

- A. 1.5×10^2
B. 1.5×10^3
C. 7.3×10^4
D. 7.3×10^5

26. Which number is irrational?

- A. $\frac{4}{3}$
- B. $\sqrt{121}$
- C. 16.121314...
- D. $0.00\overline{71}$

27. Use the graph below to answer the question.



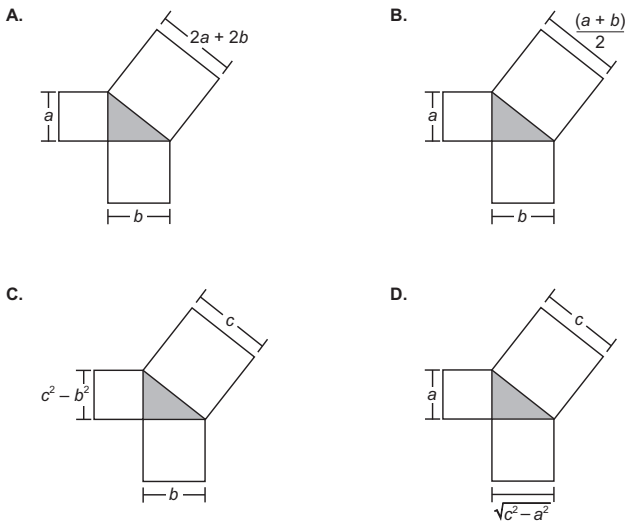
Which equation represents a line that passes through points A and B plotted on the graph?

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

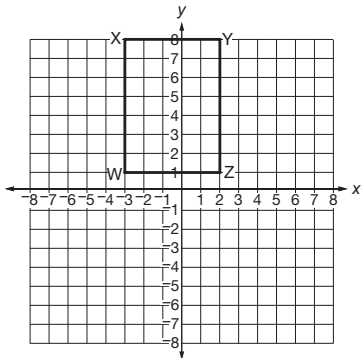
28. For which equation is $\sqrt[3]{36}$ the solution?

- A. $x^3 = 36$
- B. $x^2 = 36$
- C. $\sqrt[3]{x} = 36$
- D. $\sqrt{x} = 36$

29. Ranees is creating a diagram to prove that a certain triangle is a right triangle. In her diagram she uses three white quadrilaterals that are squares. Which diagram could be the one that Ranees is creating?

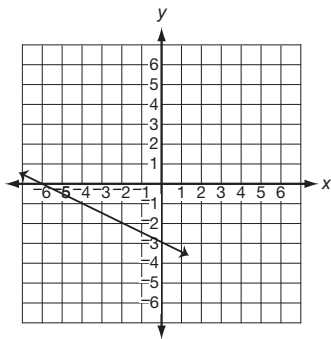


30. Use the graphic below to answer the question.



Rectangle WXYZ will be transformed so that W' is located at $(-3, -1)$ and Z' is located at $(2, -1)$. Which could be the coordinates of X' and Y' so that W'X'Y'Z' is congruent to WXYZ?

- A. X' is located at $(-3, -6)$ and Y' is located at $(2, -6)$
 X' is located at $(3, 8)$ and Y' is located at $(-2, 8)$
 C. X' is located at $(-3, 6)$ and Y' is located at $(2, 6)$
 D. X' is located at $(2, -8)$ and Y' is located at $(-3, -8)$
31. Use the graph below to answer the question.

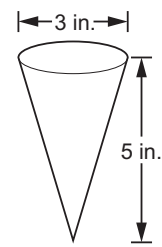


Which equation has the same y-intercept as the line in the graph, and a slope that is the opposite of the slope in the graph?

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

32. Cecil has a paper cup in the shape of a cone, as shown below.

Cecil's Paper Cup



What is the volume of Cecil's paper cup?

- A. $2\frac{1}{2}\pi$ cubic in.
 B. $3\frac{3}{4}\pi$ cubic in.
 C. 15π cubic in.
 D. 60π cubic in.
33. For a few months, Dexter recorded the amounts, in fluid ounces, of laundry detergent remaining, y , after he and his family washed x loads of laundry. The equation of the line of best fit for his data is shown below.

$$y = -1.6x + 50$$

Which statement correctly describes the slope of Dexter's equation of the line of best fit in the context of the situation?

- A. The bottle Dexter's family buys holds about 50 fluid ounces of detergent.
 B. For each load of laundry, Dexter's family uses about 1.6 fluid ounces of detergent.
 C. With 50 fluid ounces of detergent, Dexter's family can wash about 1.6 loads of laundry.
 D. With 1.6 bottles of laundry detergent, Dexter's family can wash about 50 loads of laundry.
34. Use the two functions below to answer the question.

Function A
 $y = \frac{1}{4}x - \frac{2}{3}$

Function B

x	y
2	-8
4	-9
6	-10
8	-11

Which statement about the slopes of the functions is true?

- A. The slopes of both functions are negative.
 B. The slopes of both functions are positive.
 C. The slope of function A is negative and the slope of function B is positive.
 D. The slope of function A is positive and the slope of function B is negative.
35. Eastview Junior High students order sweatshirts and T-shirts in either purple or gold. Of the students who ordered a sweatshirt, the relative frequency of ordering a gold one is half of the relative frequency of ordering a purple one. Which two-way table could show the data from the orders?

A. Sweatshirt and T-Shirt Orders

	Sweatshirt	T-Shirt
Purple	12	18
Gold	24	15

B. Sweatshirt and T-Shirt Orders

	Sweatshirt	T-Shirt
Purple	28	26
Gold	22	44

C. Sweatshirt and T-Shirt Orders

	Sweatshirt	T-Shirt
Purple	70	17
Gold	35	93

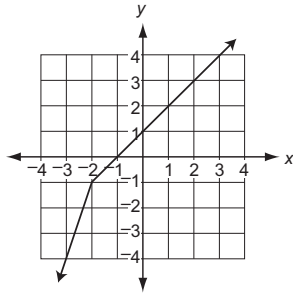
D. Sweatshirt and T-Shirt Orders

	Sweatshirt	T-Shirt
Purple	45	50
Gold	25	25

36. Caleb has a piece of rectangular paper that is 12 inches wide by 16 inches long. He drew a straight line along the diagonal of the paper. What is the length of the line Caleb drew?

- A. $\sqrt{28}$ inches
- B. $\sqrt{112}$ inches
- C. 20 inches
- D. 28 inches

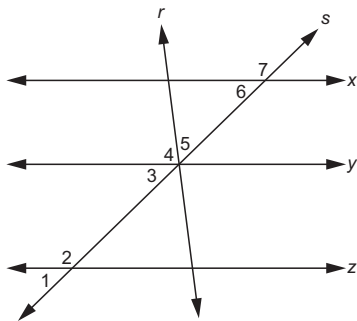
37. Use the graph of the function below to answer the question.



Which description of the function is true?

- A. The function is linear and always increasing.
- B. The function is nonlinear and always increasing.
- C. The function is decreasing from negative infinity to -1 and increasing from -1 to infinity.
- D. The function is decreasing from negative infinity to -2 and increasing from -2 to infinity.

38. In the diagram below, lines x , y , and z are all parallel, and lines r and s intersect at line y .



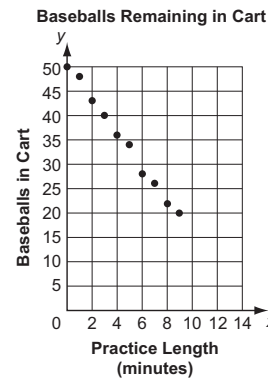
Which equation must be true?

- A. $m\angle 1 = 180^\circ - m\angle 7$
- B. $m\angle 2 = 90^\circ + m\angle 5$
- C. $m\angle 3 + m\angle 4 = m\angle 7$
- D. $m\angle 5 + m\angle 6 = m\angle 7$

39. Which equation is **not** a linear function?

- A. $y = xy + 2$
- B. $y = x + 2y$
- C. $y = -x - \frac{y}{2}$
- D. $y = x - y + 2$

40. A baseball coach places baseballs in a cart. He uses the baseballs to pitch to the players during practice. The number of baseballs remaining in the cart after different practice lengths, in minutes, are displayed in the scatter plot below.



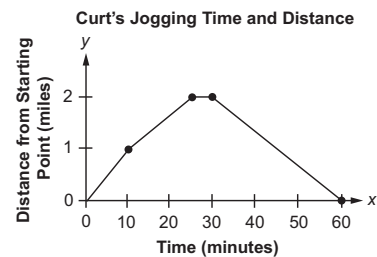
Which statement about the scatter plot is true?

- A. The scatter plot shows a positive association because all of the points have positive coordinates.
- B. The scatter plot shows a positive association because the points on the graph go towards 50 baseballs.
- C. The scatter plot shows a negative association because the practice length is always less than the number of baseballs in the cart.
- D. The scatter plot shows a negative association because as the practice length increases, the number of baseballs in the cart decreases.

41. Which equation has infinitely many solutions?

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

42. Curt jogged on a path that was 2 miles long, took a break, and then jogged back along the same path to where he started. He jogged at different speeds for different distances along the path as shown in the graph.



Between which times did Curt jog the fastest?

- A. 0 minutes and 10 minutes
- B. 10 minutes and 25 minutes
- C. 25 minutes and 30 minutes
- D. 30 minutes and 60 minutes

43. Karen and Henry each sold food at the fair. The table below shows the total number of corn dogs Karen sold at different times of the day.

Karen's Corn Dog Sales	
Time	Total Corn Dogs Sold
12:00 P.M.	42
2:00 P.M.	56
4:00 P.M.	70
6:00 P.M.	84

Henry uses the equation below to show the number of hot dogs, h , he has sold after t hours.

$$h = 14t$$

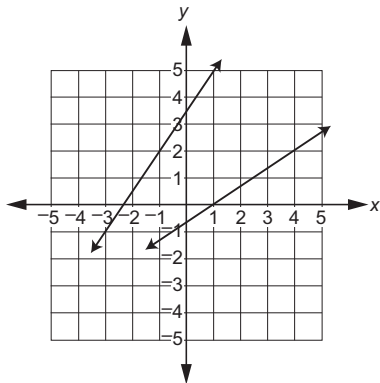
Which statement about Karen and Henry is true?

- A. The rate that Henry sells hot dogs is half the rate that Karen sells corn dogs.
 B. The rate that Henry sells hot dogs is double the rate that Karen sells corn dogs.
 C. The rate that Karen sells corn dogs is 7 times the rate that Henry sells hot dogs.
 D. The rate that Karen sells corn dogs is the same as the rate that Henry sells hot dogs.
44. A group of four friends each mowed lawns after school and on the weekends for a month. The total number of lawns mowed can be represented by the equation below.

$$x + \frac{1}{3}x + \frac{1}{2}x + 16 = 49$$

Each friend is represented by a term in the equation. How many lawns, x , did the first friend mow?

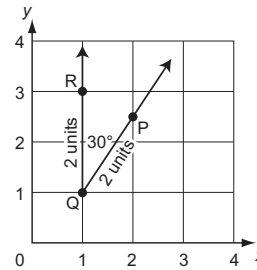
- A. 11
 B. 18
 C. 27
 D. $31\frac{1}{6}$
45. Use the system of two linear equations graphed below to answer the question.



What is the solution to the system of linear equations?

- A. $(-5, -4)$
 B. $(1, 3.5)$
 C. $y = -x + 1$
 D. $y = 3.5x + 1$
46. There were approximately 1.6×10^{11} pieces of mail processed by the United States Postal Service in 2012. This is about 75% of the number of pieces of mail processed in 2006. Approximately how many pieces of mail were processed by the United States Postal Service in 2006?
- A. 1.2×10^{10}
 B. 1.2×10^{11}
 C. 2.13×10^{10}
 D. 2.13×10^{11}

47. Use the figure below to answer the question.

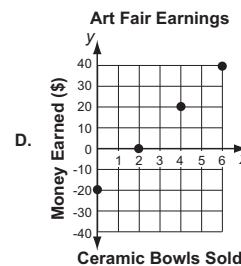
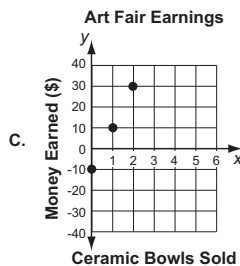
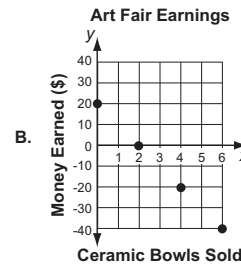
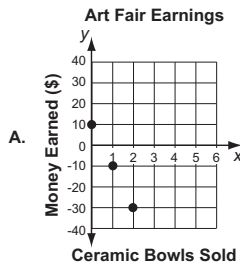


A dilation of angle PQR will make the length of line segment Q'R' equal to 6 units. What is the measure of angle P'Q'R' after the dilation?

- A. 10°
 B. 30°
 C. 60°
 D. 90°
48. Parker states that any function written **without** exponents must be linear. Which function proves Parker's statement is incorrect?

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

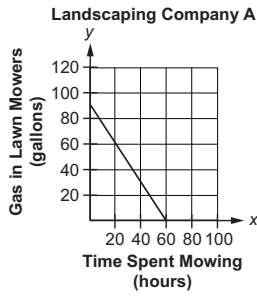
49. Ayan paid a \$20 fee for a booth at an art fair so she could sell her ceramic bowls. She will earn \$10 for every ceramic bowl she sells. The equation $y = 10x - 20$ represents the amount of money, y , that Ayan will earn selling x ceramic bowls at the art fair. Which graph represents the amount of money Ayan could earn at the art fair?



50. What is the solution to the equation $\frac{1}{3}(x + 2) = \frac{2}{3}x + 4$?

- A. $x = -10$
 B. $x = -3$
 C. $x = 6$
 D. $x = 12$

51. The graph and table below show information about two landscaping companies.

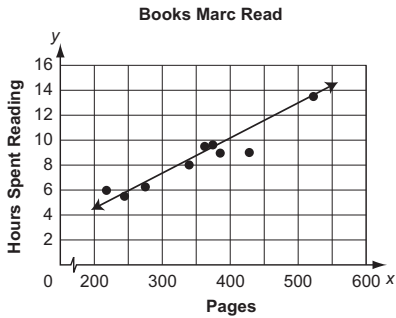


Landscaping Company B

Time Spent Mowing (hours)	Gas in Lawn Mowers (gallons)
0	110
24	80
48	50
72	20
88	0

Which statement about the two landscaping companies is true?

- A. Landscaping company A mows for 20 more hours than landscaping company B.
 B. Landscaping company B mows for 20 more hours than landscaping company A.
 C. Landscaping company A uses 0.25 of a gallon more gasoline per hour than landscaping company B.
 D. Landscaping company B uses 0.25 of a gallon more gasoline per hour than landscaping company A.
52. Marc read 9 books over the summer. He recorded the number of pages he read and the number of hours he spent reading each book. This information and a line of best fit are shown in the scatter plot.



Based on the scatter plot, which statement about the time Marc spent reading would most likely be true?

- A. Marc read at a rate of about 50 pages per hour.
 B. Marc read at a rate of about 75 pages per hour.
 C. It would take Marc about 2 hours to read a 150-page book.
 D. It would take Marc about 12 hours to read a 470-page book.
53. Rudy surveyed 80 people about whether they prefer blueberry or cherry pie and whether they prefer the pie with or without ice cream. The results are shown in the table below.

Pie and Ice-Cream Preferences

	Blueberry Pie	Cherry Pie
With Ice Cream	29	24
Without Ice Cream	15	12

Which conclusion can be made based on the results shown in the table?

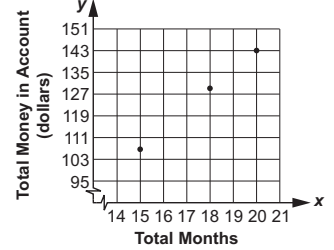
- A. About $\frac{1}{3}$ of the people prefer pie without ice cream.
 B. There are 2 times as many people who prefer blueberry pie to cherry pie.
 C. Fewer people prefer cherry pie with ice cream than blueberry pie without ice cream.
 D. The ratio of people who prefer blueberry pie to cherry pie is equivalent to the ratio of people who prefer pie with ice cream to pie without ice cream.
54. A company puts 36 cans into each box they send to a store. Each can has a radius of 1.5 inches and a height of 6 inches. What is the approximate total volume, in cubic inches, of the cans in each box the company sends to a store? Use 3.14 for π .
- A. 42.39 cubic inches
 B. 56.25 cubic inches
 C. 1,526.04 cubic inches
 D. 2,034.72 cubic inches

55. Wyatt and Chira both open savings accounts on the same day. The table and graph below show their individual savings after several months.

Wyatt's Savings Account

Total Months	Total Money in Account (dollars)
5	30.75
8	49.20
13	79.95

Chira's Savings Account



Their saving patterns continue. Which statement about how much Wyatt and Chira are saving is true?

- A. Wyatt will have more in his savings than Chira after 50 months.
 B. Each month Chira has exactly \$1 more in her savings than Wyatt.
 C. Chira will have about \$30 more in her savings than Wyatt after 30 months.
 D. Chira has more money in her savings than Wyatt, but she saves less per month.
56. Which table represents a linear function?

A.

x	y
-4	8
-2	0
0	-4
2	-6

B.

x	y
-4	2
-2	0
0	2
2	4

C.

x	y
-4	2
-2	0
0	-4
0	-2

D.

x	y
-4	4
-2	2
0	0
2	-2

57. Use the linear function in the table below to answer the question.

x	y
5	-6
10	-6
15	-6
20	-6
25	-6
30	-6

Which statement about the function in the table and the line represented by $y = 6$ is true?

- A. The lines do not intersect.
 B. The lines have the same y-intercept.
 C. The lines both cross through the origin.
 D. The lines both cross the x-axis but not the y-axis.

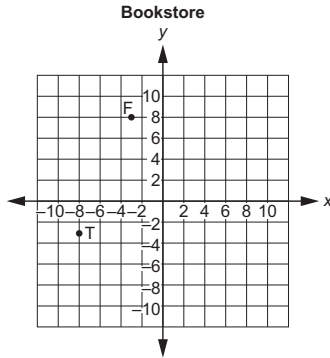
58. Glen spends a total of 9 hours writing a paper and finishing a project. He spends x hours on the paper and y hours finishing the project. Glen spends $1\frac{1}{2}$ more hours on the paper than he spends on the project. The equations below can be used to find how many hours he spends on the paper and finishing the project.

$$x + y = 9$$

$$x - y = 1\frac{1}{2}$$

How many hours does Glen spend writing the paper?

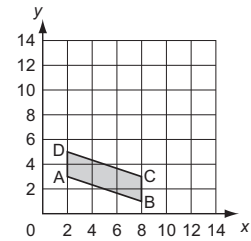
- A. $3\frac{1}{4}$ hours
 B. $3\frac{3}{4}$ hours
 C. $5\frac{1}{4}$ hours
 D. $5\frac{3}{4}$ hours
59. Stanley marked two points on the grid below to show the locations of the fiction section, point F, and the travel section, point T, in a bookstore.



What is the shortest distance, in units, between the fiction section and the travel section in the bookstore?

- A. $\sqrt{146}$
 B. $\sqrt{242}$
 C. 16
 D. 25

60. Zane graphed a parallelogram on the coordinate grid shown.



Zane then translated the parallelogram up 5 units. Which coordinate grid shows the figure after the translation?

- A.
- B.
- C.
- D.