

1. Which of the following is an irrational number?

A. $\frac{3}{5}$
B. $\sqrt{6.25}$
C. $\frac{11}{3}$
D. $\sqrt{35}$

2. Which of the following is an irrational number?

A. $-\sqrt{25}$
B. $\sqrt{42}$
C. 6.481
D. $6\frac{24}{25}$

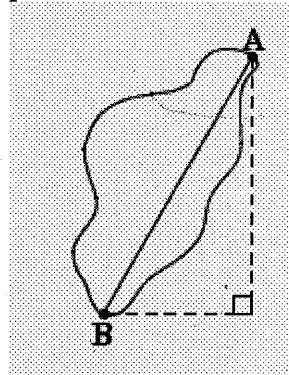
3. Which of the following lists the numbers in order from least to greatest?

A. 17.3%, 17.33, $17\frac{1}{3}$, $17.\overline{34}$
B. 17.33, $17\frac{1}{3}$, 17.3%, $17.\overline{34}$
C. $17.\overline{34}$, 17.33, $17\frac{1}{3}$, 17.3%
D. 17.3%, 17.33, $17.\overline{34}$, $17\frac{1}{3}$

4. Kelly found that the length of the hypotenuse of a triangle was equal to the square root of 125. The length of the hypotenuse was between which two consecutive integers?

A. 10 and 11
B. 11 and 12
C. 30 and 31
D. 62 and 63

5. Jean used the Pythagorean Theorem to determine the distance in feet from point A to point B across the lake.



If the length of \overline{AB} is equal to the square root of 3,000, what is true about this distance?

- A. It is between 30 feet and 31 feet.
B. It is between 40 feet and 50 feet.
C. It is between 54 feet and 55 feet.
D. It is between 55 feet and 56 feet.
6. The area of a square flower garden is 75 square feet. What is the approximate length of each side of the garden?
- A. 5.9 ft
B. 6.8 ft
C. 7.6 ft
D. 8.7 ft
7. Susie earns \$4.90 per hour. If she earned \$390.27 last pay period, **about** how many hours did she work during the pay period?
- A. 85
B. 80
C. 75
D. 70

8. The Thomas family went for a Sunday drive. Before they left, Mr. Thomas noticed the gas tank was $\frac{3}{4}$ full. When they returned home the gas tank was $\frac{1}{3}$ full. If the gas tank holds 18 gallons, how many gallons of gas did the car use on the drive?

- A. $6\frac{1}{2}$
- B. $7\frac{1}{2}$
- C. $8\frac{1}{2}$
- D. $9\frac{1}{2}$

9. A taxi cab company in Charlotte charges \$1.80 per person. In addition, there is a charge of \$1.80 per mile. If 5 people share a cab and travel a distance of 25 miles, what is the total cost per person for the trip?

- A. \$9.36
- B. \$10.80
- C. \$18.00
- D. \$54.00

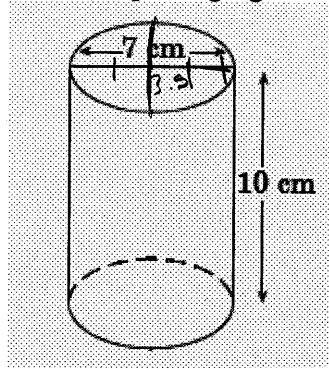
10. Which of the numbers below is the closest estimate for the value of $x^2 - b^4$ when $x = 1.1$ and $b = 1.93$?

- A. -15
- B. -7
- C. 9
- D. 17

11. What is the largest possible product when three different numbers from the set $\{-5, -3, 1, 6, 8\}$ are multiplied?

- A. -240
- B. -90
- C. 48
- D. 120

12. The diagram below shows a company's current packaging of its plant food.



If the company doubles the radius of its current packaging, what effect will this change have on the volume of the container?

- A. The volume will be one and a half times the original packaging volume.
- B. The volume will be twice the original packaging volume.
- C. The volume will be three times the original packaging volume.
- D. The volume will be four times the original packaging volume.

13. If the height of a cylinder was tripled, but the area of the base remained the same, what would happen to the volume?

- A. The volume would double.
- B. The volume would triple.
- C. The volume would be four times greater.
- D. The volume would be nine times greater.

14. Salvador packed a gift in a box that was 6 inches long, 3 inches wide, and 3 inches high. Then he decided to use a box whose length was twice as long as the original. What was the effect of this change on the volume of the box?

- A. The volume became four times greater
- B. The volume became 50% greater
- C. The volume became two times greater
- D. The volume became 6 inches greater

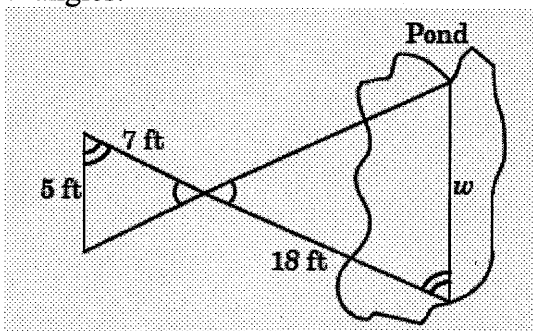
15. The length of a rectangle is 10 inches and the perimeter is 32 inches. If the length is doubled, what is the perimeter of the new rectangle?

A. 120 in
B. 64 in
C. 52 in
D. 32 in

16. If the sides of a square are multiplied by 4, how is the area changed?

A. multiplied by 2
B. multiplied by 4
C. multiplied by 8
D. multiplied by 16

17. Jake wanted to measure the width of the pond, so he drew this diagram of two similar triangles.



What is the *approximate* width, w , of the pond?

A. 25 feet
B. 19 feet
C. 18 feet
D. 13 feet

18. At noon, the shadow of a flagpole is 19 feet long. At the same time, the shadow of a 12-foot wall is 4 feet long. What is the height of the flagpole?

A. 48 feet
B. 57 feet
C. 62 feet
D. 75 feet

19. A copying machine reduces a 12-inch line segment to 10.5 inches. At this setting, what would a 16-inch line segment become?

A. 12 inches
B. 14 inches
C. 16 inches
D. 18 inches

20. What is the measure of the larger of two complementary angles if the measure of one angle is five times the measure of the other angle?

A. 15°
B. 16°
C. 74°
D. 75°

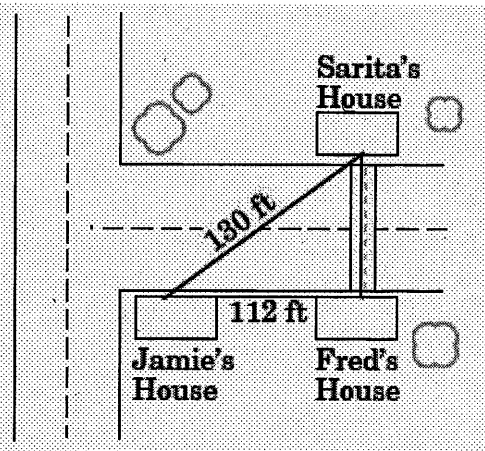
21. A circular pond is inside of a rectangular field that measures 80 ft by 100 ft. If the diameter of the pond is 40 ft, approximately how much field is left for planting grass?

A. $6,744 \text{ ft}^2$
B. $7,465 \text{ ft}^2$
C. $7,950 \text{ ft}^2$
D. $10,365 \text{ ft}^2$

22. Rae built a gate for her backyard. The height of the gate is 3 feet and the width is 5 feet. *About* how long is its support piece that goes along the diagonal?

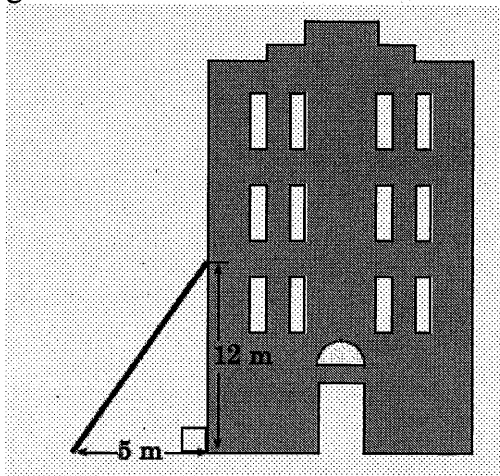
A. 34 ft
B. 8 ft
C. 6 ft
D. 3 ft

23. Jamie and Fred are meeting Sarita at her house. Jamie must use the crosswalk in front of Fred's house to cross the street.



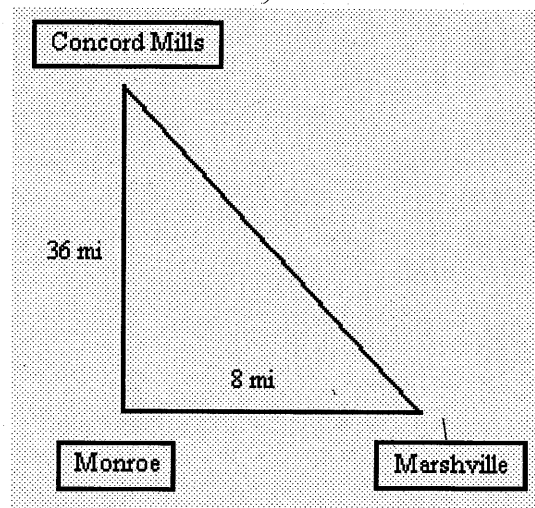
What is the total distance Jamie must walk?

- A. 66 ft
B. 130 ft
C. 178 ft
D. 199 ft
24. A ladder leans against the side of a building. The base of the ladder is 5 meters from the building, and the top is 12 meters above the ground.



What is the length of the ladder?

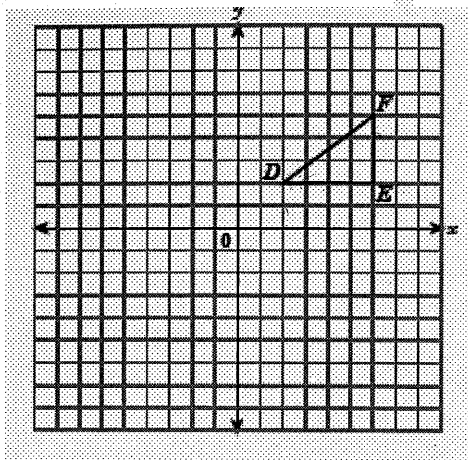
25. Maria used the diagram below to compute the distance from Concord Mills to Monroe to Marshville. How much shorter is the distance directly from Concord Mills to Marshville than the distance Maria found?



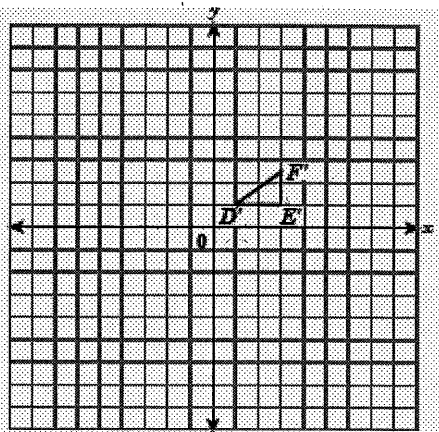
- A. 44 miles
B. 36.88 miles
C. 28 miles
D. 7.12 miles
26. A 13 foot ladder is resting against a wall. The base of the ladder is 3 feet from the base of the wall. How high up the wall will the ladder reach?
- A. 10.0 ft
B. 12.65 ft
C. 13.34 ft
D. 16.0 ft
27. Which of the following could be the sides of a right triangle?
- A. 3m, 5m, 8m
B. 9ft, 12ft, 15ft
C. 5in, 12in, 14in
D. 4cm, 8cm, 12cm

- A. 11 meters
B. 13 meters
C. 17 meters
D. 169 meters

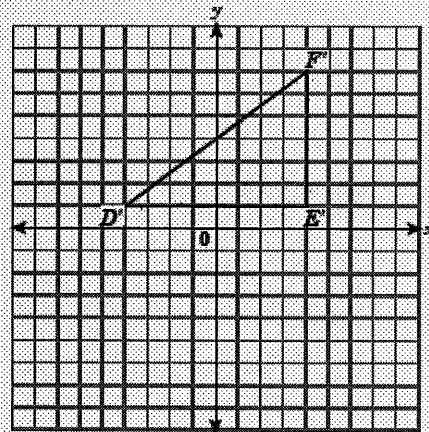
28. Given $\triangle DEF$, which figure illustrates a dilation with a scale factor of $\frac{1}{2}$?



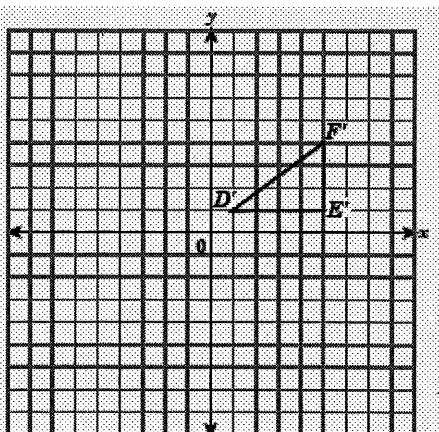
A.



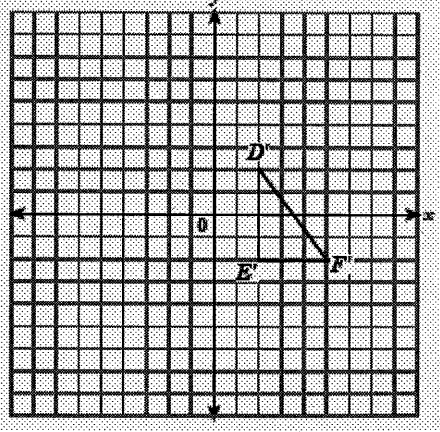
C.



B.



D.



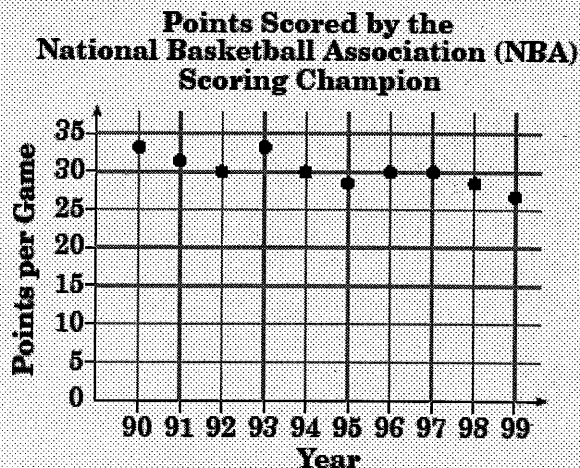
29. A square whose preimage perimeter is 8 sq. ft. is dilated by a scale factor of 2. What is the length of one side of the image after the dilation?

A. 4 ft
B. 8 ft
C. 16 ft
D. 64 ft

30. A triangle has the following vertices: A (2,1), B (4,1), and C (3,3). What is the coordinate of C' after a dilation of $\frac{1}{3}$?

A. (9,9)
B. $(\frac{2}{3}, \frac{1}{3})$
C. (1,1)
D. (12,3)

31. The scatter plot displays the average number of points per game scored each year by the National Basketball Association's (NBA) scoring champion.



In which year did the scoring champion average the *fewest* points per game?

A. 1990
B. 1993
C. 1995
D. 1999

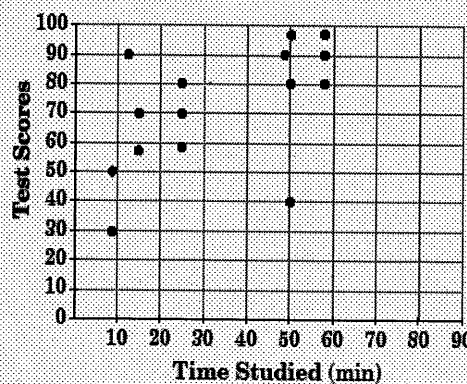
32. The table below shows the relationship between elevation and record high temperatures.

Place	Elevation (ft)	Highest Temp (°F)
City A	367	136
City B	-178	134
City C	-722	129
City D	622	128
City E	676	120
City F	26	122
City G	72	108
City H	49	59

How would the relationship be described?

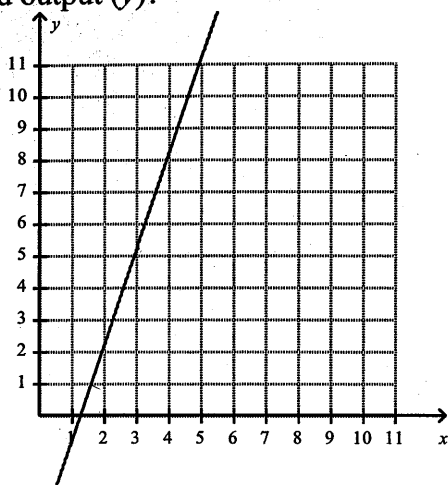
- A. the higher the elevation, the higher the record temperature
B. the lower the elevation, the higher the record temperature
C. the lower the elevation, the lower the record temperature
D. There is no relationship between elevation and record temperature.

33. Which relationship is suggested by the scatter plot below?

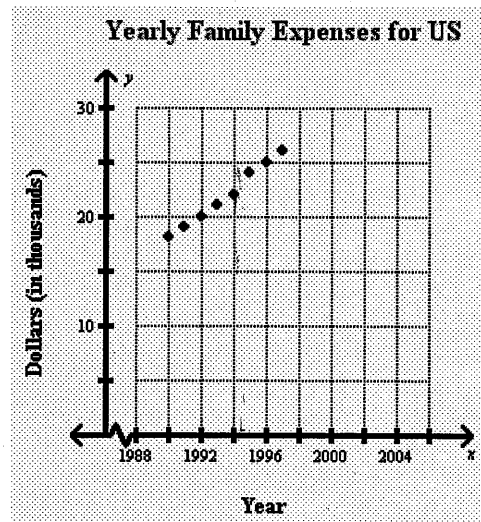


- A. Study time does not affect test scores.
B. The longer the student studied, the higher the test score.
C. The longer the student studied, the lower the test score.
D. Students who did not study received a high test score.

34. What is the relationship between the input (x) and output (y)?

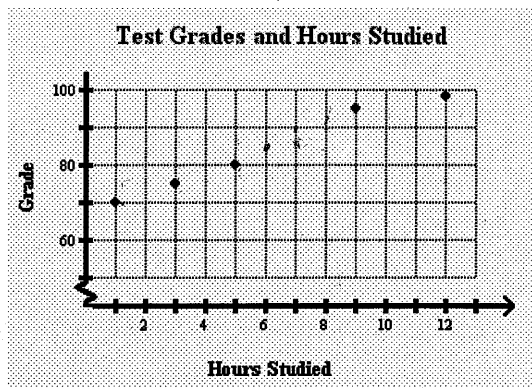


- A. The output is twice the input.
 B. The output is seven less than four times the input.
 C. The output is two more than the input.
 D. The output is four less than three times the input.
35. Mailing a letter costs 37 cents for the first ounce and 23 cents for each additional ounce. Suppose that we want to write a cost function to describe this situation. Which of the following is an independent variable?
- A. the letter's weight
 B. the mailing cost
 C. 37 cents
 D. the number of stamps needed

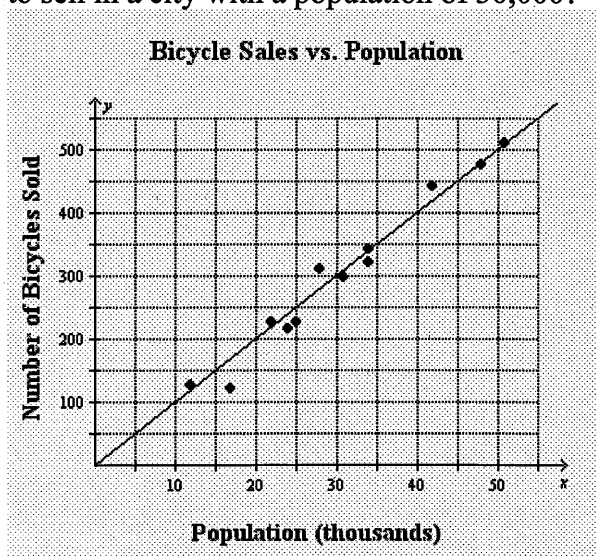


36. What would the yearly expense be for a family in the US in 1995?
- A. 20,000
 B. 24,000
 C. 25,000
 D. 26,000
37. Which of the following is a true statement about the scatterplot?
- A. There is no correlation between time and family expenses.
 B. There is a negative correlation between time and family expenses.
 C. Family expenses have decreased over time.
 D. Family expenses have increased over time.
38. The following data gives the high temperatures for the first week in June. If x represents the day of the week and y represents the temperature, describe the trend in the data.
- (1, 68), (2, 70), (3, 65), (4, 67), (5, 71), (6, 75), (7, 74)
- A. positive trend
 B. negative trend
 C. no trend
 D. opposite trend

39. Using the graph below, predict the exam grade of a student who studied 8 hours.



- A. 70
B. 80
C. 90
D. 100
40. A bicycle manufacturer sells bicycles at stores in several cities. The scatterplot shows the number of bicycles sold in each city and the population of the city. According to the scatterplot, what is the best prediction of the number of bicycles the company should expect to sell in a city with a population of 30,000?

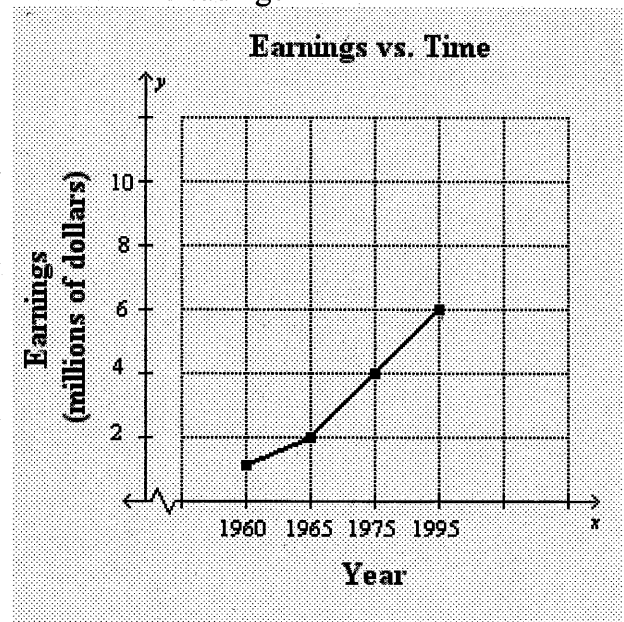


- A. 250
B. 300
C. 350
D. 400

41. Patrice and Tom needed to report the results of a survey regarding the favorite snack food of the students at Milton Middle School. How could the experiment be done to produce a random sampling of 100 students?

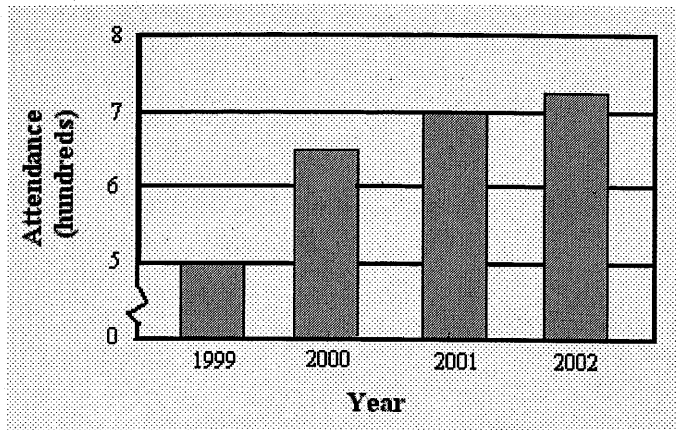
- A. Ask the students as they get off the school buses.
B. Ask the opinion of all the teachers at the school.
C. Ask all the students who are in the school cafeteria during one day.
D. Ask every 20th student randomly until 100 students have been asked.

42. The line graph below shows how the earnings of a company have changed over time. Which of the following best explains why this graph could be misleading?



- A. The intervals of the horizontal scale are unequal.
B. The earnings are given in millions of dollars.
C. The horizontal scale does not start at zero.
D. The graph does not have a key.

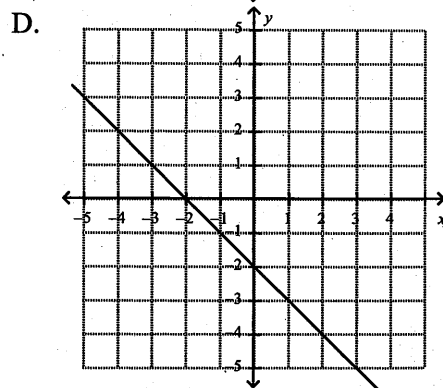
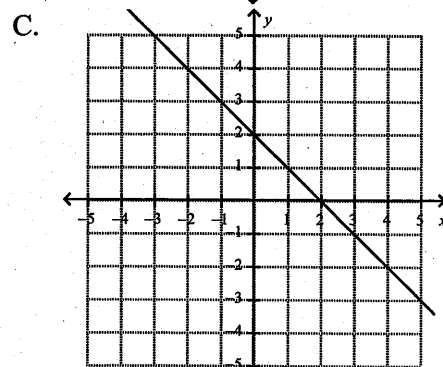
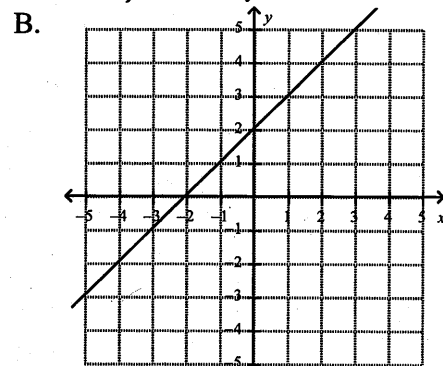
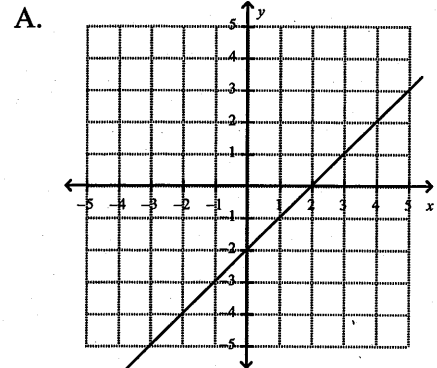
43. The bar graph below shows the attendance at a yearly school fundraiser. Which statement is supported by the data presented in the graph?



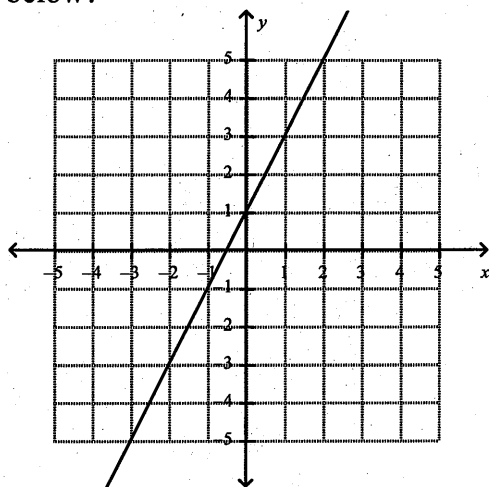
- A. The greatest increase in attendance was between 2000 and 2001.
 B. The attendance in 2002 was nearly 25 % greater than in 1999.
 C. About 25 more people attended in 2002 than in 2001.
 D. The attendance in 2001 was about three times the attendance in 1999.
44. Trent is using the linear equation $x + y = 2$ to plot a line on graph paper. If $(x, -4)$ are the coordinates of a point on the line, what is the value of x ?

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

45. Which of the following is the graph of the equation $y = x - 2$?



46. Which equation describes the line graphed below?



- A. $x - y = 0$
 B. $x - y = -1$
 C. $2x - y = -1$
 D. $x + 2y = -3$
47. Henry opened a savings account by depositing \$150. He also signed an automatic draft agreement to have \$125 deposited directly from his pay check each month. If x is the number of months that have passed since Henry opened the account, which of the following shows how much Henry has deposited into his savings account?
- A. $f(x) = 150 + 125x$
 B. $f(x) = 150x + 125$
 C. $f(x) = (150 + 125)x$
 D. $f(x) = 150 + 125(12x)$
48. The length of a rectangle is 10 units greater than the width, x . Which of the following expressions gives the area, A , of the rectangle?

- A. $A = x(10 + x)$
 B. $A = x + (x + 10)$
 C. $A = x(10 - x)$
 D. $A = 10x^2$

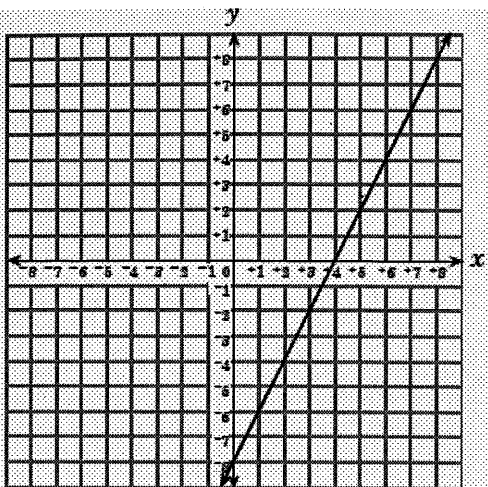
49. Which of the following equations describes the data in the table below?

x (% reduction (or increase) in dietary fat)	-6	-4	-2	1	5
y (weight loss (or gain) in pounds)	-15	-11	-7	-1	7

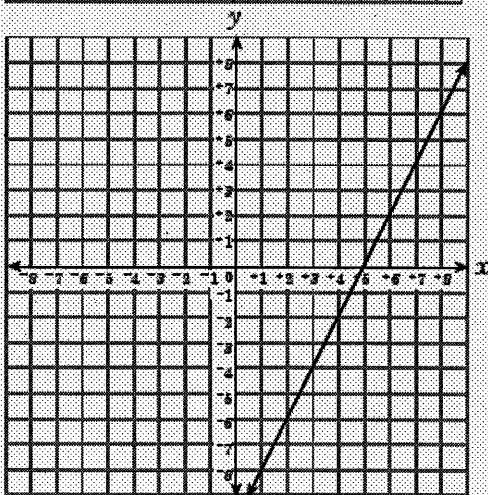
- A. $2x + y = -27$
 B. $x - y = 3$
 C. $x + y = -21$
 D. $2x - y = 3$
50. The fare for riding in a taxi is a \$2.50 fixed charge and \$0.50 per mile. The fare for a ride of d miles is \$9.65. Which equation could be used to find d ?
- A. $0.50 + 2.5d = 9.65$
 B. $2.50(9.65 + d) = 2.50$
 C. $2.50 + 0.50d = 9.65$
 D. $(0.50 + 9.65)d = 2.50$

51. Which line has a slope of 2 and passes through $(-1, -12)$?

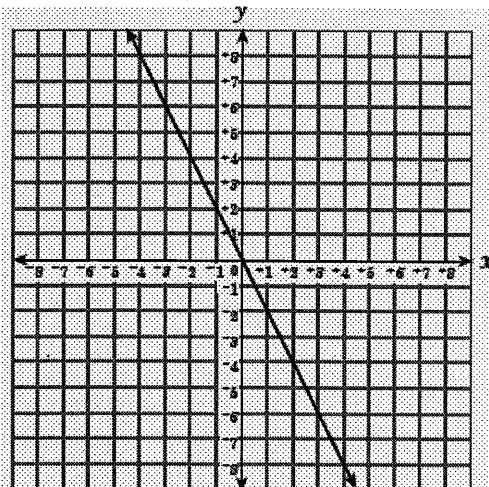
A.



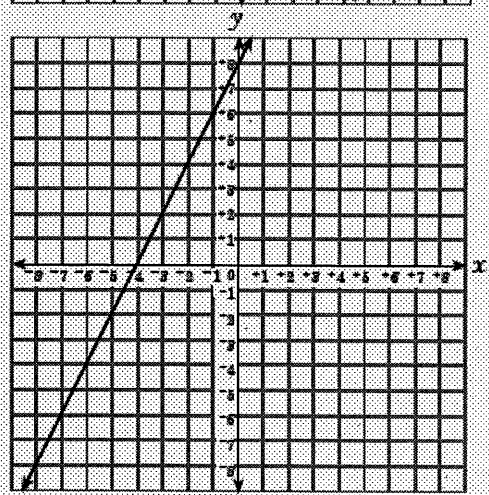
B.



C.



D.



52. In planning a summer trip for his family, Jamel's dad made up a mileage and cost table.

Mileage	Cost
50 miles	\$67.45
150 miles	\$102.45
175 miles	\$111.20

If the relationship between mileage and cost is linear, what equation would apply?

- A. $C = 50m + 50$
 B. $C = 0.35m + 49.95$
 C. $C = 0.35m - 50$
 D. $C = 0.50m + 49.95$

53. Find the missing value in the table if the function is linear.

Years after buying	Value of Car
0	\$10,000
1	\$8,500
2	\$7,000
3	\$5,500
6	?

- A. \$19,000
B. \$4,000
C. \$1,000
D. \$-1,000

54. Which of the following functions is linear?

A.

X	Y
-3	4
-2	5
-1	6
0	7
1	9

B.

X	Y
2	12
4	24
6	48
8	96

C.

X	Y
-2	-4
0	0
2	4
4	8

D.

X	Y
1	1
2	4
3	9
4	16

55. The x-intercept of a line is the point on the graph where $y = 0$. What is the x-intercept for the graph of $4x + 3y = 12$?

- A. (4,0)
B. (3,0)
C. (-3,0)
D. (-4,0)

56. Which equation has a graph whose slope is $\frac{1}{2}$?

A. $y = 1 + 2x$

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

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

D. $y = x + \frac{1}{2}$

57. Mark burns 34 calories when he plays volleyball for 10 minutes. If he plays for 15 minutes, he burns 51 calories. How fast is Mark burning calories?

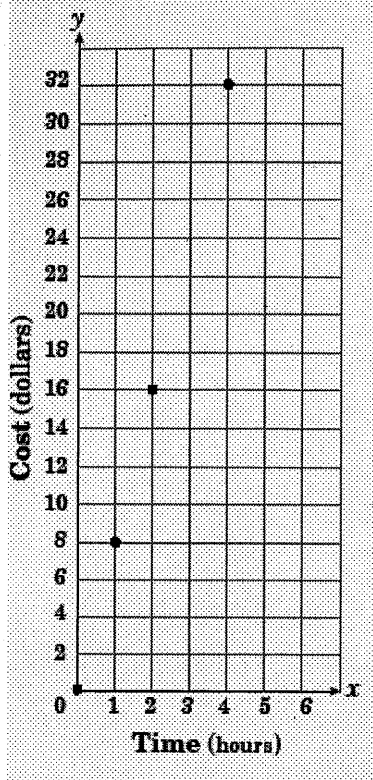
A. $\frac{5}{17}$ calories per minute

B. $\frac{2}{3}$ calories per minute

C. $\frac{3}{2}$ calories per minute

D. $\frac{17}{5}$ calories per minute

58. This graph represents how much Juan charges to take care of one child.



How much does Juan charge per hour?

- A. \$5.00
- B. \$8.00
- C. \$10.00
- D. \$13.00

59. A spring stretches linearly as weight is added. The table shows data collected for a certain spring.

Weight (g)	Stretch (cm)
100	0.5
500	2.5
800	4.0
900	4.5
1,200	6.0

What is the slope of the line that fits this data for the spring?

- A. $\frac{1}{200}$
- B. $\frac{1}{100}$
- C. $\frac{1}{50}$
- D. $\frac{1}{2}$

60. It begins snowing at midnight. At 3:00 a.m., there is 6 inches of snow on the ground. What is the rate of change?

- A. -2 in/hr
- B. 2 in/hr
- C. 6 in/hr
- D. 12 in/hr

61. What is the slope of a line that passes through the points (6,10) and (-2, 7)?

- A. $-\frac{8}{3}$
- B. $-\frac{3}{8}$
- C. $\frac{3}{8}$
- D. $\frac{8}{3}$

62. Susie's income is represented by the function $y = 2,000x + 20,000$, where x represents the # of cars sold. John's income is represented by the function $y = 5,000x + 7,500$, where x represents the # of cars sold. Which statement is true?

A. John would make more money than Susie if they both sold 3 cars.
 B. John's base salary is less than Susie's but his rate of change makes his income grow faster.
 C. Susie's income is always greater than John's.
 D. Their salaries are equal if they both sell 2 cars.

63. What is the relationship between function A and B?

Function A

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

Function B

$$-2x + 3y = 12$$

A. Function A is steeper than Function B.
 B. They have the same y-intercept.
 C. They are \parallel lines.
 D. They are \perp lines.

64. Which of the following functions represent perpendicular lines?

A. $y = -2x + 3$; $y = -\frac{1}{2}x + 3$
 B. $y = 4x - 2$; $y = 4x - 4$
 C. $-2x + 3y = 9$; $y = \frac{2}{3}x + 3$
 D. $3y = 9x + 12$; $y = -\frac{1}{3}x + 2$

65. A line has a slope of $\frac{2}{3}$ and a y-intercept of -4. Which of the following is the equation of the line?

A. $2x - 3y = 12$
 B. $2x - 3y = -4$
 C. $3x - 2y = -4$
 D. $3x - 2y = 12$

66. Which equation represents a line whose slope is -2 and y-intercept is 4?

A. $2y = -6x + 8$
 B. $-4x - 2y = -8$
 C. $y = 2x + 4$
 D. $\frac{1}{2}y = -2x + 4$

67. Find the equation of a line that passes through (4,-2) and (6,8).

A. $y = \frac{1}{5}x + 6\frac{4}{5}$
 B. $y = 5x - 22$
 C. $y = 5x + 38$
 D. $y = 6x + 8$

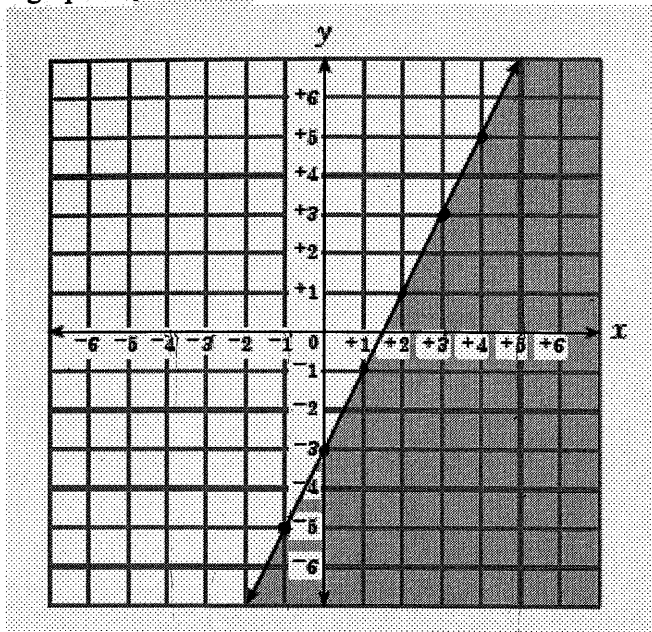
68. Find the equation of a line that has an undefined slope and passes through (4,2).

A. $x = 2$
 B. $x = 4$
 C. $y = 2$
 D. $y = 4$

69. Find the equation of a line whose slope is $-\frac{1}{2}$ and passes through (-6,9)

A. $y = \frac{-1}{2}x - 3$
 B. $y = \frac{-1}{2}x + 6$
 C. $y = \frac{-1}{2}x + 12$
 D. $2x + y = -12$

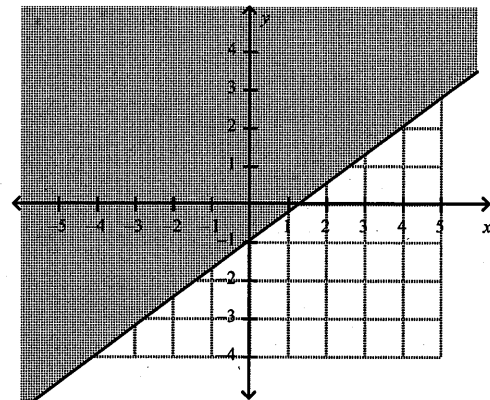
70. The graph of $y \leq 2x - 3$ is shown.



Which set of points satisfies the inequality?

- A. $\{(3, 3), (-4, -11), (-1, -8), (5, 0)\}$
- B. $\{(5, 7), (-3, -10), (5, -7), (-1, -4)\}$
- C. $\{(-1, -10), (5, 8), (-4, -13), (3, -2)\}$
- D. $\{(-4, -12), (-1, -5), (3, 4), (5, 6)\}$

71. Which of the following inequalities is graphed below?



- A. $y \geq \frac{3}{4}x - 1$
- B. $y > \frac{3}{4}x - 1$
- C. $y \leq \frac{4}{3}x - 1$
- D. $y \geq \frac{4}{3}x - 1$

72. Denisha bought a car for \$15,000. The value depreciates linearly. After 3 years the value is \$11,250. What is the amount of yearly depreciation?

- A. \$2,000
- B. \$1,500
- C. \$1,250
- D. \$750

73. The drama club is selling tickets to a play for \$10 each. The cost to rent the theater and costumes is \$500. In addition the printers are charging \$1 per ticket to print the tickets. How many tickets *must* the drama club sell to make a profit?

- A. 54
- B. 55
- C. 56
- D. 57

74. The length of a rectangle is one inch longer than twice the width. What is the **maximum** width of the rectangle when the perimeter is no more than 92 inches?

A. 12 inches
B. 15 inches
C. 18 inches
D. 21 inches

75. What is the solution to the following inequality?

$$-3w + 3 \geq 18$$

A. $w \geq -7$
B. $w \leq -7$
C. $w \geq -5$
D. $w \leq -5$

76. Solve: $\frac{x}{3} + 5 = 2$

A. $x = -9$
B. $x = -1$
C. $x = 1$
D. $x = 9$

77. Three less than four times a number is 17. Which equation could be used to find the number?

A. $4x - 3 = 17$
B. $3 - 4x = 17$
C. $4(x - 3) = 17$
D. $-3(4x) = 17$

78. Solve for d .

$$\frac{4}{7}d = 4\frac{2}{3}$$

A. $2\frac{2}{3}$
B. $4\frac{2}{11}$
C. $5\frac{1}{6}$
D. $8\frac{1}{6}$

79. What are the solutions for $x^2 - 4 = 0$

A. $\{0, -4\}$
B. $\{-4, 2\}$
C. $\{-2, 2\}$
D. $\{0, 2\}$

80. Solve: $5x - 3(2x + 4) = 4x + 8$

A. $x = -4$
B. $x = \frac{-4}{7}$
C. $x = \frac{-4}{5}$
D. $x = \frac{4}{5}$