

1 What value of x will make the equation $3(x + 15) - 6x = -6(x - 3)$ true?

Write your answer on answer sheet.

2 Which describes the graph of $g(x) = -3x + 5$?

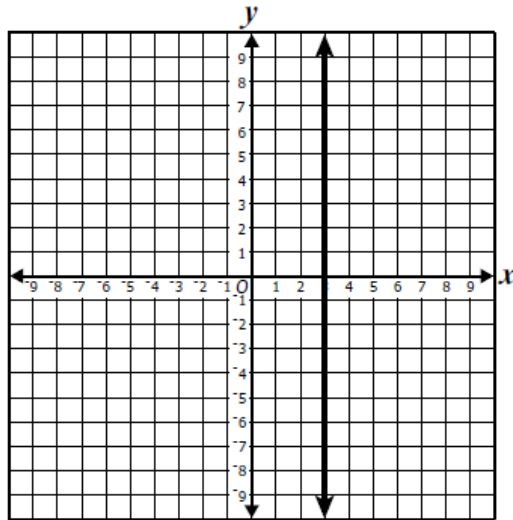
F A line with a slope of -3 and a y -intercept of -5 .

G A line with a slope of -3 and a y -intercept of 5 .

H A line with a slope of 3 and a y -intercept of -5 .

J A line with a slope of 3 and a y -intercept of 5 .

3 What is *most* likely the slope of the line graphed on the coordinate plane?



- A -3
- B 0
- C 3
- D Undefined

4 What ordered pair represents the solution to the system of equations?

$$\begin{cases} 2x - 7y = 0 \\ x - 6y = -5 \end{cases}$$

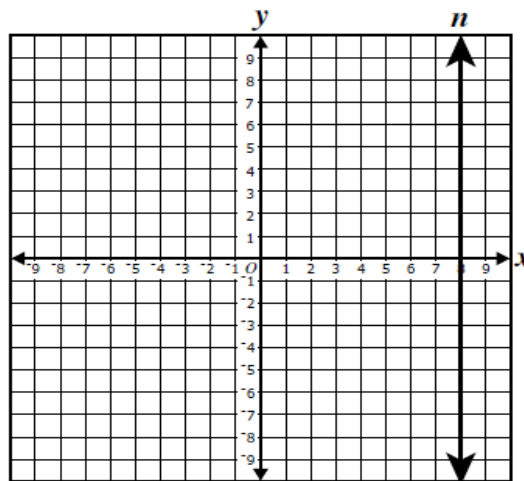
Write your answer on answer sheet.

5 What is the solution to the following inequality?

$$3(x - 3) \leq 3$$

- A $x \leq 2$
- B $x \geq 2$
- C $x \leq 4$
- D $x \geq 4$

6 Which equation *best* models line *n* ?



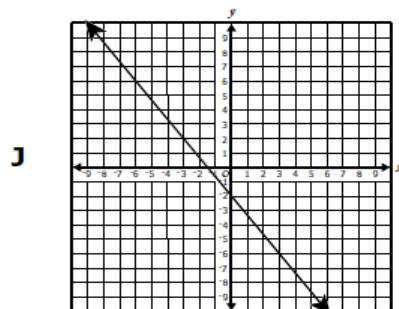
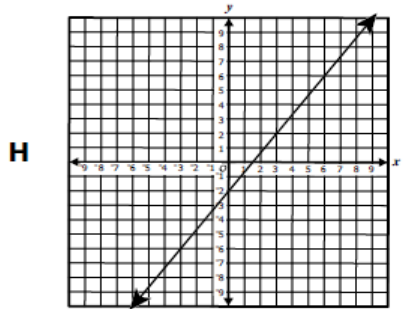
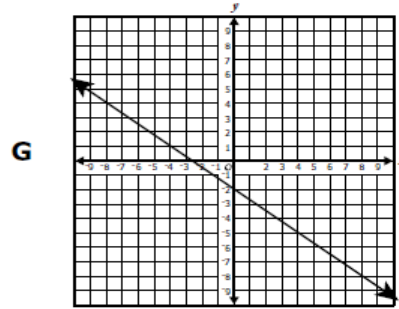
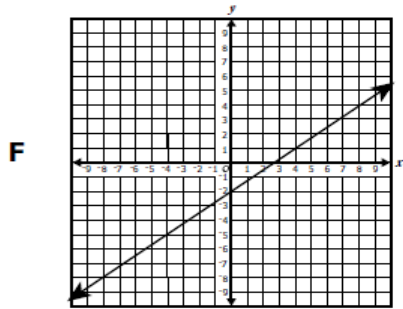
- F $x = 8$
- G $y = 8$
- H $x = 8y$
- J $y = x + 8$

7 Solve the equation for *a*

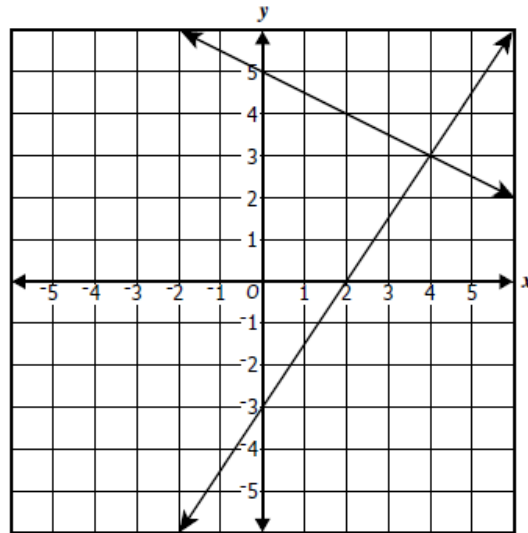
$$Q = 3a + 5ac$$

Write your answer on answer sheet.

8 Which graph *best* represents the equation $y = \frac{3}{4}x - 2$



9 This is the graph of a system of linear equations.



Based upon the graph, what is the apparent solution to the system of equations?

Write your answer on answer sheet.

10 Which is an example of the distributive property?

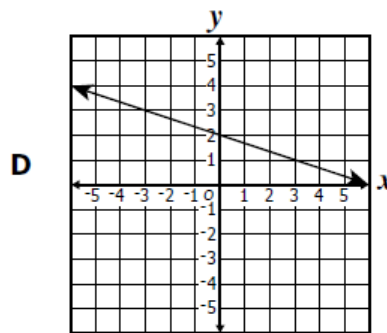
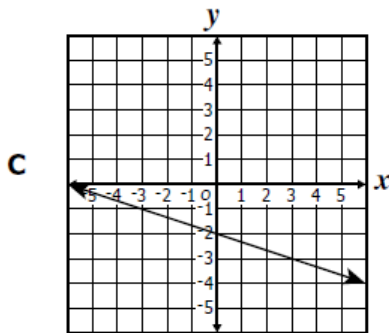
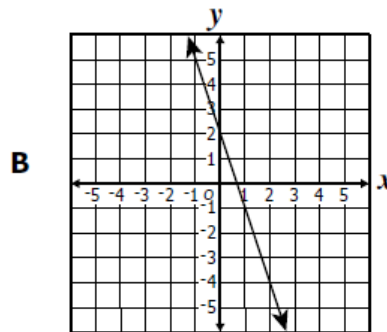
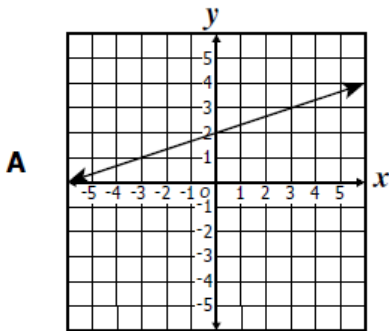
F $10 + 5x = 5x + 10$

G $5(x + 2) = 5x + 10$

H $5x + 10 = 5x + 10$

J $(5 + 10)x = x(5 + 10)$

11 Which graph best represents the equation of the line $y = -\frac{1}{3}x + 2$?



12 A school play cost \$1,200 to produce. If tickets sold for \$5 each, the profit, p , made on the play by selling x tickets is given by the equation shown.

$$p = 5x - 1,200$$

What is the slope of the line representing this equation?

F -1,200

G -240

H 1

J 5

- 13 Identify each value that could be a solution to the inequality below. There may be more than one solution.**

$$-2x + 7 \leq 9 - 3x$$

A -3

B 10

C 3

D -4

E 1

Write your answer on answer sheet.

- 14 Which is an equation for the line that contains (1, 2) and has a slope of 4 ?**

- F $y = 2x - 4$
- G $y = -2x + 4$
- H $y = 4x - 2$
- J $y = -4x + 2$

- 15 Which inequality is equivalent to $4x - 2y \leq 8$?**

- A $y \leq 2x - 4$
- B $y \geq 2x - 4$
- C $y \leq -2x - 4$
- D $y \geq -2x - 4$

- 16 What is the slope of the line that passes through (-2, 5) and (3, 9) ?**

Write your answer on answer sheet.

- 17 In addition to an \$80 bonus, Joan earned \$8 per hour working last week. Joan's total earnings last week were \$240. How many total hours did she work last week?**

Write your answer on answer sheet.

- 18 Tommie paid \$17.50 to buy 6 youth tickets and 1 adult ticket to a school carnival. Susan paid \$22.50 to buy 3 youth tickets and 3 adult tickets at the carnival. What was the price of an adult ticket?**

Write your answer on answer sheet.

19 Identify each expression that is equivalent to -2.

| | | | |
|---|---|---|--|
| A | $-3 x - y + 4,$ when $x = 3$ and $y = 5$ | B | $\frac{x + 2y}{xy},$ when $x = \frac{1}{2}$ and $y = \frac{1}{4}$ |
| C | $\frac{(6 - w)^y - 13}{3y - 4y},$ when $w = 9$ and $y = 2$ | D | $\frac{x^3 + x^2}{-x},$ when $x = -2$ |

Write your answer on answer sheet.

20 Which equals $(2.3 \times 10^3)(3.6 \times 10^3)$?

- F 8.28×10^9
- G 8.28×10^6
- H 5.90×10^9
- J 5.90×10^6

21 Which expression is equivalent to

$$(4x^2 - 3x + 9) + (7x^2 - 11) + (-x^2 + 7x - 2) ?$$

- A $10x^2 + 4x - 4$
- B $10x^2 - 10x - 22$
- C $10x^6 + 4x^2 - 4$
- D $11x^2 + 4x + 4$

22 In simplest radical form, $\sqrt{845}$ is equal to —

F 13

G $13\sqrt{2}$

H $13\sqrt{3}$

J $13\sqrt{5}$

23 Which polynomial is equivalent to $\frac{8x^3 + 12x}{2x}$ when $x \neq 0$?

A $4x^2 + 6$

B $4x^2 + 6x$

C $4x^2 + 12x$

D $4x^4 + 6x^2$

24 What is the complete factorization of $x^2 - 5x - 14$?

F $(x - 2)(x + 7)$

G $(x + 2)(x - 7)$

H $(x - 1)(x + 14)$

J $(x + 1)(x - 14)$

25 Which statement could be represented by the expression $n^2 + 4n$?

A The square of a number increased by four

B The square of the product of a number and four

C The sum of two times a number and four times a number

D The square of a number increased by four times the number

26 Which expression is equivalent to $4x(2x^2 - x - 3)$?

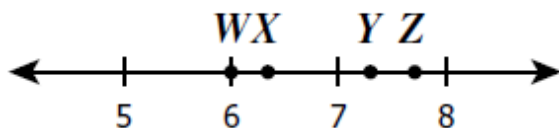
F $6x^2 - 5x - 7$

G $6x^3 - 5x^2 + 7x$

H $8x^2 - 4x + 12$

J $8x^3 - 4x^2 - 12x$

27 Which labeled point on the number line is closest to $\sqrt{40}$?



A W

B X

C Y

D Z

28 A computer chip has two pins on one side. One pin is 4.0×10^{-3} inches long and the other is 2.5×10^{-3} inches long. What is the difference in the lengths of the pins?

F 6.5×10^9 in.

G 6.5×10^{-3} in.

H 1.5×10^{-3} in.

J 1.5×10^{-6} in.

29 Which represents the *complete* factorization of $3v^2 + 9v$?

A $v(3v + 9)$

B $3(v^2 + 3v)$

C $3v(v + 3)$

D $3v^2(1 + 3v)$

30 Lincoln High School earned \$5,100 in ticket sales for a play. The cost per ticket was \$12. Let t represent the number of tickets sold to the play. Which of the following equations could be used to determine how many tickets were sold to the play?

- F $12 = 5,100t$
- G $12t = 5,100$
- H $t = 5,100 - 12$
- J $t = 5,100 \cdot 12$

31 The function $f(x) = 35 + 15x$ represents the amount of money, in dollars, Mr. Lewis earns for working x hours. How much money does Mr. Lewis earn for working 25 hours?

Write your answer on answer sheet.

32 Which equation represents the relationship between time, t , and distance, d ?

Distance Traveled

| Time (hours) | Distance (miles) |
|--------------|------------------|
| 2 | 90 |
| 3 | 135 |
| 4 | 180 |
| 5 | 225 |

F $d = t + 45$

G $d = 45t$

H $t = 45d$

J $t = \frac{45}{d}$

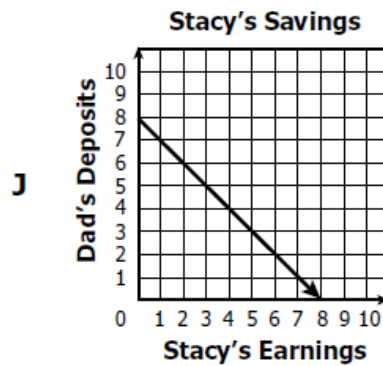
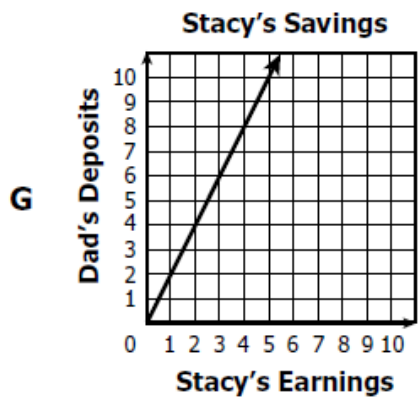
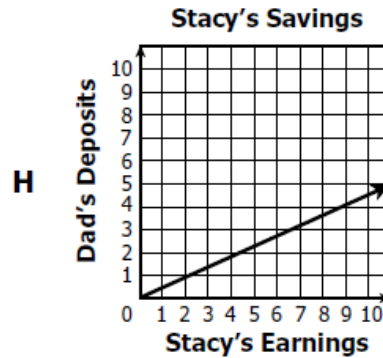
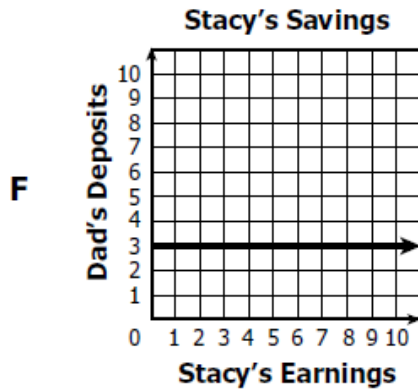
33 What is the domain of the relation shown in the table?

| x | y |
|-----|-----|
| -5 | -23 |
| -2 | -14 |
| 0 | -8 |
| 3 | 1 |
| 6 | 10 |

- A $\{-5, -2, 0, 3, 6\}$
- B $\{-23, -14, -8, 1, 10\}$
- C $\{-23, -14, -8, -5, -2, 0, 1, 3, 6, 10\}$
- D $\{(-5, -23), (-2, -14), (0, -8), (3, 1), (6, 10)\}$

- 34 For every dollar that Stacy earns, her dad deposits twice that amount into a savings account for her.

Which graph illustrates this example of direct variation?



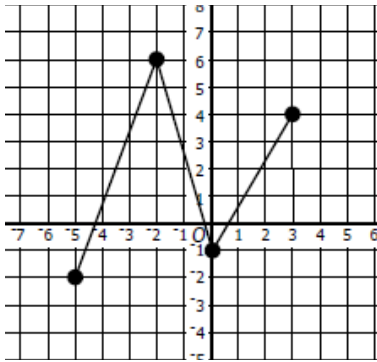
- 35 Which of the following sets of ordered pairs is a function?

- A $\{(3, 4), (2, 3), (3, -2), (4, 1)\}$
- B $\{(2, 5), (-1, 9), (6, 3), (-1, -2)\}$
- C $\{(1, 3), (-2, 5), (4, 5), (3, -2)\}$
- D $\{(5, 6), (-2, 3), (10, 1), (-2, -9)\}$

36 What is $g(2)$ for $g(x) = \frac{1}{2}x^3 + 2x$?

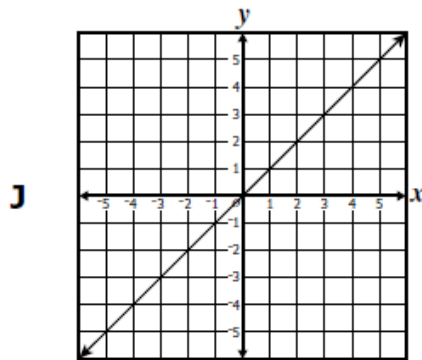
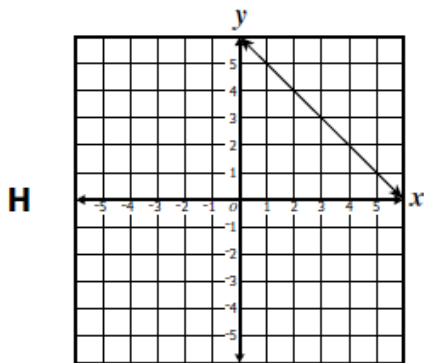
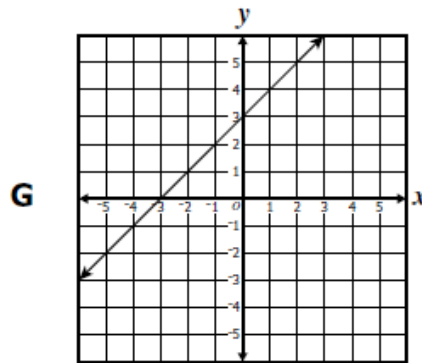
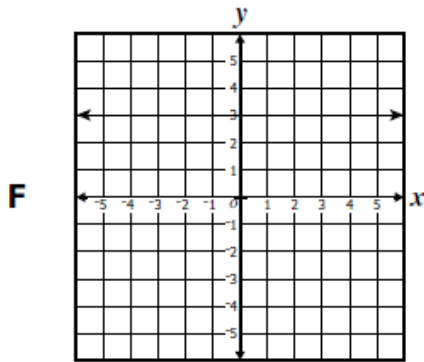
Write your answer on answer sheet.

37 What is the domain of the function shown?



- A $-2 \leq x \leq 6$
- B $-5 \leq x \leq 3$
- C $-2 \leq y \leq 6$
- D $-5 \leq y \leq 3$

38 Which graph *best* represents a direct variator



- 39 What are the range values of the function $f(x) = -3x^2 + 5$ for the domain values $\{-2, 0, 1\}$?

Write your answer on answer sheet.

- 40 Which of the following tables indicates that x and y vary directly?

| x | y |
|-----|-----|
| 1 | 2 |
| 2 | 4 |
| 3 | 4 |
| 4 | 5 |
| 5 | 8 |

F

| x | y |
|-----|-----|
| 1 | 1 |
| 2 | 4 |
| 3 | 9 |
| 4 | 16 |
| 5 | 25 |

G

| x | y |
|-----|-----|
| 1 | 5 |
| 2 | 4 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |

H

| x | y |
|-----|-----|
| 1 | 3 |
| 2 | 6 |
| 3 | 9 |
| 4 | 12 |
| 5 | 15 |

J

- 41 The table shows the cost of a 12-inch pizza for different numbers of toppings.

Pizza Pricing

| Number of toppings | Cost of pizza |
|--------------------|---------------|
| 0 | \$15.50 |
| 1 | \$17.35 |
| 2 | \$19.20 |
| 3 | \$21.05 |
| 4 | \$22.90 |

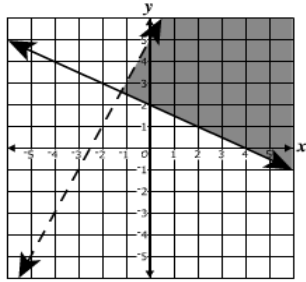
Which equation gives C , the cost of a pizza with t toppings?

- A $C = 1.85t$
B $C = 17.35t$
C $C = 15.50 + 1.85t$
D $C = 22.90 - 1.85t$
- 42 Simplify the expression. Assume that the denominator does not equal zero.

$$\frac{x^2 - 3x - 10}{x + 2}$$

Write your answer on answer sheet.

- 43 Using the inequalities shown, create a system of two inequalities that could be represented by this graph.



Place the two solutions on the answer key provided.

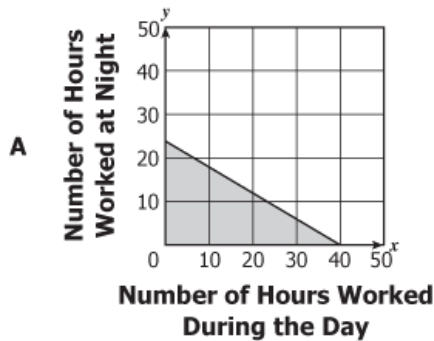
| | |
|----------------------------|-----------------|
| $y > -\frac{1}{2}x + 2$ | $2x + 5 > y$ |
| $y < -\frac{1}{2}x + 2$ | $2x + 5 < y$ |
| $y \geq -\frac{1}{2}x + 2$ | $2x + 5 \geq y$ |
| $y \leq -\frac{1}{2}x + 2$ | $2x + 5 \leq y$ |

- 44 Frank works at a convenience store.

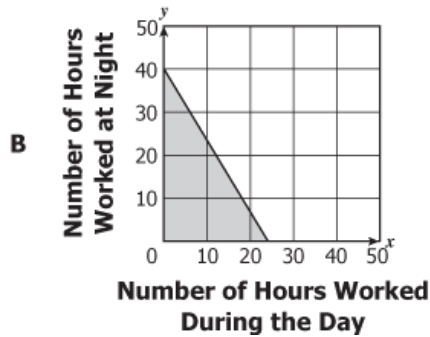
- He earns \$7.50 per hour when he works during the day.
- He earns \$12.50 per hour when he works at night.
- He wants to earn at least \$300 per week.

Which graph best represents this situation?

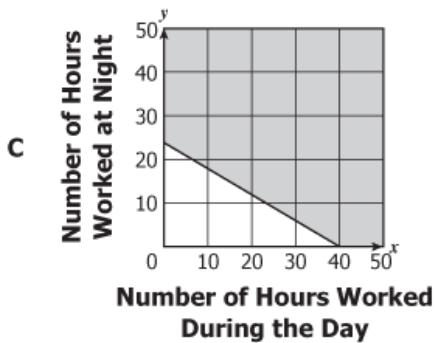
Frank's Weekly Earnings



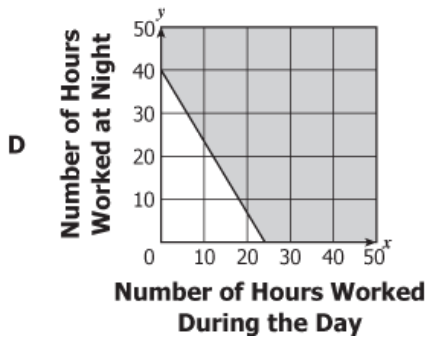
Frank's Weekly Earnings



Frank's Weekly Earnings



Frank's Weekly Earnings



45 Which equation *most* closely represents the line of best fit for the data in this table?

| x | y |
|-----|-----|
| 1 | 4 |
| 2 | 6 |
| 3 | 7 |
| 4 | 9 |
| 5 | 10 |
| 6 | 10 |

A $y = -\frac{5}{4}x + 3$

B $y = -\frac{4}{5}x + 3$

C $y = \frac{4}{5}x + 3$

D $y = \frac{5}{4}x + 3$

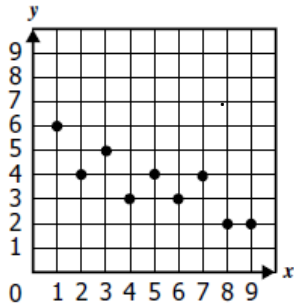
46 An experiment is conducted on a container of gas that is kept at a constant temperature.

- When the pressure on the gas is 30 pounds per cubic inch, the volume is 120 cubic inches.
- When the pressure on the gas is 40 pounds per cubic inch, the volume is 90 cubic inches.
- Let p represent the pressure on the gas.
- Let v represent the volume of the gas.

Which statement is true about this relationship?

- A The volume of the gas varies directly with the pressure because $v = 4p$.
- B The volume of the gas varies directly with the pressure because $vp = 3,600$.
- C The volume of the gas varies inversely with the pressure because $v = 4p$.
- D The volume of the gas varies inversely with the pressure because $vp = 3,600$.

- 47 Which is most likely the equation of the line of best fit for the set of data points?



- F $y = \frac{5}{2}x + 6$
- G $y = \frac{2}{5}x + 6$
- H $y = -\frac{2}{5}x + 6$
- J $y = -\frac{5}{2}x + 6$

- 48 The function $f(x) = 35 + 15x$ represents the amount of money, in dollars, Mr. Lewis earns for working x hours. How much money does Mr. Lewis earn for working 25 hours?

- A \$75
- B \$375
- C \$410
- D \$1,250

- 49 Point A is an element of a direct variation. Give the coordinates of two more points that are elements of the same direct variation.

