

TEST NAME: Expressions & Equations EOG Review
TEST ID: 2417897
GRADE: 08 - Eighth Grade
SUBJECT: Mathematics
TEST CATEGORY: My Classroom

Student: _____

Class: _____

Date: _____

1. Which number is equivalent to $(2)^3 \left(\frac{2}{3}\right)^2 (3)^3$?

- A. 4
- B. 16
- C. 72
- D. 96

2. Yuri's solution to evaluate $4[5(2+3)^2 + (4+2)^2] - (5-7)(8-12)$ is shown below.

Step 1: $4[5(5)^2 + 6^2] - (5-7)(8-12)$

Step 2: $4[5(10) + 12] - (-2)(-4)$

Step 3: $4(50 + 12) - (-2)(-4)$

Step 4: $4(62) - 8$

Step 5: $248 - 8$

Step 6: 240

Which statement about Yuri's solution is correct?

- A. Yuri first made a mistake in Step 1.
- B. Yuri first made a mistake in Step 2.
- C. Yuri first made a mistake in Step 4.
- D. Yuri's solution is correct.

3. Which is equivalent to 6^{-2} ?

- A. -36
- B. -12
- C. $\frac{1}{36}$
- D. $\frac{1}{12}$

4. Which value is a simplified form of $\frac{3^5}{3^{-5}}$?

- A. 3^{25}
- B. 3^{10}
- C. 3
- D. 1

5. Which value is equivalent to $\frac{2^9}{2^3}$?

- A. 2^2
- B. 2^3
- C. 2^9
- D. 2^{18}

6. Which expression is equivalent to $2x^{-2}y^{-4}$?

A. $\frac{2}{(xy)^6}$

B. $\frac{2}{x^2y^4}$

C. $\frac{1}{2x^2y^4}$

D. $\frac{1}{2(xy)^6}$

7. The distance from Earth to the Sun is approximately 9×10^7 miles. The distance from Earth to the moon is approximately 2×10^5 miles. Approximately how many times the distance from the Earth to the Moon is the distance from Earth to the Sun?
- A. 18
B. 45
C. 222
D. 450
8. The diameter of a carbon atom is about 1.0×10^{-10} meters. The diameter of a hydrogen atom is about 5.3×10^{-11} meters. **About** how many times larger is the diameter of the carbon atom than the diameter of the hydrogen atom?
- A. 2
B. 5
C. 20
D. 50
9. What is 0.0000085 written in scientific notation?
- A. 8.5×10^{-5}
B. 8.5×10^{-6}
C. 8.5×10^{-7}
D. 8.5×10^{-8}
10. The average distance in kilometers between the Sun and Earth is 150,000,000. How is this number expressed in scientific notation?
- A. 1.5×10^7
B. 1.5×10^8
C. 15×10^7
D. 15×10^8

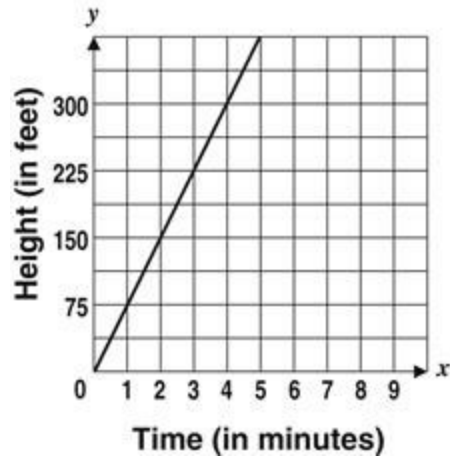
11. The dimensions of the base of an office building are 1.5×10^2 feet by 1.35×10^3 feet. What is the perimeter of the base of this building, in feet?
- A. 3.0×10^3
B. 2.85×10^5
C. 2.025×10^5
D. 1.5×10^3
12. The following table gives the number of pounds of the principal materials purchased by the federal government for the construction of Hoover Dam.

Materials	Pounds
Reinforcement Steel	4.5×10^7
Gates and Valves	2.2×10^7
Plate Steel and Outlet Pipes	8.8×10^7
Pipe and Fittings	6.7×10^6
Structural Steel	1.8×10^7
Miscellaneous Metalwork	5.3×10^6

Approximately how many pounds of materials were purchased to build the dam?

- A. 1.9×10^7
B. 2.9×10^7
C. 1.9×10^8
D. 2.9×10^8

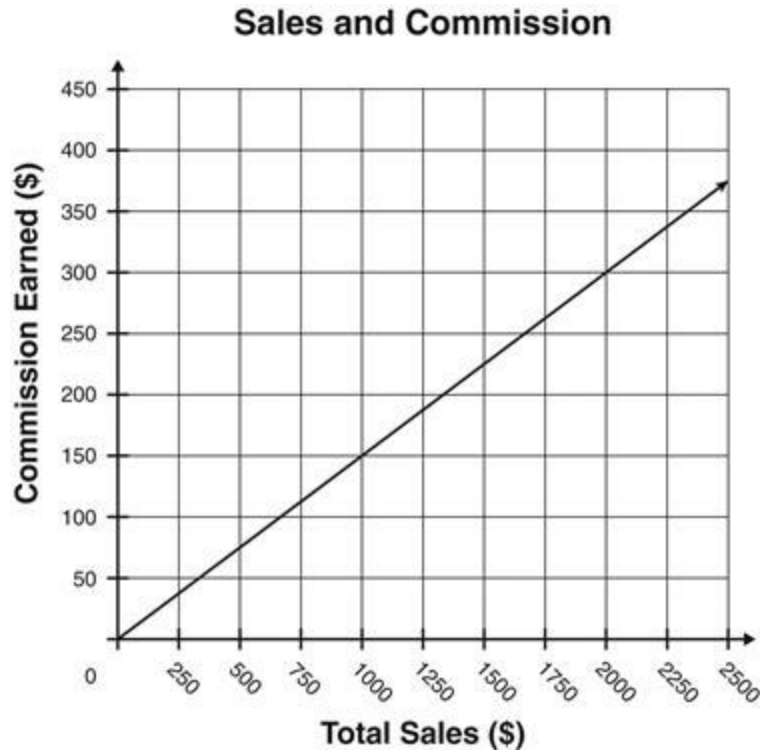
13. The graph below shows the relationship between time and the height of a hot air balloon.



Which of the following **BEST** describes the slope of the graph?

- A. The distance the balloon is from the ground
- B. The rate of speed the balloon rises in feet per minute
- C. The number of minutes the balloon has been in the air
- D. The number of minutes the balloon takes to reach its maximum height

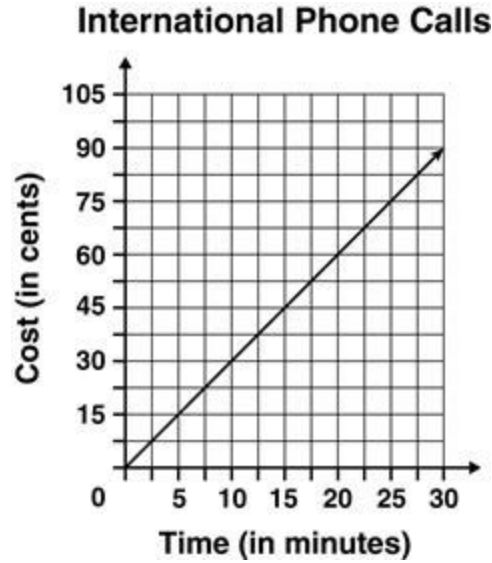
14. Maria works at a company where she receives commission on all the sales she makes. The commission that the company pays, based on her sales, is graphed.



Which BEST describes Maria's commission rate?

- A. 1 cent per dollar of sales
- B. 5 cents per dollar of sales
- C. 10 cents per dollar of sales
- D. 15 cents per dollar of sales

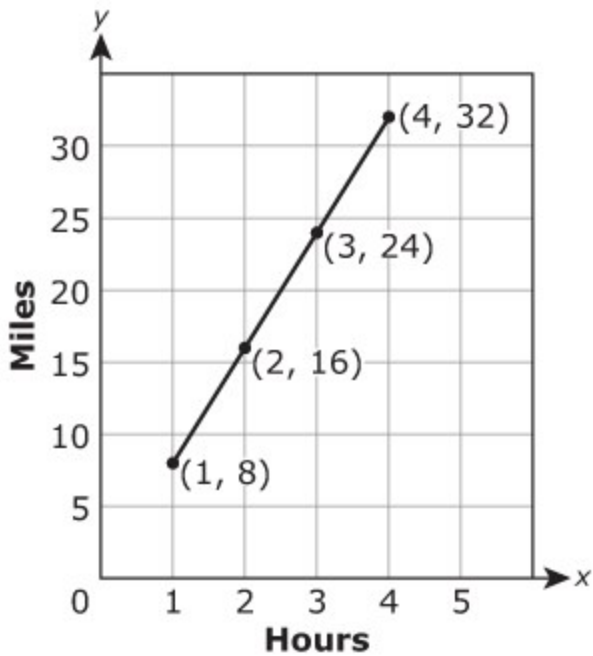
15. The graph shows the price charged by a company to make international phone calls from the United States.



Based on the graph, what does the slope of the line represent?

- A. Each call costs 3 cents per minute.
- B. Each call costs 5 cents per minute.
- C. Each call costs 15 cents per minute.
- D. Each call costs 20 cents per minute.

16. Mario's speed while riding his bike is shown in the graph.

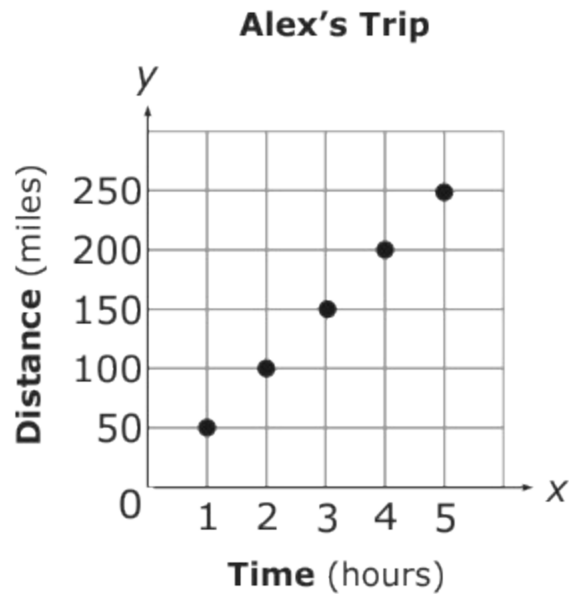


Amanda's speed while riding her bike is $\frac{18 \text{ miles}}{2 \text{ hours}}$.

Which statement is true?

- A. Mario's speed and Amanda's speed are equivalent.
- B. Mario's speed is faster than Amanda's speed.
- C. Amanda's speed is 1 mile per hour faster than Mario's speed.
- D. Amanda's speed is 10 miles per hour faster than Mario's speed.

17. Alex and Susan are taking a trip. They are both driving at a constant speed. The graph shows the distance Alex has traveled.



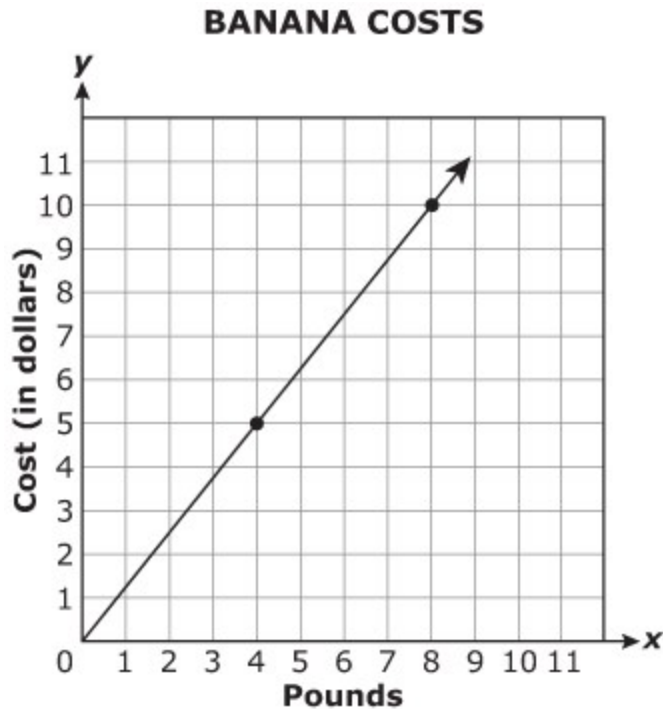
The table shows the distance Susan has traveled.

Time (hours)	2	3	4
Distance (miles)	90	135	180

After 6 hours, which statement is true?

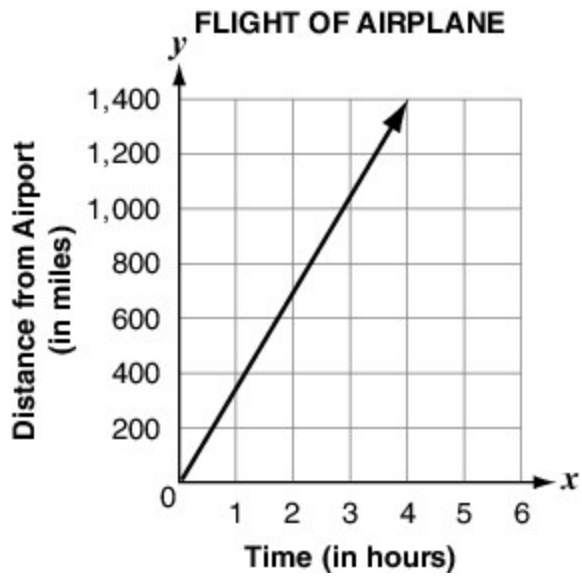
- A. Alex has driven 5 miles farther than Susan.
- B. Alex has driven 30 miles farther than Susan.
- C. Susan has driven 5 miles farther than Alex.
- D. Susan has driven 30 miles farther than Alex.

18. The graph below shows that the cost of bananas depends on the number of pounds purchased.

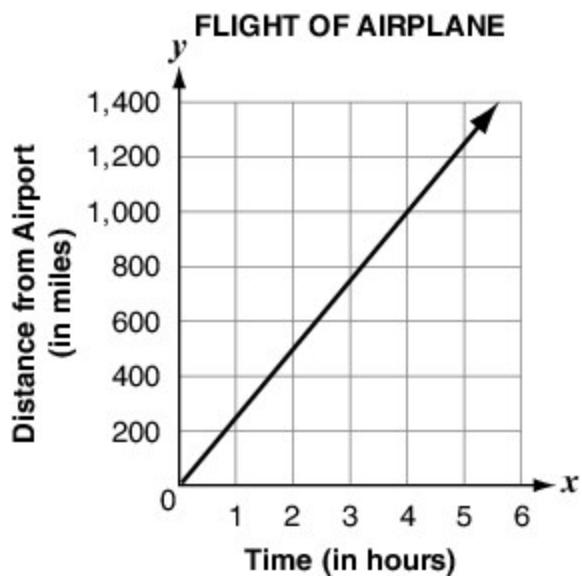


- What is the unit rate of the bananas?
- A. \$5.00 per pound
 - B. \$1.25 per pound
 - C. \$1.00 per pound
 - D. \$0.80 per pound
19. A plane takes off from an airport and travels at a steady speed of 350 miles per hour. Which of these graphs **best** represents the distance the plane is from the airport, y , after traveling for x hours?

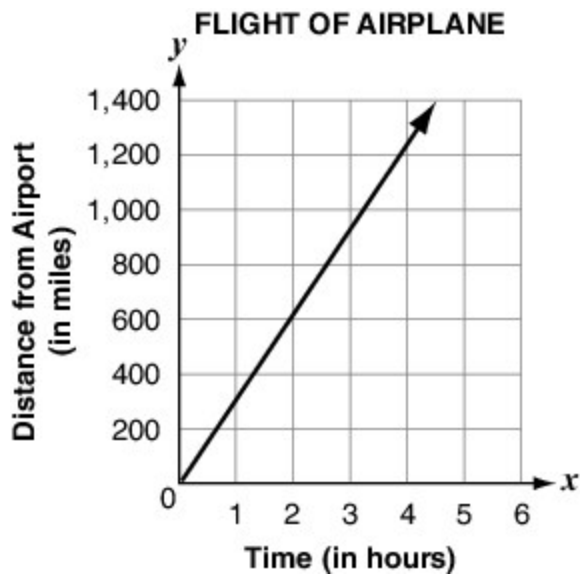
A.



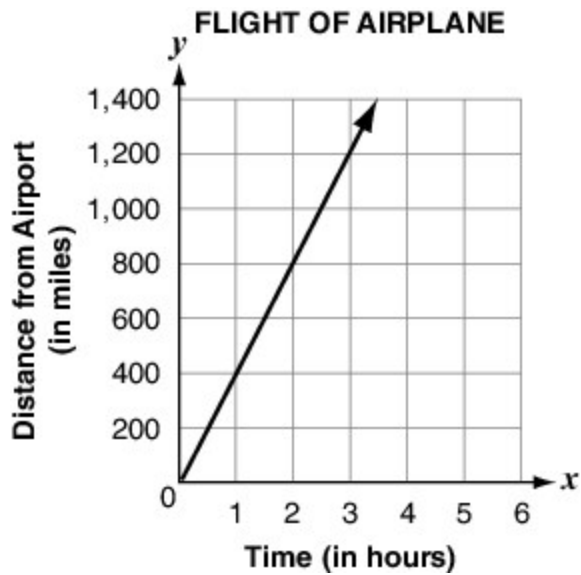
B.



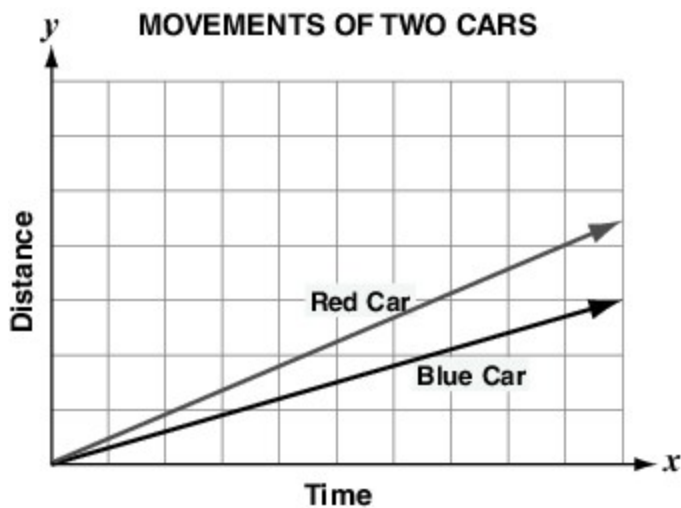
C.



D.



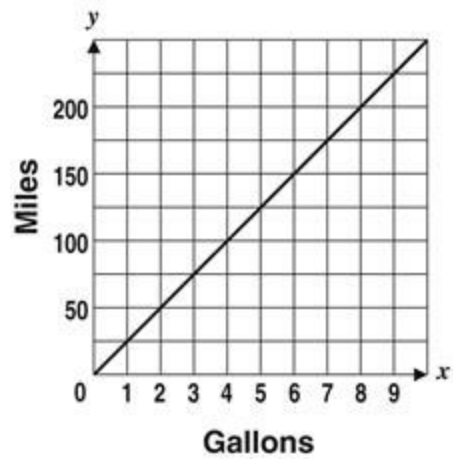
20. The graph below shows the distance of two cars from the same starting point. The speed of the blue car is 30 miles per hour.



Based on the graph, what is the **best** estimate for the speed of the red car?

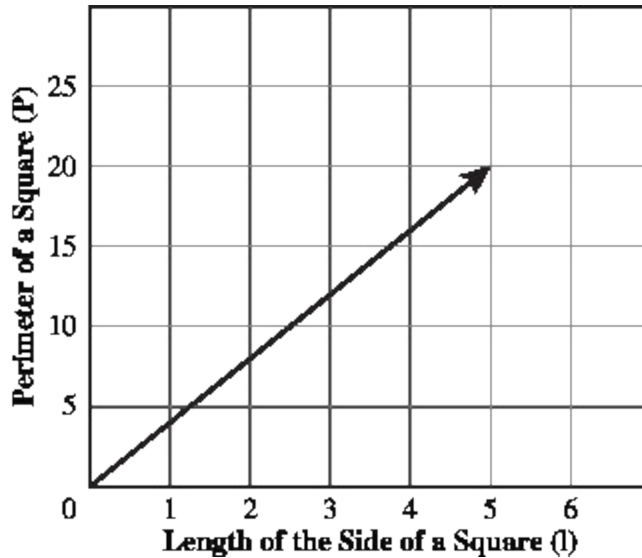
- A. 20 mph
- B. 35 mph
- C. 45 mph
- D. 60 mph

21. What does the slope of this graph represent?



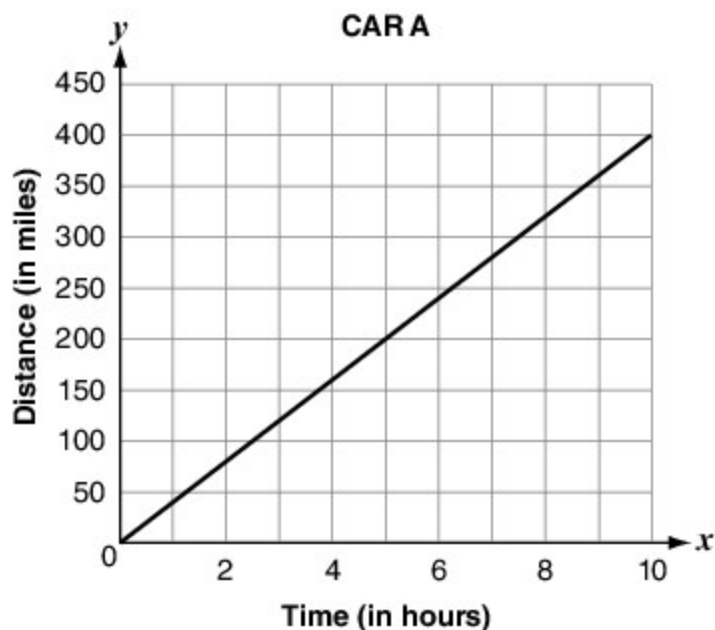
- A. number of miles traveled
- B. gallons of gas used
- C. miles per gallon
- D. speed of vehicle

22. The perimeter of a square is directly proportional to the length of the side of a square shown in the graph below. Which linear equation represents this graph?



- A. $P = 2l$
- B. $P = 4l$
- C. $P = l^2$
- D. $P^2 = l$
23. Two stores sell gasoline.
- Store W uses the equation $y = 3.69x$ to calculate the cost of x gallons of gasoline.
 - At Store Z, the cost of 8 gallons of gasoline is \$30.08, and the cost of 15 gallons of gasoline is \$56.40.
- If a customer needs 12 gallons of gas, which store will cost less and by how much?
- A. Store W will cost \$0.07 less than Store Z.
- B. Store Z will cost \$0.84 less than Store W.
- C. Store W will cost \$0.84 less than Store Z.

24. The distances traveled by car A and car B after x hours are represented by the graph and table below.



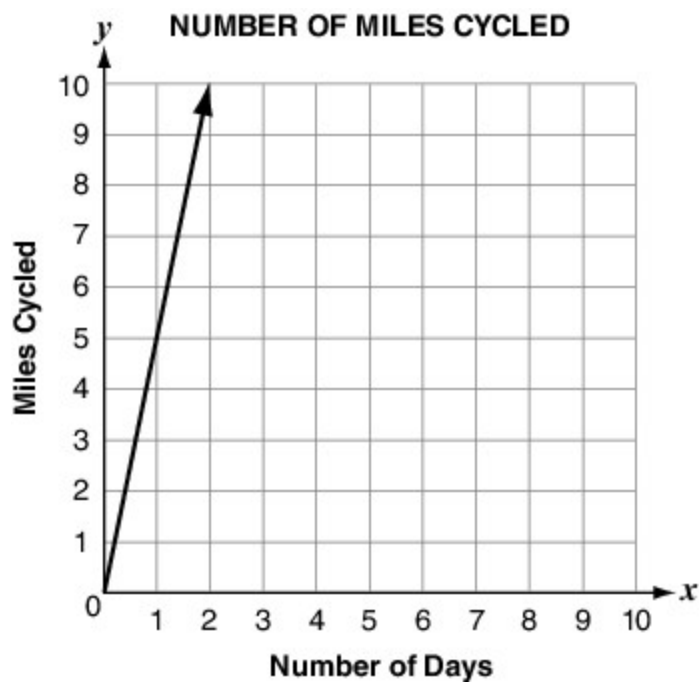
CAR B

x (Time)	y (Distance)
3	240
6	480
8	640
12	960

Which statement is **true**?

- A. The speed of car A is twice the speed of car B.
- B. The speed of car B is twice the speed of car A.
- C. The speed of car A is 2.4 times the speed of car B.
- D. The speed of car B is 2.4 times the speed of car A.

25. Keith and James cycle a constant distance every day during a training program. The total distance that James cycles during the program is shown in the graph below.



If James cycles 1 mile more than Keith does each day, which equation represents the total distance, d , in miles that Keith cycles in t days?

- A. $d = 1t$
- B. $d = 4t$
- C. $d = 5t$
- D. $d = 6t$

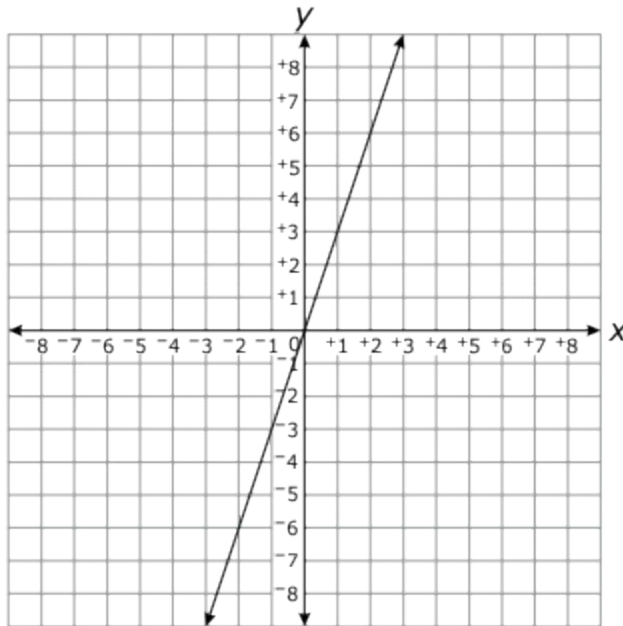
26. Two produce stores sell watermelons by the pound.

- At Jack's store, he uses the equation $y = 0.39x$ to calculate the cost of a watermelon that weighs x pounds.
- At Molly's store, she charges \$4.20 for a 12-pound watermelon and \$5.25 for a 15-pound watermelon.

If a watermelon weighs 20 pounds, at which store will the watermelon cost less, and by how much?

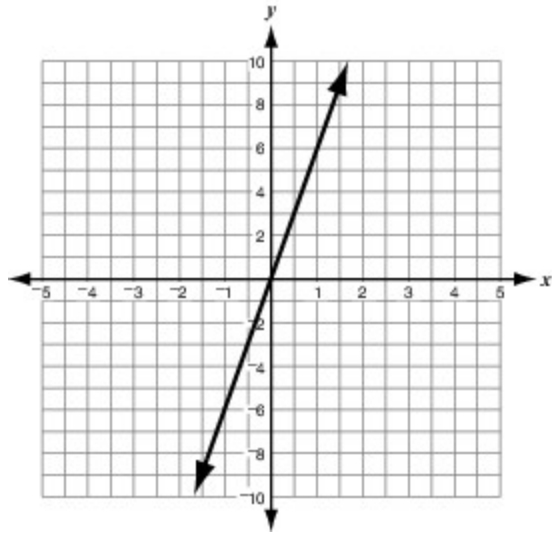
- A. Jack's store is less expensive by \$0.80.
- B. Molly's store is less expensive by \$0.80.
- C. Molly's store is less expensive by \$0.04.

27. Which is an equation of the line graphed below?



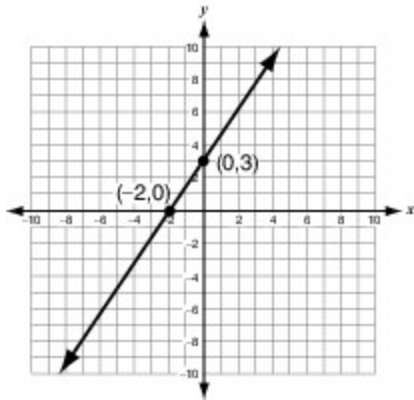
- A. $y = 3x$
- B. $y = x + 3$
- C. $y = x - 3$
- D. $y = \frac{1}{3}x$

28. What is the equation of the line shown in the coordinate plane below?



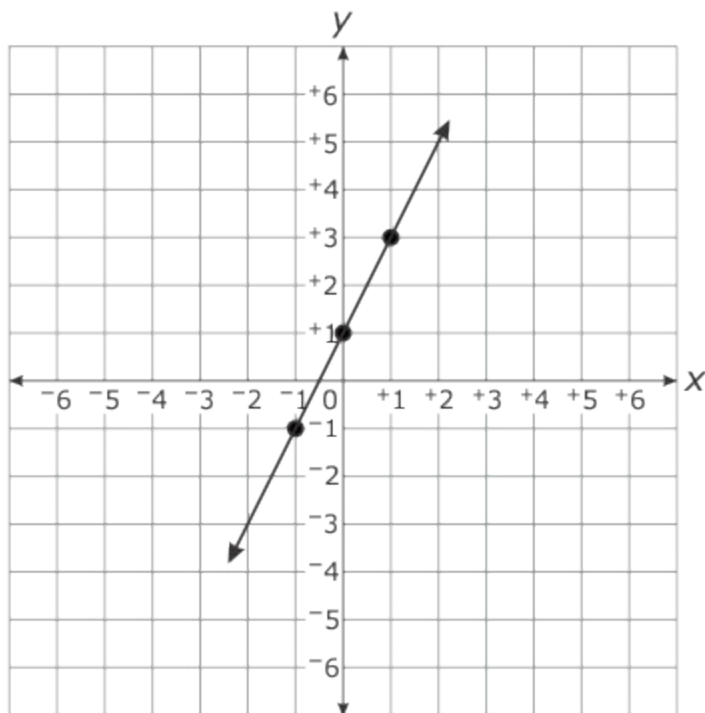
- A. $y = 6x$
- B. $y = -6x$
- C. $y = \frac{1}{6}x$
- D. $y = -\frac{1}{6}x$

29. What is the equation of the line shown on the coordinate plane below?



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

30. Which is an equation of the line graphed below?



A. $y = -2x + 1$

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

C. $y = 2x + 1$

31. What is the value of x in the equation $7 - \frac{3}{4}x = \frac{1}{2}x - 3$?

A. 40

B. $\frac{25}{2}$

C. 8

D. $\frac{16}{5}$

32. What is the value of x in the equation below?

$$2x + 4 = x - 3$$

- A. 3
- B. 1
- C. -7

33. Which value of x satisfies the equation $2(5x + 1) - 2x = 2 - 2(3x + 1)$?

- A. $-\frac{1}{4}$
- B. $-\frac{1}{7}$
- C. $\frac{1}{9}$
- D. $\frac{1}{7}$

34. Which operation should be performed on both sides of this equation to solve for x ?

$$x + 4 = 6$$

- A. add 4
- B. add the opposite of 4
- C. multiply by the reciprocal of 4
- D. multiply by the opposite reciprocal of 4

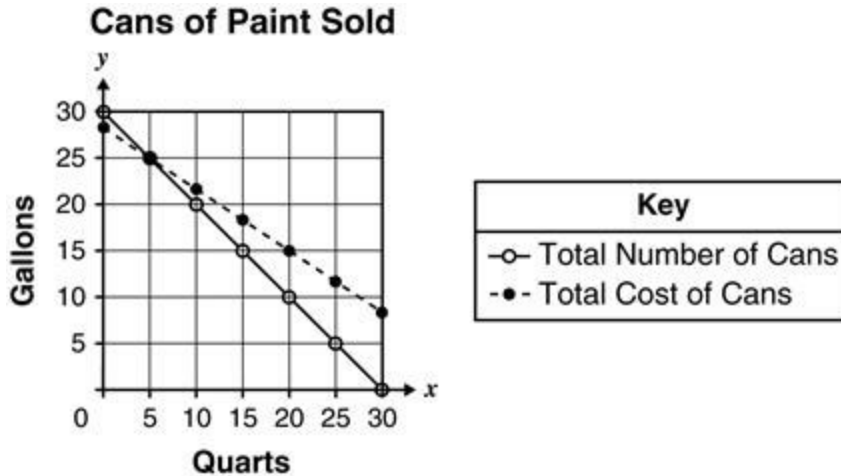
35. What is the solution to the equation $-2(6x + 8) + 7x = 3x - 2(12 + 4x)$?

- A. infinitely many solutions
- B. no solution
- C. $x = 2$
- D. $x = 3$

36. Terry sold 30 cans of paint at a total cost of \$425. A can of paint holding one quart cost \$10 each. A can of paint holding one gallon cost \$15 each. The equations and graph below can be used to determine the number of cans of paint Terry sold, where x represents the number of quarts of paint, and y represents the number of gallons of paint.

Number of cans: $x + y = 30$

Total cost of cans: $10x + 15y = 425$



How many quart and gallon cans of paint did Terry sell?

- A. 5 quarts, 25 gallons
 - B. 15 quarts, 15 gallons
 - C. 25 quarts, 5 gallons
 - D. 42 quarts, 28 gallons
37. A system of equations is shown below.

$$y = 3x - 2$$

$$y = x$$

What is the solution to the system of equations?

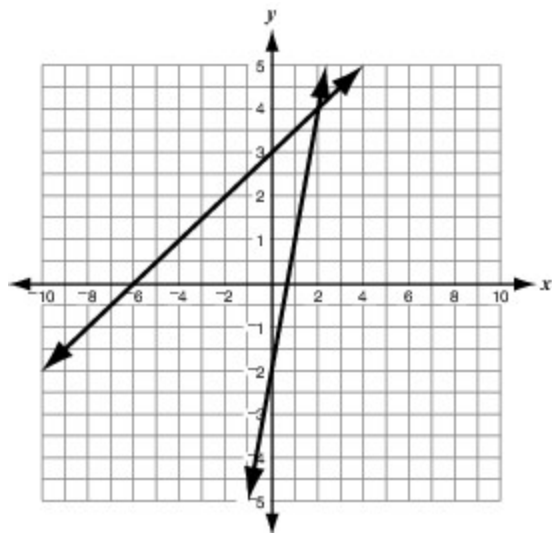
- A. (0, 0)
- B. (1, 1)
- C. (2, 2)

38. What is the x -value of the solution to the system of equations shown below?

$$\begin{cases} 4x + 10y = -2 \\ -3x + y = 10 \end{cases}$$

- A. -3
- B. -1
- C. 1
- D. 3

39. Which ordered pair is the solution to the system of linear equations graphed below?



- A. $(-6, 0)$
- B. $(0, -2)$
- C. $(0, 3)$
- D. $(2, 4)$

40. Tickets to a school basketball game cost \$4 for students and \$7 for adults. At the end of the night, 168 tickets are sold for a total of \$861. How many student tickets are sold?
- A. 29
 - B. 42
 - C. 63
 - D. 105