

TEST NAME: **Math 1 Algebra**
TEST ID: **2093176**
GRADE: **09 - Ninth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **My Classroom**

Student: _____

Class: _____

Date: _____

1. Ms. Rodriguez's class takes 3 hours to pick up all the litter in a park. Mr. Lee's class takes 5 hours to do the same job. How many hours would the two classes take to clean the park if working together?

- A. $1\frac{7}{8}$
- B. 2
- C. 4
- D. $7\frac{1}{2}$

2. Which point lies on the graph of the equation $3x+5y=15$?

- A. (10, -3)
- B. (3, 5)
- C. (-3, 10)
- D. (5, -6)

3. Rectangle $ABCD$ is drawn on a coordinate grid with vertices at $A(-4, -2)$, $B(-4, 8)$, $C(8, 8)$ and $D(8, -2)$. It is dilated with the origin as the center of dilation to obtain $A'B'C'D'$.

The length of $A'B'$ is 5 units. What are the coordinates of the vertices of rectangle $A'B'C'D'$?

- A. $A'(-6, -4)$, $B'(-6, 6)$, $C'(6, 6)$, $D'(6, -4)$
- B. $A'(-2, -1)$, $B'(-2, 4)$, $C'(4, 4)$, $D'(4, -1)$
- C. $A'(-2, 0)$, $B'(-2, 10)$, $C'(10, 10)$, $D'(10, 0)$
- D. $A'(-8, -4)$, $B'(-8, 16)$, $C'(16, 16)$, $D'(16, -4)$

4. What is the sum of $(4r + 3) + (3r + 2)$?

- A. $12r$
- B. $7r + 5$
- C. $7r^2 + 5$
- D. $12r^2 + 17r + 6$

5. **How much water should be added to an 80% alcohol solution to make 10 liters of a 60% alcohol solution?**
- A. 2 liters
 - B. 2.5 liters
 - C. 5.2 liters
 - D. 6 liters
6. Scientists measure the total population of sea turtles, y , each year in a refuge. They discovered an initial population of 65 sea turtles and an increase of 5 turtles each year. If x is the number of years after the initial observation, which equation **best** models the sea turtle population?
- A. $y = 5x + 65$
 - B. $y = 5(65)^x$
 - C. $y = 65x + 5$
 - D. $y = 65(5)^x$

7. Which table includes points on the graph of the function $f(x) = 3x - 20$?

A.

x	$f(x)$
-2	-24
5	30
10	-40

B.

x	$f(x)$
-2	-14
5	-35
10	-80

C.

x	$f(x)$
-2	14
5	35
10	40

D.

x	$f(x)$
-2	-26
5	-5
10	10

8. For the start of school, Jericho bought p pairs of pants, s shirts, and k pairs of socks. All of his items were on sale with a different percent marked off. The expression below represents the amount he paid, including tax.

$$(0.6 \times 15p + 0.8 \times 12s + 0.4 \times 3k) + 0.07(0.6 \times 15p + 0.8 \times 12s + 0.4 \times 3k)$$

Which BEST describes the meaning of the factor 0.6?

- A. the sales tax rate
- B. the cost of each pair of pants that Jericho paid
- C. the percent marked off the cost of the pants
- D. the percent of the cost of the pants that Jericho paid

9. Which two points lie on the graph of $2x + 3y = 12$?

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

10. Write a real-life word problem that can be solved using the system of inequalities below. Be sure to define the variables.

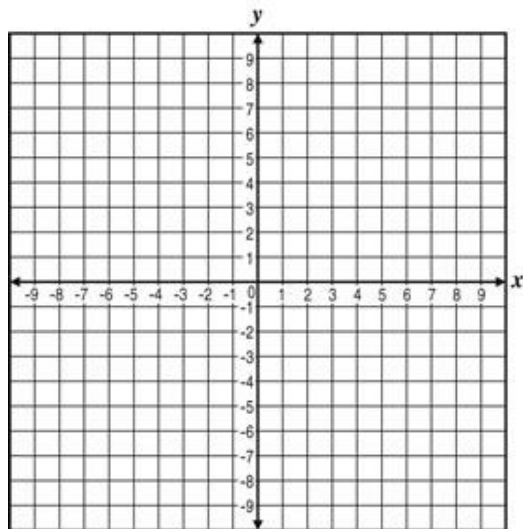
$$x + 6y < 750$$

$$x + 8y > 750$$

11. The graph of a parabolic function in the standard xy -coordinate plane includes the vertex $(3, -7)$ and the point $(5, 1)$. What is the sum of the x -intercepts and y -intercept of the function, to the nearest tenth?

12. Which value of y makes the system of equations below true?

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



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

13. The graph of a quadratic function has a vertex located at $(7, -3)$ and passes through $(5, 5)$. Which equation BEST represents this function?
- A. $f(x) = (x - 7)^2 - 3$
 - B. $f(x) = 2(x - 7)^2 - 3$
 - C. $f(x) = -(x - 5)^2 + 5$
 - D. $f(x) = -2(x - 5)^2 + 5$
14. A crane operator takes 45 hours to unload a ship. Another crane operator can do the same job in 30 hours. How long, in hours, will it take them working together to unload a ship?
- A. 37.5
 - B. 18
 - C. 15
 - D. 7.5
15. A pitcher contains 10 ounces of fruit punch that is 55% grape juice. How many ounces of water must be added to make a fruit punch that is 25% grape juice?
- A. 3
 - B. 4
 - C. 10
 - D. 12
16. The expression $33n + 13f + 7p + 10d$ represents the cost, in dollars, to purchase n cases of paper, f packages of hanging folders, p packs of pencils, and d flash drives. Which statement is NOT true?
- A. The term $7p$ represents the cost for 7 packs of pencils.
 - B. The coefficient 10 represents the cost of each flash drive.
 - C. The coefficient n represents the cost of one case of paper.
 - D. The term $13f$ represents the cost of f packages of hanging folders at \$13 per package.

17. Two functions are shown below.

$$f(x) = 2^x + 2$$
$$g(x) = -2x + 6$$

For what value of x does $f(x) = g(x)$?

- A. 1
- B. 2
- C. 4
- D. 6

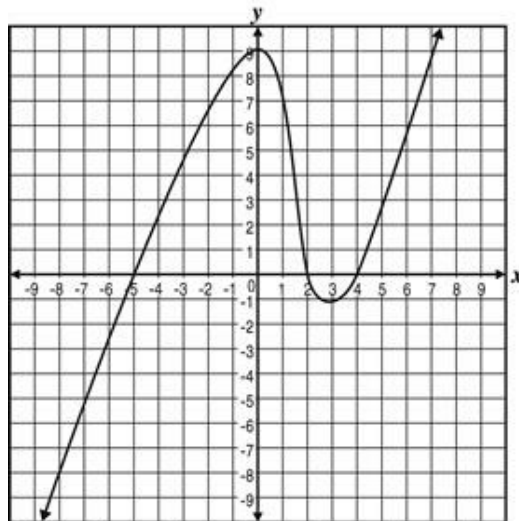
18. The volume (V) of a cylinder can be determined by using the formula $V = \pi r^2 h$, where r = the radius of the base, and h = the height of the cylinder. What is the result of solving this equation for r ?

- A. $r = \sqrt{\frac{V}{\pi h}}$
- B. $r = \sqrt{V - \pi h}$
- C. $r = \frac{V}{2\pi h}$
- D. $r = \frac{V - \pi h}{2}$

19. A copy service has a contract to produce a large copy job. Copier A can do the job in 4 hours, and copier B can do the job in 3 hours. How many hours would it take to do the entire job if both copiers are used?

- A. $\frac{7}{12}$
- B. $1\frac{5}{7}$
- C. $3\frac{3}{7}$
- D. $3\frac{1}{2}$

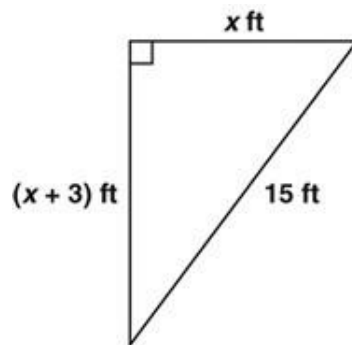
20. The graph of a function is shown below.



What is the approximate solution if $x = -5$?

- A. -5
- B. -1
- C. 0
- D. 1

21. A right triangle is shown below.



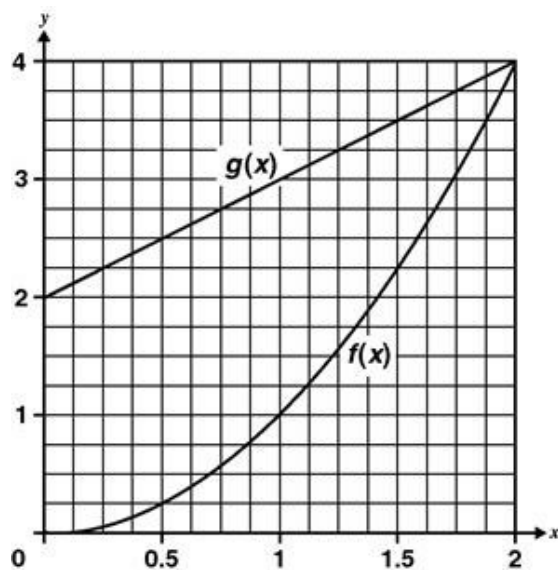
The relationship between the 3 sides of the triangle is represented by the equation

$x^2 + (x + 3)^2 = 225$. What is the length, in feet, of the shortest side?

- A. 2
- B. 6
- C. 9
- D. 12

22. The sum of 3 times a number and 5 is 2 times the number plus 15. What is half the number?
- A. 2
 - B. 4
 - C. 5
 - D. 10
23. Which of the following is equivalent to $4x^2 - 12x + 9$?
- A. $(2x - 3)^2$
 - B. $(2x + 3)^2$
 - C. $(-2x - 3)^2$
 - D. $(2x + 3)(2x - 3)$
24. Which expression is equivalent to $5x^2 + 7x - 6$?
- A. $(5x + 6)(x - 1)$
 - B. $(5x - 6)(x + 1)$
 - C. $(5x + 3)(x - 2)$
 - D. $(5x - 3)(x + 2)$
25. What value of x satisfies the equation $3x - 2 = 2x + 4$?
- A. $\frac{2}{5}$
 - B. $\frac{6}{5}$
 - C. 2
 - D. 6

26. The graphs of $f(x) = x^2$ and $g(x) = x + 2$ are shown below.



Which statement explains the reason $(2, 4)$ is a solution?

- A. At $(2, 4)$ the functions both have x - and y -values.
 - B. The domain and range of $f(x)$ and $g(x)$ are the same.
 - C. $x^2 = x + 2$ when $x = 2$
 - D. $f(x)$ and $g(x)$ intersect in the first quadrant.
27. What is the x -coordinate of the point of intersection for the two lines below?

$$\begin{aligned} -x + 2y &= -7 \\ 3x - 2y &= 5 \end{aligned}$$

- A. 4
- B. 1
- C. -1
- D. -4

28. A system of inequalities is shown below.

$$\begin{aligned}6x - 3y &\geq 18 \\ 2x + 6y &> 12\end{aligned}$$

Which point is a solution to the system?

- A. (0, 0)
- B. (4, 2)
- C. (6, 0)
- D. (3, 8)

29. Nicki used the equation $v = at + v_0$, where v is velocity at time t , a is acceleration, and v_0 is velocity at time 0. Given the equation, which could be used to find the acceleration of an object?

- A. $a = \frac{v}{t} - v_0$
- B. $a = \frac{v}{t} + v_0$
- C. $a = \frac{v - v_0}{t}$
- D. $a = \frac{v + v_0}{t}$

30. Which point is a solution to $3x + 2y = 5$?

- A. (1, -1)
- B. (3, -2)
- C. (-3, 2)
- D. (-1, -1)

31. What values of x satisfy the inequality $5x + 2a > 2x - a$?

- A. $x < -a$
- B. $x > -a$
- C. $x < a$
- D. $x > a$

32. José leaves Point A traveling due east at a constant speed of 35 miles per hour. After José has driven 22 miles, his sister Lupe leaves Point A traveling due east. At what constant rate of speed, in miles per hour, must Lupe drive at in order to catch up to José in 2 hours?
- A. 35
 - B. 46
 - C. 59
 - D. 70

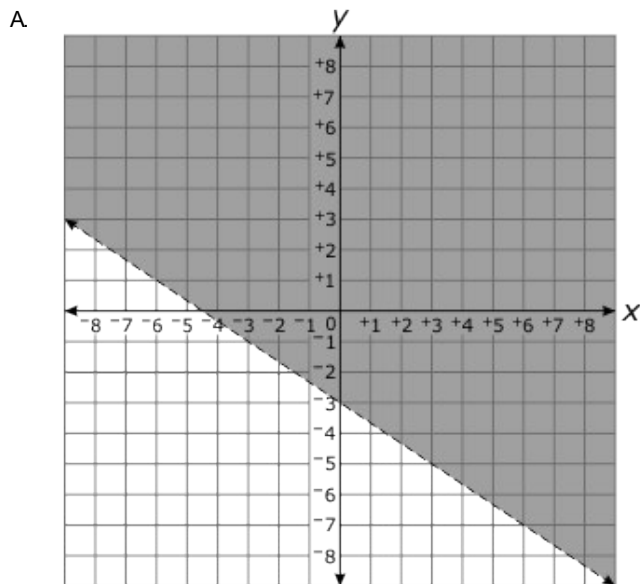
33. What is the simplest form of $(3p + 2)(5p - 7)$?

- A. $15p^2 - 31p - 14$
- B. $15p^2 - 11p - 14$
- C. $15p^2 + 11p - 14$
- D. $15p^2 + 31p - 14$

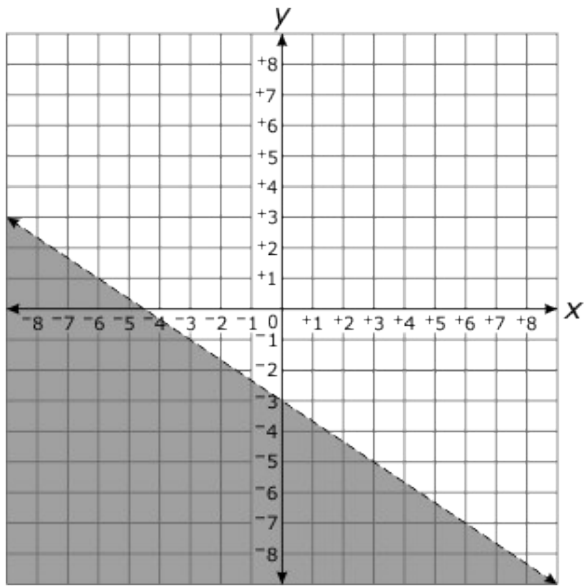
34. Twice a number x minus 4 is at least 8 and no more than 16. What are the values of x that satisfy these conditions?

- A. $x = 2$
- B. $x = 6$
- C. $6 \leq x \leq 8$
- D. $6 \leq x \leq 10$

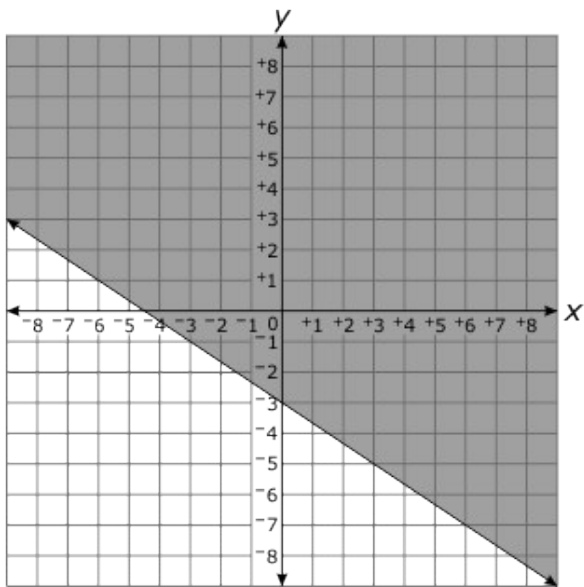
35. Which is the graph of $-2x - 3y \geq 9$?



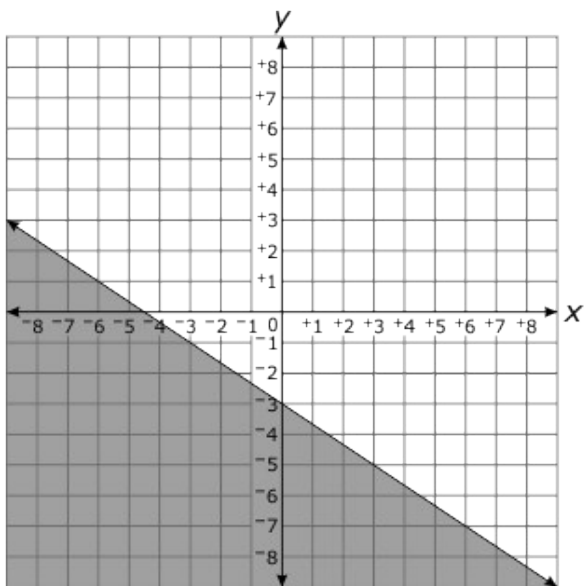
B.



C.



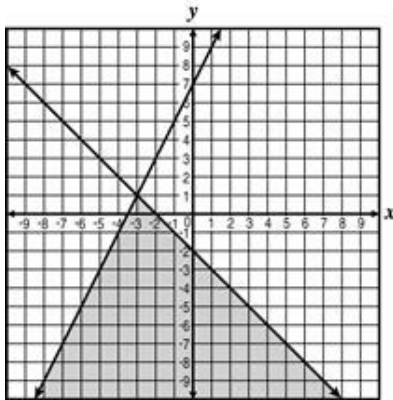
D.



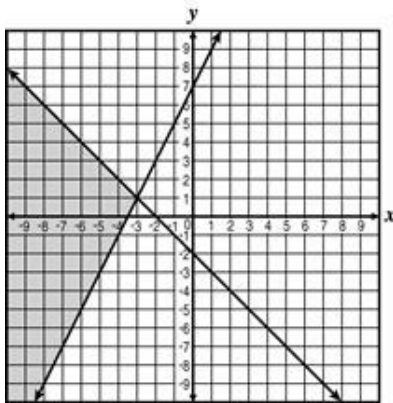
36. Which graph BEST represents the solution to the system of inequalities below?

$$\begin{cases} y \leq 2x + 7 \\ y \leq -x - 2 \end{cases}$$

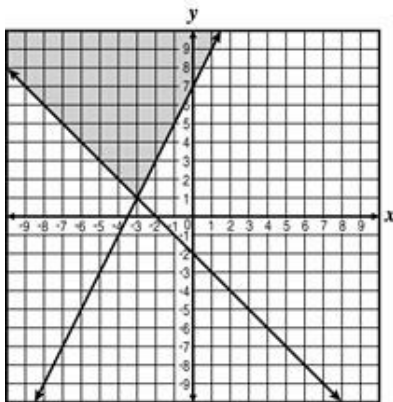
A.



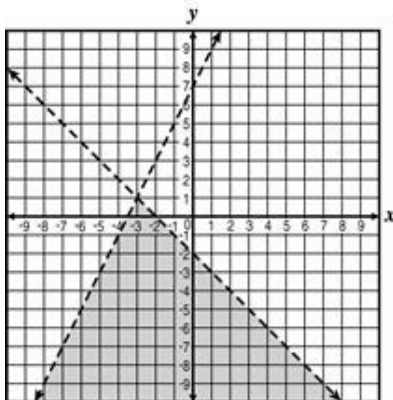
B.



C.



D.



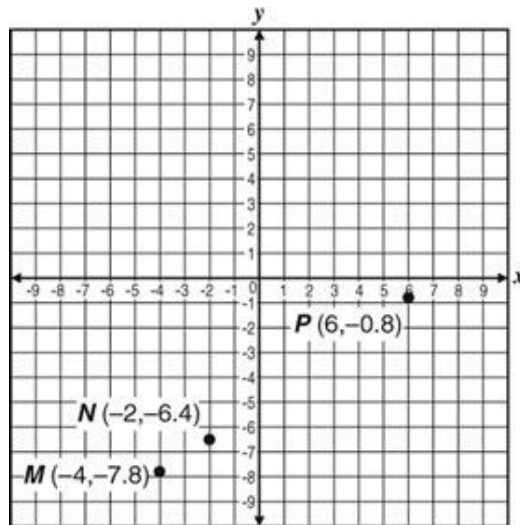
37. Martha wants to buy a new bike that costs \$79, including tax. She currently has \$15 saved. She began a dog walking business to earn the remaining money needed to buy the bike. She charges \$5 for each dog she walks. What is the fewest number of dogs that Martha needs to walk to have enough money to buy the bike?

- A. 12
- B. 13
- C. 18
- D. 19

38. What is the simplest form of $(5x - 1)(5x + 4)$?

- A. $25x^2 - 25x - 4$
- B. $25x^2 + 25x - 4$
- C. $25x^2 - 15x - 4$
- D. $25x^2 + 15x - 4$

39. Points M , N , and P lie on the same line.



What are the coordinates of another point that lies on this line?

- A. $(-7, -9.8)$
- B. $(3, -2.9)$
- C. $(2.4, -3.6)$
- D. $(-5.6, -8.5)$

40. Which point is a solution to the equation $y = -3^x$?

- A. $(-2, 6)$
- B. $(0, 1)$
- C. $(2, -9)$
- D. $(4, 81)$