

Name: _____

Date: _____

1.

$$\frac{16x + 36}{4} - \frac{s}{19} = r(2x - 7)$$

In the given equation, s and r are constants, and $s > 0$. If the equation has infinitely many solutions for x , what is the value of s ?

Answer:

2.

$$3(5x - 2) + 4(3y + 1) = 28$$

$$-3(5x - 2) + 4(3y + 1) = 12$$

The solution to the given system of equations is (x, y) . What is the value of $5x + 3y$?

- A. 4
- B. $\frac{17}{3}$
- C. 6
- D. $\frac{26}{3}$

3.

x	y
k	19
$k + 5$	-11

The table gives the coordinates of two points on a line in the xy -plane. The y -intercept of the line is $(k - 3, b)$, where k and b are constants. What is the value of b ?

Answer:

4.

$$5x = 45y - 60$$

One of the two equations in a system of linear equations is given. The system has no solution. Which equation could be the second equation in this system?

A. $x = 9y - 12$

B. $\frac{1}{3}x = 3y - 4$

C. $\frac{1}{9}x = y + 3$

D. $x = 5y - 12$

5. In the xy -plane, line ℓ_1 passes through $(8, 0)$ and $(0, 4)$. Line ℓ_2 passes through $(8, 0)$ and $(0, -6)$. Which of the following systems of equations represents the lines ℓ_1 and ℓ_2 ?

A.
$$\begin{aligned} 4x + 8y &= 32 \\ -6x + 8y &= -48 \end{aligned}$$

B.
$$\begin{aligned} 2x + 4y &= 16 \\ -3x + 4y &= -24 \end{aligned}$$

C.
$$\begin{aligned} 4x + 8y &= 32 \\ -9x + 12y &= -72 \end{aligned}$$

D.
$$\begin{aligned} x + 2y &= 8 \\ 3x - 4y &= 24 \end{aligned}$$

6.

$$\frac{18x - 42}{6} + \frac{m}{11} = p(x + 5)$$

In the given equation, m and p are constants. If the equation has infinitely many solutions for x , what is the value of m ?

Answer:

7.

$$5(2u + 3) - 2(4v - 1) = 41$$

$$5(2u + 3) + 2(4v - 1) = 49$$

The solution to the given system of equations is (u, v) . What is the value of $2u - 4v$?

- A. 1
- B. 3
- C. 5
- D. 8

8.

x	y
$w - 2$	14
$w + 4$	-10

The table gives the coordinates of two points on a line in the xy -plane. The x -intercept of the line is $(a, w - 5)$, where a and w are constants. What is the value of a ?

Answer:

9.

$$6x - 18y = 42$$

The system of equations consisting of the given equation and $y = cx + d$, where c and d are constants, has infinitely many solutions. What is the value of $c + d$?

- A. $-\frac{7}{3}$
- B. -2
- C. $\frac{1}{3}$
- D. $\frac{8}{3}$

10. In the xy -plane, line j has an x -intercept of $(-4, 0)$ and a y -intercept of $(0, 6)$. Line k is perpendicular to line j and passes through $(3, 2)$. If the equation of line k is written as $ax + by = 12$, where a and b are integers with no common factor greater than 1, what is the value of $a + b$?

Answer:

11.

$$\frac{20x + c}{5} - \frac{d}{8} = 4(x - 3)$$

In the given equation, c and d are positive integers. If the equation has infinitely many solutions, which of the following is a possible value of c ?

- A. 5
- B. 10
- C. 15
- D. 20

12.

$$\begin{aligned} 4(3x - y) + 3(x + 2y) &= 58 \\ -4(3x - y) + 3(x + 2y) &= -2 \end{aligned}$$

The solution to the given system of equations is (x, y) . What is the value of $4x + y$?

- A. 7
- B. 11
- C. $\frac{101}{6}$
- D. 19

13.

x	y
m	32
$m + 8$	-8

The table gives coordinates of two points on line ℓ . A second line, n , is parallel to line ℓ and has a y -intercept at $(m - 6, 14)$. What is the x -intercept of line n ?

Answer:

14.

$$ax + 12y = 18$$

$$4x + by = 6$$

In the system of equations above, a and b are constants. If the system has no solution, which of the following must be true?

- A. $ab = 48$ and $a \neq 12$
- B. $ab = 48$ and $a = 12$
- C. $ab = 72$ and $a \neq 12$
- D. $ab = 72$ and $a = 12$

15.

$$2(a - 3b) + 5(2a + b) = 73$$

$$4(a - 3b) - 5(2a + b) = -31$$

What is the value of $a - 3b$?

Answer:

16. In the xy -plane, line ℓ_1 has the equation $3x - 5y = 15$. Line ℓ_2 is the result of reflecting line ℓ_1 across the y -axis and then shifting it down by 4 units. If the equation of ℓ_2 is written in the form $Ax + By = C$ where $A = 3$, what is the value of C ?

- A. -35
- B. -5
- C. 5
- D. 35

17.

$$\frac{ax + 24}{3} - \frac{b}{7} = 5(x - 4)$$

In the equation above, a and b are constants. If the equation has infinitely many solutions, what is the value of $a + b$?

Answer:

18.

$$\begin{aligned} 7(x + y) - 3(x - y) &= 47 \\ -7(x + y) - 3(x - y) &= -23 \end{aligned}$$

What is the value of $x^2 - y^2$?

- A. 5
- B. 8
- C. 12
- D. 15

19.

x	y
$t + 1$	25
$t + 4$	13

The table gives coordinates of two points on a line in the xy -plane. The point $(t - 2, d)$ lies on the same line. What is the value of d ?

Answer:

20.

$$\begin{aligned}\frac{2}{3}x - \frac{5}{6}y &= 4 \\ kx + 5y &= c\end{aligned}$$

In the system of equations above, k and c are constants. If the system has infinitely many solutions, what is the value of $k - c$?

- A. -28
- B. -20
- C. 20
- D. 28