

Name: _____

Solving Systems of Linear Equations

Substitution Method:

- substitute known value into the other equation
- solve for x and y
- x and y values represent the solution or point of intersection for the two lines

example: $-3x - 4y = -2$

$$y = \boxed{2x - 5}$$

$$x = \underline{\quad 2 \quad}$$

$$y = \underline{\quad -1 \quad}$$

$$\text{solution: } \underline{\quad (2, -1) \quad}$$



$$-3x - 4(2x - 5) = -2$$

$$-3x - 8x + 20 = -2$$

$$-11x + 20 = -2$$

$$-11x = -22$$

$$\boxed{x = 2}$$



$$y = 2(2) - 5$$

$$y = 4 - 5$$

$$\boxed{y = -1}$$

Solve for x and y , and find a solution for each system of equations.

1. $8x + 5y = 24$

$$y = -4x$$

$$x = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{2cm}}$$

$$\text{solution: } \underline{\hspace{2cm}}$$

2. $-4x + 11y = 15$

$$x = 2y$$

$$x = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{2cm}}$$

$$\text{solution: } \underline{\hspace{2cm}}$$

Solving Systems of Linear Equations

3. $10x - 9y = 24$

$$y = x - 2$$

$$x = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{2cm}}$$

solution: $\underline{\hspace{2cm}}$

4. $3x + y = 10$

$$y = 2x + 5$$

$$x = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{2cm}}$$

solution: $\underline{\hspace{2cm}}$

5. $3x - 2y = 5$

$$x = 4y - 5$$

$$x = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{2cm}}$$

solution: $\underline{\hspace{2cm}}$

6. $x + 3y = 14$

$$x = 10 - 2y$$

$$x = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{2cm}}$$

solution: $\underline{\hspace{2cm}}$

ANSWER KEY

Solving Systems of Linear Equations

1. $8x + 5y = 24$

$$y = -4x$$

$$x = \underline{\quad -2 \quad}$$

$$y = \underline{\quad 8 \quad}$$

$$\text{solution: } \underline{\quad (-2, 8) \quad}$$

$$8x + 5(-4x) = 24$$

$$8x - 20x = 24$$

$$-12x = 24$$

$$x = -2$$

$$y = -4(-2)$$

$$y = 8$$

2. $-4x + 11y = 15$

$$x = 2y$$

$$x = \underline{\quad 10 \quad}$$

$$y = \underline{\quad 5 \quad}$$

$$\text{solution: } \underline{\quad (10, 5) \quad}$$

$$-4(2y) + 11y = 15$$

$$-8y + 11y = 15$$

$$3y = 15$$

$$y = 5$$

$$x = 2(5)$$

$$x = 10$$

3. $10x - 9y = 24$

$$y = x - 2$$

$$x = \underline{\quad 6 \quad}$$

$$y = \underline{\quad 4 \quad}$$

$$\text{solution: } \underline{\quad (6, 4) \quad}$$

$$10x - 9(x - 2) = 24$$

$$10x - 9x + 18 = 24$$

$$x + 18 = 24$$

$$x = 6$$

$$y = 6 - 2$$

$$y = 4$$

4. $3x + y = 10$

$$y = 2x + 5$$

$$x = \underline{\quad 1 \quad}$$

$$y = \underline{\quad 7 \quad}$$

$$\text{solution: } \underline{\quad (1, 7) \quad}$$

$$3x + 2x + 5 = 10$$

$$5x + 5 = 10$$

$$5x = 5$$

$$x = 1$$

$$y = 2(1) + 5$$

$$y = 7$$

5. $3x - 2y = 5$

$$x = 4y - 5$$

$$x = \underline{\quad 3 \quad}$$

$$y = \underline{\quad 2 \quad}$$

$$\text{solution: } \underline{\quad (3, 2) \quad}$$

$$3(4y - 5) - 2y = 5$$

$$12y - 15 - 2y = 5$$

$$10y - 15 = 5$$

$$10y = 20$$

$$y = 2$$

$$x = 4(2) - 5$$

$$x = 3$$

6. $x + 3y = 14$

$$x = 10 - 2y$$

$$x = \underline{\quad 2 \quad}$$

$$y = \underline{\quad 4 \quad}$$

$$\text{solution: } \underline{\quad (2, 4) \quad}$$

$$10 - 2y + 3y = 14$$

$$10 + y = 14$$

$$y = 4$$

$$x = 10 - 2(4)$$

$$x = 2$$