

Name: _____

Solving Systems of Linear Equations

Substitution Method:

- when neither x or y has a coefficient of one, the entire equation needs to be divided in order to find the value of x or y

example: $3x - 9y = -18$
 $5x + 4y = -30$

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

$$y = \underline{\quad 0 \quad}$$

solution: $(-6, 0)$

$$3x - 9y = -18$$

$$\frac{3x}{3} = \frac{-18 + 9y}{3}$$

$$x = -6 + 3y$$

$$5(-6 + 3y) + 4y = -30$$

$$-30 + 15y + 4y = -30$$

$$-30 + 19y = -30$$

$$19y = 0$$

$$y = 0$$

$$x = -6 + 3(0)$$

$$x = -6 + 0$$

$$x = -6$$



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

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

2. $2x + 6y = 14$

$$7y - 3x = 59$$

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

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

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

Solving Systems of Linear Equations

3. $5y - 5x = 5$

$$4y - 3x = 13$$

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

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

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



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5. $-4x - 2y = 14$

$$-10x + 7y = -25$$

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

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

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

ANSWER KEY

Solving Systems of Linear Equations

1. $2x + 4y = -8$

$3x - 2y = 12$

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

$$\frac{2x}{2} = \frac{-8 - 4y}{2}$$

$$x = -4 - 2y$$

$$3(-4 - 2y) - 2y = 12$$

$$-12 - 6y - 2y = 12$$

$$-12 - 8y = 12$$

$$-8y = 24$$

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

$$x = -4 + 6$$

$$x = 2$$

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

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

solution: $\underline{\quad (-1, -5) \quad}$

$$\frac{-2x}{2} - \frac{y}{2} = \frac{7}{2}$$

$$-2x - y = 7$$

$$-y = 7 + 2x$$

$$y = -7 - 2x$$

$$-10x - 49 - 14x = -25$$

$$-24x - 49 = -25$$

$$-24x = 24$$

$$x = -1$$

$$y = -7 + 2$$

$$y = -5$$