

Name _____

Date _____

Solving Systems of Equations - Guided Lesson Explanation

Explanation#1

Step 1) Isolate a variable.

The variable y is already isolated in the second equation.

Plug the result of Step 1 into the other equation and solve for one variable.

Plug $y = -8$ into the other equation, $8x + 6y = -9$, and find the value of x .

$$8x + 6y = -9$$

$$8x + 6(-8) = -9$$

$$8x - 48 = -9$$

$$8x = -9 + 48$$

$$8x = 39$$

$$x = 4.875$$

Step 2: Plug the result of Step 1 into one of the original equations and solve for the other variable.

The second equation already shows that $y = -8$, so it is not necessary to plug in and solve for y .

Step 3: State the solution.

Since $x = 4.875$ and $y = -8$, the solution is $(4.875, -8)$.



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Explanation#2

Step 1) Make sure the equations have opposite x terms or opposite y terms.

The y terms (3y and -3y) are already opposites.

Add to eliminate one variable and solve for the other.

Add to eliminate the y terms, and then solve for x.

$$\begin{array}{rclcl} -4x & + & 3y & = & 6 \\ + & 8x & - & 3y & = & -22 \\ \hline 4x & + & 0y & = & -16 & \text{Add to eliminate the y terms} \\ 4x & = & -16 & & & \text{Simplify} \\ x & = & -4 & & & \text{Divide both sides by 4} \end{array}$$

Step 2) Plug the result of Step 1 into one of the original equations and solve.

Take the result of Step 1, $x = -4$, and plug it into one of the original equations, such as $-4x + 3y = 6$. Then find the value of y.

$$\begin{array}{rclcl} -4x + 3y & = & 6 \\ -4(-4) + 3y & = & 6 & \text{Plug in } x = -4 \\ 16 + 3y & = & 6 & \text{Multiply} \\ 3y & = & -10 & \text{Subtract 16 from both sides} \\ y & = & -3.33 & \text{Divide both sides by 3} \end{array}$$

Step 3) State the solution.

Since $x = -4$ and $y = -3.33$, the solution is $(-4, -3.33)$.



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Explanation#3

Step 1) Isolate a variable.

The variable y is already isolated in the second equation.

Plug the result of Step 1 into the other equation and solve for one variable.

Plug $y = 7$ into the other equation, $7x + 4y = -13$, and find the value of x .

$$7x + 4y = -13$$

$$7x + 4(7) = -13$$

$$7x + 28 = -13$$

$$7x = -13 - 28$$

$$7x = -41$$

$$x = -5.857$$

Step 2: Plug the result of Step 1 into one of the original equations and solve for the other variable.

The second equation already shows that $y = 7$, so it is not necessary to plug in and solve for y .

Step 3: State the solution.

Since $x = -5.857$ and $y = 7$, the solution is $(-5.857, 7)$.

