

Warm Up

Read over my comments from last week's exit ticket when you solved this system by graphing...

$$\begin{cases} x - 2y = -4 \\ x + 8y = 16 \end{cases}$$

Warm Up

Write each equation in slope-intercept form.

$$x - 2y = -4$$

$$x + 8y = 16$$

Solving Systems with Addition

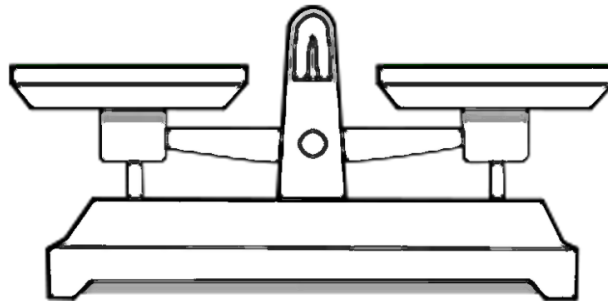
$$\begin{cases} x - 2y = -19 \\ 5x + 2y = 1 \end{cases}$$

GOAL: Reduce the system to one equation that only has one variable.

RECALL: You can add the same amount to both sides of an equation, and the statement will still be true.

Solving Systems with Addition

$$\begin{cases} x - 2y = -19 \\ 5x + 2y = 1 \end{cases}$$



You can add the same amount to both sides of an equation, and the statement will still be true.

Solve the system by elimination: $\begin{cases} x - 2y = -19 \\ 5x + 2y = 1 \end{cases}$

$$\begin{array}{r} x - 2y = -19 \\ 5x + 2y = 1 \end{array}$$

Write the equations so the terms are aligned.

$$\begin{array}{r} x - 2y = -19 \\ + 5x + 2y = 1 \\ \hline 6x = -18 \\ 6 \quad 6 \\ \hline x = -3 \end{array}$$

Add the two equations together.

Solve for x.

$$\begin{array}{r} x - 2y = -19 \\ (-3) - 2y = -19 \\ +3 \quad +3 \\ \hline -2y = -16 \\ -2 \quad -2 \\ \hline y = 8 \end{array}$$

Substitute x into the original equation

$$(-3, 8)$$

Example 1

$$\begin{cases} 2x + 5y = -24 \\ 3x - 5y = 14 \end{cases}$$

Example 2

$$\begin{cases} -2x + y = -20 \\ 2x + y = 48 \end{cases}$$

Example 3

$$\begin{cases} x - 10y = 60 \\ x + 14y = 12 \end{cases}$$

What did you notice about the solutions to the system that you solved by graphing and by substitution on the quiz?

If you solved this system by elimination, what do you think the solution would be?

Solving Systems with Addition and Multiplication

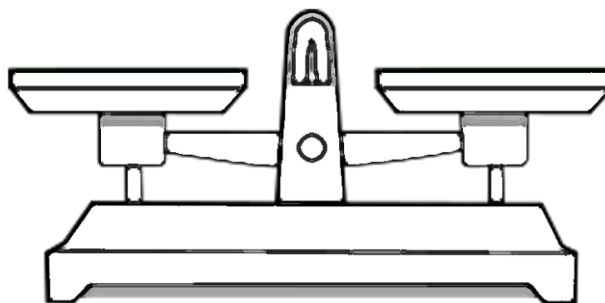
$$\begin{cases} 2x + y = 3 \\ -x + 3y = -12 \end{cases}$$

GOAL: Reduce the system to one equation that only has one variable.

RECALL: You can multiply both sides of the equation by the same number, and the statement will still be true.

Solving Systems with Addition and Multiplication

$$\begin{cases} 2x + y = 3 \\ -x + 3y = -12 \end{cases}$$



You can multiply both sides of an equation by the same number, and the statement will still be true.

Example 4

$$\begin{cases} -3x + 4y = 12 \\ 2x + y = -8 \end{cases}$$

Example 5

$$\begin{cases} x - y = -5 \\ 2x = y - 1 \end{cases}$$

Example 6

$$\begin{cases} 2x + 4y = -4 \\ 3x + 5y = -3 \end{cases}$$

How do you choose which method to use?

$$\begin{cases} y = -4x \\ y = 2x - 2 \end{cases}$$

$$\begin{cases} x - 3y = 3 \\ 2x = 3y \end{cases}$$

$$\begin{cases} 3x - y = 7 \\ 2x + y = 3 \end{cases}$$

$$\begin{cases} 3x - y = -2 \\ y - 2x = 3 \end{cases}$$

$$\begin{cases} -3x + 4y = 12 \\ 2x + y = -8 \end{cases}$$

Solve by Elimination

$$\begin{cases} x + 2y = 5 \\ 3x + 2y = 17 \end{cases}$$

EXIT TICKET