

Content and Language Objective:

Students will discover another method for solving systems of equations known as the elimination method and be able to explain the process in their own words.

Title: Solving Systems Using Elimination Part II

Date: November 5, 2015

Warm Up

Solve for y

$$y + 5 = \frac{9}{3}(8 - 4)$$

$$\begin{array}{l} y + 5 = 3(4) \\ y + 5 = 12 \\ \underline{-5 \quad -5} \\ y = 7 \end{array}$$

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Reminder of the rules.

1. Two equations in standard form, with the same variables. $Ax + By = C$
2. In order to use elimination you need to have the same variables.
3. In order to use elimination you need to have the same numbers attached to one of the two variables.
4. In order to use elimination you need to have a negative version and a positive version of the same number.

If the equations follow most of the rules we can make some minor alterations to have it work for us.

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$$\begin{array}{r} -1(2x - 3y = 15) \\ 5x - 3y = 18 \\ \hline -2x + 3y = -15 \\ \hline 3x = 3 \\ \hline x = 1 \end{array}$$

$$x = 1$$

$$(1, -13/3)$$

$$\begin{array}{r} 2(1) - 3y = 15 \\ 2 - 3y = 15 \\ -2 \quad \quad -2 \\ \hline -3y = 13 \\ \hline y = -13/3 \end{array}$$

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$$\begin{array}{r} -1(2x + 6y = 10) \\ 2x + 4y = 20 \\ \hline -2x - 6y = -10 \\ \hline \end{array}$$
$$\begin{array}{r} 2x + 4(-5) = 10 \\ 2x - 20 = 10 \\ + 20 + 20 \\ \hline 2x = 40 \\ \hline 2 \end{array}$$
$$\begin{array}{r} -2y = 10 \\ \hline -2 \quad -2 \\ \hline y = -5 \end{array}$$
$$(20, -5)$$

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$$\begin{array}{r} 4x + 4y = 4 \\ -2(2x + 3y = 9) \\ \hline -4x - 6y = -18 \\ 4x + 4y = 4 \\ \hline -2y = -14 \\ \frac{-2y}{-2} = \frac{-14}{-2} \\ y = 7 \end{array}$$

$$\begin{array}{r} 4x + 4(7) = 4 \\ 4x + 28 = 4 \\ -28 \quad -28 \\ \hline 4x = -24 \\ x = -6 \end{array}$$

$$(-6, 7)$$

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$$\begin{array}{l} 2(5x + 6y = 12) \\ 5(-2x - 4y = 16) \end{array}$$

$$\begin{array}{r} 10x + 12y = 24 \\ -10x - 20y = 80 \\ \hline -8y = 104 \\ \hline -8 \quad -8 \end{array}$$

$$y = -13$$

$$(18, -13)$$

$$\begin{array}{r} 5x + 6(-13) = 12 \\ 5x - 78 = 12 \\ +78 \quad +78 \end{array}$$

$$\begin{array}{r} 5x = 90 \\ \hline 5 \quad 5 \\ \hline x = 18 \end{array}$$

