p. 30-31   Solving Systems by Elimination   3.2

Warm-Up: p. 30

Solve the following systems by ~~~~~~~~~~

$$-3x + 3y = 4$$

$$-x + y = 3$$

① $y = x + 3$

② $-3x + 3(x+3) = 4$

$-3x + 3x + 9 = 4$

$9 = 4$ No!

No Solution

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Elimination Method

In order to use the elimination method, you must have a pair of variables with the same coefficient but opposite signs

Step 1: Multiply one or both equations by a value that will eliminate a variable when adding the equations together.

Step 2: Add the equations and solve.

Step 3: Substitute answer into another equation and solve.

Step 4: Check

p. 30-31   Solving Systems by Elimination   3.2

Elimination Method   p. 31

In order to use the elimination method, you must have a pair of
variables with the same coefficient number but opposite signs

1) $2x - 4y = 10$

$+$ $5x + 4y = -3$
_____

② $7x = 7$

$x = 1$

③ $2(1) - 4y = 10$

$2 - 4y = 10$

$\dfrac{-4y = 8}{-4 \quad -4}$

$y = -2$

Step 1: Multiply one or both equations by a value that will eliminate a variable when adding the equations together.

Step 2: Add the equations and solve.

Step 3: Substitute answer into another equation and solve.

Step 4: Check

Sol. $(1, -2)$

Check: $5(1) + 4(-2) \overset{?}{=} -3$

$5 + (-8) = -3$

$-3 = -3 ✓$

Elimination Method   p. 31

In order to use the elimination method, you must have a pair of
variables with the same coefficient number but opposite signs

2) $(4x + 2y = 6)$ → $-20x - 10y = -30$

$6x + 10y = -12$ $+ 6x + 10y = -12$
_____

$4(3) + 2y = 6$ $\dfrac{-14x = -42}{-14 \quad -14}$

$12 + 2y = 6$

$\dfrac{-12 \qquad -12}{}$ $x = 3$

$\dfrac{2y = -6}{2 \quad 2}$ Sol. $(3, -3)$

$y = -3$ Check:

$6(3) + 10(-3) \overset{?}{=} -12$

$18 + (-30) = -12$

$-12 = -12 ✓$

Turn & Talk   p. 30

*T*alk with a partner - What are the <u>3 methods</u> of solving a system of equations?

*W*rite your answer on page 30.

Assignment p. 146 # 31, 33, 35, 38, 39

Solve each system by elimination.   **See Problems 4 and 5.**

31. $\begin{cases} 4x - 6y = -26 \\ -2x + 3y = 13 \end{cases}$ **32.** $\begin{cases} 9a - 3d = 3 \\ -3a + d = -1 \end{cases}$ **33.** $\begin{cases} 2a + 3b = 12 \\ 5a - b = 13 \end{cases}$

34. $\begin{cases} 2x - 3y = 6 \\ 6x - 9y = 9 \end{cases}$ **35.** $\begin{cases} 20x + 5y = 120 \\ 10x + 7.5y = 80 \end{cases}$ **36.** $\begin{cases} 6x - 2y = 11 \\ -9x + 3y = 16 \end{cases}$

37. $\begin{cases} 2x - 3y = -1 \\ 3x + 4y = 8 \end{cases}$ **38.** $\begin{cases} 5x - 2y = -19 \\ 2x + 3y = 0 \end{cases}$ **39.** $\begin{cases} r + 3s = 7 \\ 2r - s = 7 \end{cases}$