

Name:

Date:

Period:

2.5 Solving Systems by Elimination

Notes

Main Idea: **Solving by Elimination**

Step 1	Vertically align (one above the other) the terms in the equations.
Step 2	Multiply one or both equations by a number to allow for elimination. The coefficient of one of the terms is the positive and negative of the same number.
Step 3	Add the equations to eliminate this variable
Step 4	Solve for the remaining variable.
Step 5	Substitute your value from step 4 back into one of the original equations and solve for the other variable. Write your solution as a coordinate pair.

Ex1: $3x + 2y = 22$ step 1
 $5x - 2y = 42$ step 2 done

$$\begin{array}{r} 3x + 2y = 22 \\ 5x - 2y = 42 \\ \hline 8x = 64 \end{array} \quad \text{step 3}$$

$$\frac{8x}{8} = \frac{64}{8} \quad \text{step 4}$$

$$3(8) + 2y = 22 \quad \text{step 5}$$

$$24 + 2y = 22$$

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

$$y = -1$$

$$(8, -1)$$

Ex2: ① $x + 7y = 17$ step 1 done
 ② $x - y = -7$

$$\rightarrow -1(x) + -1(7y) = -1(17) \quad \text{step 2}$$

$$\textcircled{1} -x - 7y = -17$$

$$\textcircled{2} \begin{array}{r} x - y = -7 \\ \hline -8y = -24 \end{array} \quad \text{step 3}$$

$$\frac{-8y}{-8} = \frac{-24}{-8}$$

$$y = 3 \quad \text{step 4}$$

$$x - 3 = -7$$

$$x = -4$$

step 5

$$(-4, 3)$$

Ex3: $7x - 6y = -53$ ①
 $2x - 3y = -13$ ②

Step 2 $\rightarrow -2(2x) + (-2)(-3y) = -2(-13)$

$-4x + 6y = 26$ ②

$7x - 6y = -53$ ①

$\frac{3x}{3} = \frac{-27}{3}$

$x = -9$

$2(-9) - 3y = -13$

$-18 - 3y = -13$

$-3y = 5$

$y = -\frac{5}{3}$

$(-9, -\frac{5}{3})$

Ex4: $5x = -3y - 7$ ①
 $7y = 3 - 2x$ ②

① $5x + 3y = -7$
 ② $2x + 7y = 3$

mult. by 2 \rightarrow
 $10x + 6y = -14$
 $-10x - 35y = -15$

$-29y = -29$

$y = 1$

$5x = -3(1) - 7$

$5x = -3 - 7$

$5x = -10$

$x = -2$

$(-2, 1)$

Step 1
 They do not
 have to be
 put in std
 form.

mult. by (-5)