Unit 3 Linear Equations **Name:** _____

Day 3 Solving Systems with Elimination **Date:** _____ **Hour:** _____

(PH 7-3)

So far we have solved systems of equations by graphing and using the substitution method. When one of the equations is already solved for x or y the substitution method is easy, but unfortunately that isn't always the case. Elimination method is another way we can solve systems of equations and works best when the equations are lined up. Let's take a look…

Example 1: Solve each system by eliminating one of the variables.

$$\begin{aligned} 2x - 7y &= 3 \\ -2x + y &= -9 \end{aligned}$$

Sometimes the equations are lined up, but nothing cancels out.
We can use multiplication to create an additive inverse or "opposite".
For example, $3x$ and $-3x$ are opposites since $3x + -3x = 0$.
Likewise $-y$ and y are also opposites since $-y + y = 0$.

Example 2: Solve by elimination.

a.) $\begin{aligned} 3x + 6y &= 6 \\ 2x + y &= 1 \end{aligned}$

b.) $\begin{aligned} 3x - 4y &= 0 \\ x - y &= 1 \end{aligned}$

Sometimes you have to rewrite an equation in *Standard Form* first so that everything lines up.

Example 3:

$$2x = y - 6$$
$$2x + 3y = 14$$

Sometimes you have to multiply *BOTH* equations by something if you want a variable to cancel.

Example 4: What would you have to multiply each equation by so the variable **x** is eliminated?

(**DO NOT SOLVE)**

$$4x - 2y = -3$$
$$-5x + 7y = 1$$

Example5: Solve the system of equations.

$$2x - 5y = -19$$
$$3x + 2y = 0$$

Example 6: Suppose a school is selling gift wrap which costs $2 per package and cards which cost $5 per package. The school sells 220 packages in all and earns a total of $695. Find the number of each type of package sold.

Homework: p. 356 – 359 #7 – 11 odd, 17 – 25 odd, 26, 30, 31, and 41 (12 exercises)