



Unit 4: Chapter 6
SYSTEMS OF EQUATIONS
Cornell Notes/Summary Sheet

Name: _____
Period: _____

Lesson 6.1 – Big Ideas

- System of equations
- Intersection/break-even point
- Solving systems using graphing
- Substitution method
- Consistent systems
- Inconsistent systems

Your Notes

Lesson 6.2 – Big Ideas

- Linear combinations method (aka elimination method)

Your Notes

❖ Substitution Method

$$3x - 7y = -14$$

$$x = 2y - 3$$

Notice that one of the equations is already solved for x.

Let's stick that **X blob** into the other equation in place of X:

$$3x - 7y = -14$$

$$x = 2y - 3$$

Solve the resulting equation for y:

$$3(2y - 3) - 7y = -14$$

$$6y - 9 - 7y = -14$$

$$-y - 9 = -14$$

$$\begin{array}{r} +9 \quad +9 \\ \hline -y = -5 \end{array}$$

$$y = 5$$

Substitute the value of y into the equation for x:

$$x = 2y - 3$$

$$y = 5$$

$$x = 2(5) - 3 = 7$$

$$x = 7$$

The answer is (7, 5).

❖ Linear Combinations Method – Addition works

$$2x + 3y = 20$$

$$-2x + y = 4$$

See how these guys are the same, but with a different sign?

Addition ELIMINATES the x terms.

$$2x + 3y = 20$$

$$+ \quad -2x + y = 4$$

$$\hline 0 + 4y = 24$$

$$4y = 24$$

$$y = 6$$

Substitute the value of y into one of the original equations & solve for x:

$$-2x + y = 4$$

$$y = 6$$

$$-2x + 6 = 4$$

$$-2x = -2$$

$$x = 1$$

The answer is (1, 6).

❖ Linear Combinations Method – Multiplying both equations is necessary

$$2x - 9y = 8$$

$$-5x + 8y = -20$$

These numbers are easier than the -9 and 8.

We want to make these 10x and -10x:

$$5(2x - 9y = 8) \rightarrow 10x - 45y = 40$$

$$2(-5x + 8y = -20) \rightarrow -10x + 16y = -40$$

$$\hline -29y = 0$$

$$y = 0$$

Remember to hit each guy!
* It's easy to forget the last guys.

Let's stick $y = 0$ into the first equation:

$$2x - 9y = 8$$

$$y = 0$$

$$2x - 9(0) = 8$$

$$2x = 8$$

$$x = 4$$

The answer is (4, 0).

	CONSISTENT SYSTEMS	INCONSISTENT SYSTEMS
NUMBER OF SOLUTIONS		
DESCRIPTION OF Y-INTERCEPTS		
DESCRIPTION OF SLOPES		
DESCRIPTION OF GRAPH		
DESCRIPTION OF ALGEBRAIC SOLUTIONS		