Unit 3 Study Sheet

Slope Intercept Form

$$y = mx + b$$

m = slope
b = y-intercept
(where line crosses the y-axis.)

Horizontal Lines

$$Y = \#$$

Horizontal lines have ZERO SLOPES

Vertical Lines

$$X = \#$$

Vertical lines have NO SLOPE or UNDEFINED

Procedure to Graph a linear Equation:

1.) Get the equation in slope intercept form y = mx + b

2.) Identify the slope (***m***) and the y-intercept (***b***)

3.) Plot the (***b***) value on the y-axis

4.) If the slope (***m)*** is positive move up, if it is negative move down.

5.) And then always move to the right.

6.) Connect each point with a straight edge forming a line.

If you can graph a straight line, you can solve systems of equations graphically!

1.) Graph the 1st linear equation
2.) Graph the 2nd linear equation
3.) Identify the point of intersection
4.) Check your P.O.I. on your calculator by following the steps below

- Type equations into y_1 and y_2 (they must be in slope intercept form)
- Look at table by pressing 2nd graph (Look for the same y-values.) Or you can…..
- Look at graph:
  a. Press graph (Press zoom 6 to fix graph if needed.)
  b. Press 2nd trace
  c. Press #5 (intersect)
  d. Use left and right arrows to move blinking box close to the P.O.I.
  e. Hit enter 3 times

Steps for Solving Systems of Linear Inequalities

- Solve both inequalities for y
- Graph, shade, and label both inequalities
- Label the intersection of shading "S" (if there is no overlap—no solution)
- Choose a point in the shaded region to check both inequalities!

When you graph a linear inequality you determine the type of line and the shading by the chart below:

Inequality Symbol	Type of Line	Meaning	Shading a Diagonal or Horizontal Line	Shading a Vertical Line
$\leq$	Solid Line	The points on the line satisfy the inequality	Below	Left
$\geq$	Solid Line	The points on the line satisfy the inequality	Above	Right
$<$	Dashed	The points on the line don't satisfy the inequality	Below	Left
$>$	Dashed	The points on the line don't satisfy the inequality	Above	Right

To Solve Systems of Equation with the <u>Elimination (Addition)</u> Method:

1.) If necessary, rewrite the equations in standard form: $ax + by = c$

2.) Determine if the system contains opposites. Ex: -5x and 5x

3.) If not decide which variable you want to eliminate

4.) Use multipliers to get opposites

5.) Multiply one or both equations by constants, if necessary so that the coefficients of the variable you want to eliminate are opposite.

6.) Add equations to eliminate one of the variables.

7.) Solve the resulting equation.

8.) Substitute the resulting value into either original equation.

9.) Solve the equation for the other variable.

10.) Write your answer as coordinates (x,y)

11.) Check your P.O.I. in BOTH original equations.

To Solve Systems of Equation with the <u>Substitution</u> Method:

1.) One variable has to be alone (x=… or y = …)

2.) Replace that variable (the one that is alone) into the other equation using parenthesis

3.) Solve for the variable

4.) Plug in your answer to one of the original equations to find the other variable

5.) Write your answer as a P.O.I

6.) Check the P.O.I. in both equations