Equation of a Line

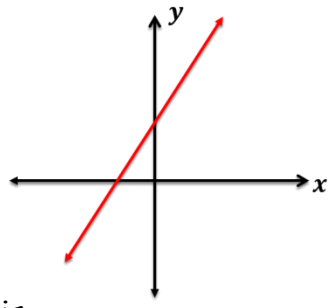
C.O.:_____

_____

L.O.:_____

_____

Linear Equations:



A linear Equation is an equation whose graph is a _____.

A line on a graph has the following properties:

Slope *(m)*: ratio of change in ___ to change in ___

x* – *Intercept: the part of the line that intersects the ___-axis. Written as the point (___, ___)

y* – *Intercept: the part of the line that intersects the ___-axis. Written as the point (___, ____)

Forms of a Linear Equation: A linear equation can be written in the following forms:

Standard Form: The equation of a line can be written in the form

where ___ and ____ are not both zero

Slope-Intercept Form: A line with slope ***m*** and y-intercept ____ has the equation

Graphing a Line: To graph a linear equation, you need at least **two** points

- Linear equations, in either form, can be used to find points that can help you graph the line formed by a linear equation.

➢ Standard Form can give you both the _____ and _____

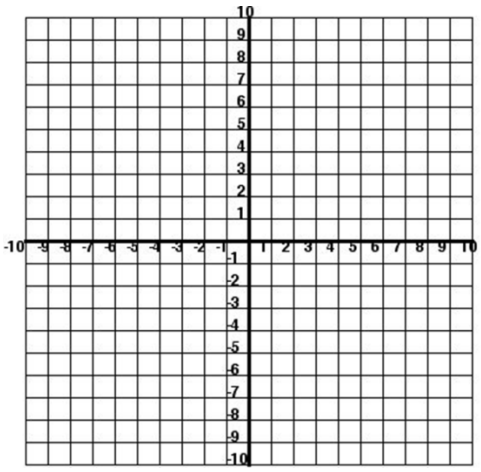
➢ Slope-Intercept Form can give you both the _____ and the _____

  - The _____ can then be used to get a second _____ by applying it to the _____.

Equation of a Line

Example – Standard Form: Graph the line $2x - 3y = 12$

x-Intercept: Let $y = 0$ and solve for x



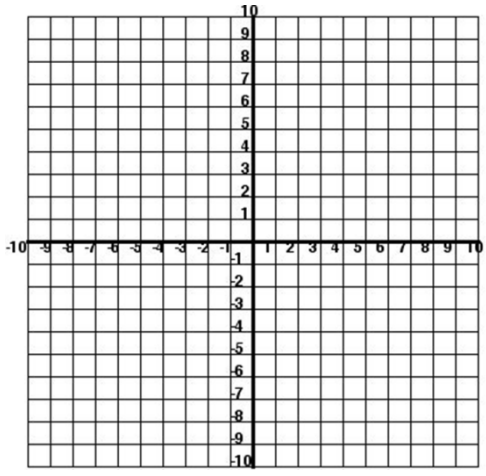
y-Intercept: Let $x = 0$ and solve for y

Example – Slope-Intercept Form: Graph the line $y = -\frac{3}{4}x + 6$

Since the equation is in slope-intercept form, we can quickly identify the slope and y-intercept, and then use the slope to find a second point:

y-Intercept: $b =$

Slope: $m =$ ——



To graph the line, follow these steps:

1.) Plot the y-intercept you found.

2.) Use the motion of the slope to find another point going from y-intercept.

3.) Where the slope landed you will be your second point

4.) You can use the slope to get even more points, but two is enough to get your line.

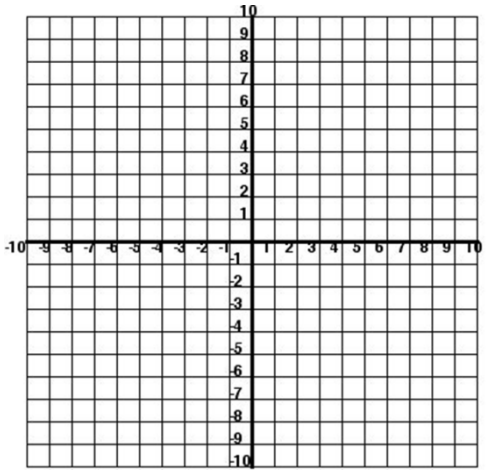
5.) Finally, connect the points to make your line.

Group Practice: On a separate piece of paper (that I will provide), graph the following lines given their equation.

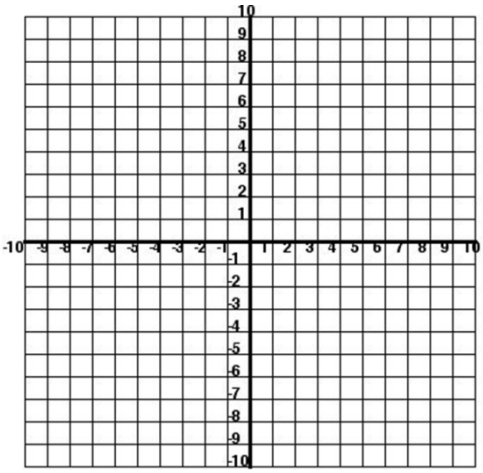
- For equations in Standard Form, give the intercepts
- For equations in Slope-Intercept Form, give the slope and y-intercept

Equation of a Line

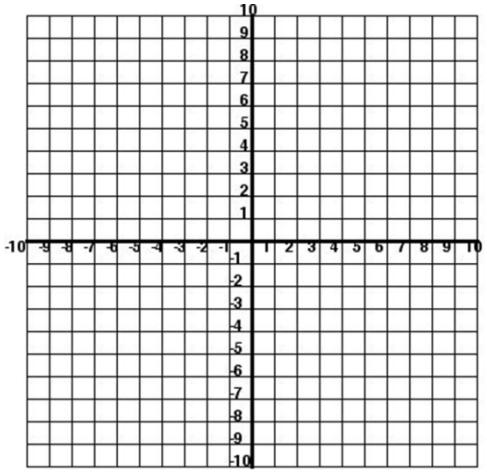
1.) $3x - 5y = 15$



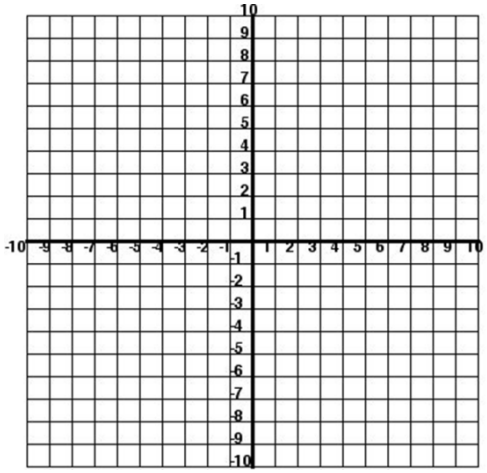
2.) $y = 2x + 5$



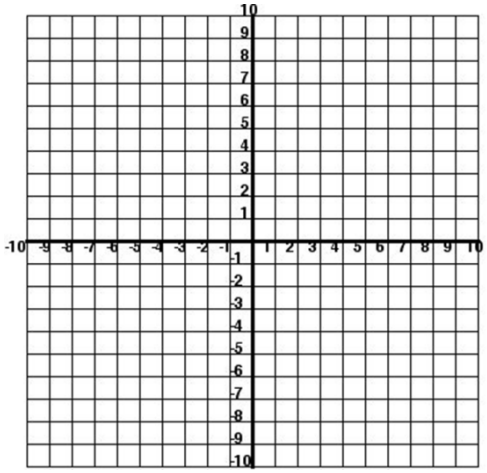
3.) $-4x + 3y = 24$



4.) $y = \frac{5}{3}x - 2$



5.) $4x + 6y = 36$



6.) $y = \frac{3}{4}x + 1$