Lesson 2-2 (Day 1) Linear Equations

***Learning Objective**: I can graph linear functions using the following methods:*

- *a table of values*
- *x- and - y-intercepts*
- *a slope and y-intercept*
- *and a point and a slope.*

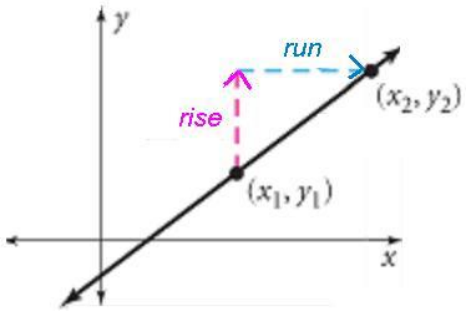
I can find the x–&–y–intercepts of a line.

I can find the slope of a line through two points.

EQ: How many methods are there for graphing a Linear Equation? How do I graph using each method?

The Slope of a line passing through two points (x_1, y_1), (x_2, y_2) is

$$slope = \frac{rise}{run} = \frac{change\ in\ y}{change\ in\ x} = \frac{y_2 - y_1}{x_2 - x_1}$$

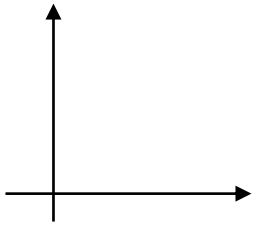


Note: slope is also called *a rate of change* and we tend to use the variable *m* to represent *slope*

Ex.1. Finding Slope

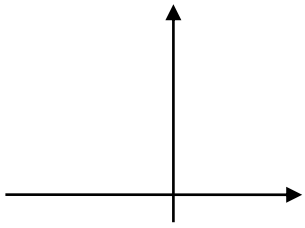
Plot the points, then find the slope of the line that passes through the points

a) $(2,4),\ (3,6)$



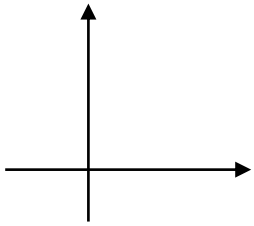
$m =$ _____

b) $(-3,5),\ (2,1)$



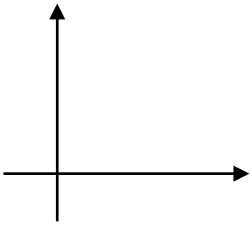
$m =$ _____

c) $(-1,3),\ (2,3)$

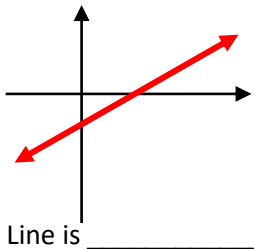


$m =$ _____

d) $(2,3),\ (2,5)$



$m =$ _____



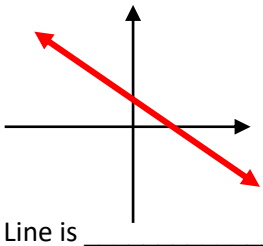
Line is _____

and has a

_____ slope.

The equation of the line is in the form

_____



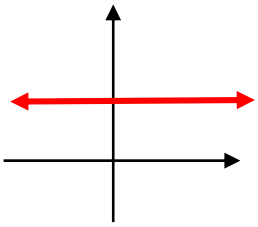
Line is _____

and has a

_____ slope.

The equation of the line is in the form

_____



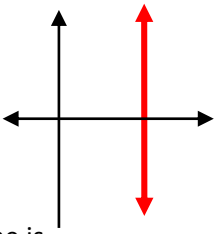
Line is _____

and has a

_____ slope.

The equation of the line is in the form

_____



Line is _____

and has a

_____ slope.

The equation of the line is in the form

_____

Short Summary #1:

Methods for Graphing Linear Equations/Functions:

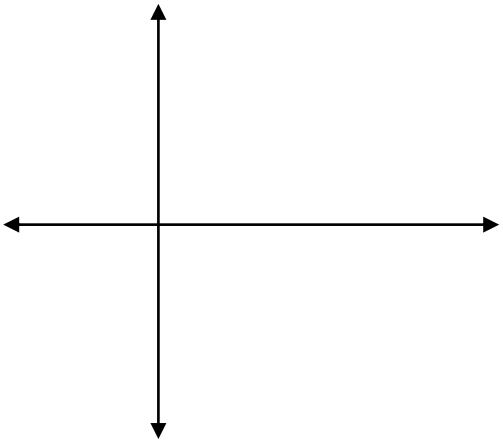
- Using a table of x and y values
- Using the x-and y-intercepts of a line. (x,0) & (0, y)
- Using the slope and y-intercept of a line. (y=mx + b)

Ex. 2: Graphing Linear Equations

Graphing a Linear Equation using a table of values.

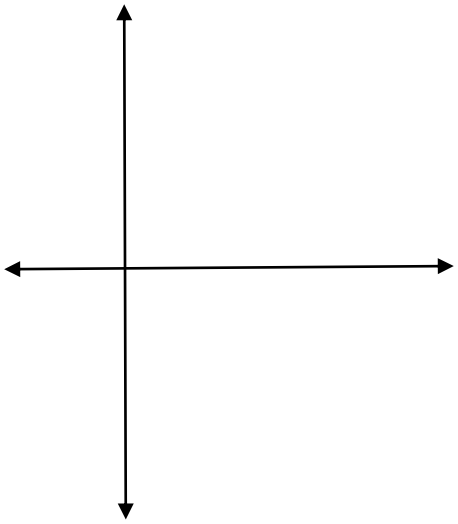
a.) Graph $2x + y = 2$

x	y



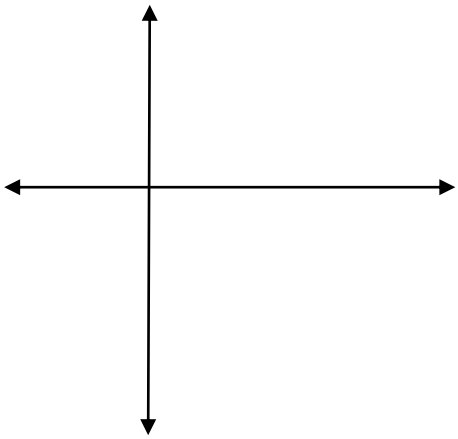
b.) Graph $3y + 4x = 12$

x	y



c.) $3x - y - 2 = 0$

x	y



Short Summary #2:

Ex. 3: Graphing Linear Equations using Standard form and x-&y- intercepts

Graph using x- and y- intercepts

a.) $6x - y - 2 = 0$

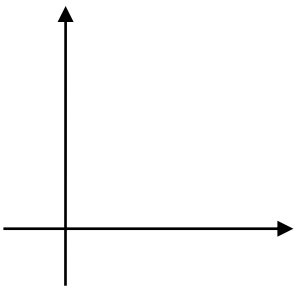
b.) $3y + 4x = 12$

Steps:

1.Find the x-&-y intercepts of the equation.
2. Graph both intercepts.
3. Connect points to form a line.

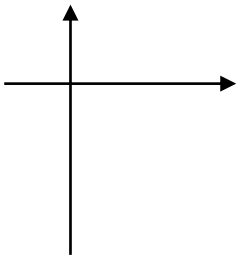
c) $2x + 3y = 12$

x	y



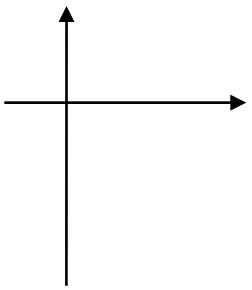
d) $3x - 4y = 9$

x	y



e) $-4x + 2y = -8$

x	y



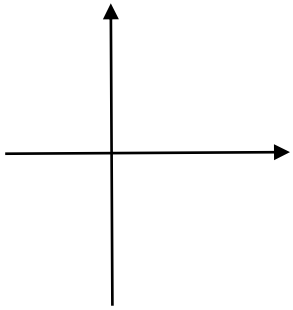
Short Summary #3:

Ex. 4: Graphing Using Slope-Intercept Form

Use the Slope Intercept Form to graph the Linear Equation

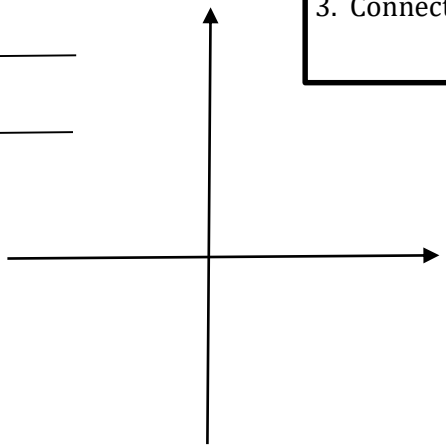
a.) $y = \frac{3}{4}x - 2$

x	y



b.) $y = -2x + 1$

x	y

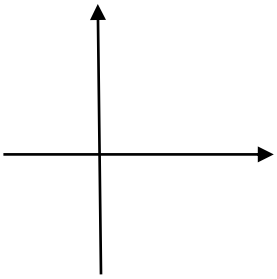


Steps:

1. Graph the y – intercept on the y–axis.
2. To plot the second point, count the the rise over run starting from the y–intercept you graphed in step 1.
3. Connect the points to form a line.

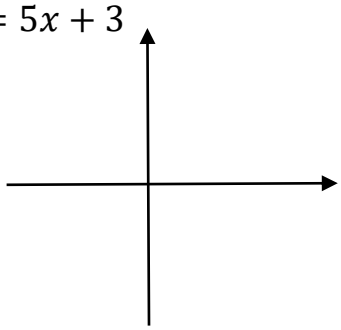
c.) $6x + 4y = -18$

x	y



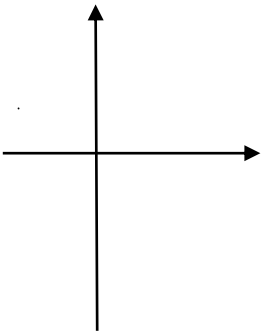
d.) $y = 5x + 3$

x	y



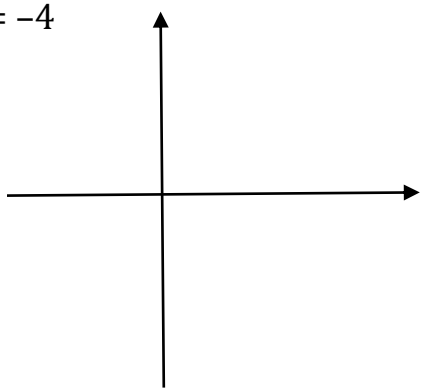
e) $y = 3x - 2$

x	y



f.) $3x - 2y = -4$

x	y



Short Summary #4:

Ex. 5: Graphing Linear Equations When x or y is the only variable given.

Graph the equation.

a.) $f(x) = -3$ b.) $x = 4$ c.) $y = 2$ d.) $x = -1$

e.) $f(x) = 5$

Short Summary #5: