Unit 4

L7 Graphing and understanding Parameters a and b in y = ax + b

1) Make a Table of Values (min 3 points)

2) Choose easy x-values like _____.

If your slope (a) is a fraction, pick multiples of the value for the **run (denominator)**.

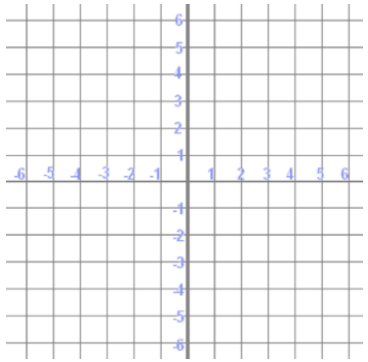
- ie if slope = $\frac{3}{4}$ pick x =0, 4, 8.

1. Graph and label these equations

$y = 3x$ $y = -3x + 2$ $y = \frac{1}{3}x$ $y = -\frac{1}{3}x - 3$

$y = 3x$

$y = \frac{1}{3}x$



$y = -3x + 2$

$y = -\frac{1}{3}x - 3$

A faster way to graph a line straight from the rule:

The rule of the line is:

y = ax + b

b : y-intercept

a : rate of change = $\frac{rise}{run}$

2. Graph and label these equations

$y = 3x$ $y = -3x + 2$ $y = \frac{1}{3}x$ $y = -\frac{1}{3}x - 3$

$y = 3x$

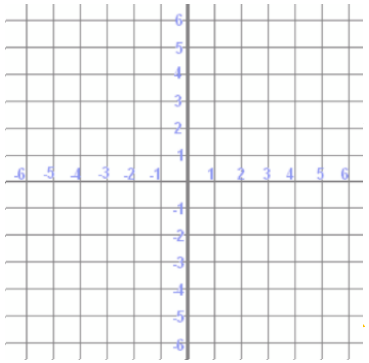
a = 3 = rise
1 run

b = 0

$y = -3x + 2$

a = -3
1

b = 2



$y = \frac{1}{3}x$

a = 1
3

b = 0

$y = -\frac{1}{3}x - 3$

a = -1
3

b = -3

Parameters a and b in y = ax + b

- For every line y = ax + b

(the parameters are a and b, and they each affect the look of the line)

- We can observe the affects of changing the parameters by using technology:

TI-83 or GeoGebra or graphsketch.com

A	f(x) = x	g(x) = 2x	h(x) = 0.5x
type of function			
R.O.C. (a)			
Initial value (b)			
Description of line			
B	**p(x) = -x**	**q(x) = -2x**	**r(x) = -0.5x**
type of function			
R.O.C. (a)			
Initial value (b)			
Description of line			

C	f(x) = x	s(x) = x + 2	t(x) = x – 4
type of function	**Direct**		
R.O.C. (a)	**1**		
Initial value (b)	**0**		
Description of line	**-Centered in 1st and 3rd quadrants. -Increasing line.**		
D	**u(x) = 3x + 2**	**v(x) = 0.5x – 4**	**w(x) = -2x + 6**
type of function			
R.O.C. (a)			
Initial value (b)			
Description of line			

Conclusions:

- For every line y = ax + b (the parameters are a and b affect the look of the line)
- a : affects the angle of inclination (steepness of line)
- b : affects the vertical translation of the line

Practice:

4.6 # 1-3