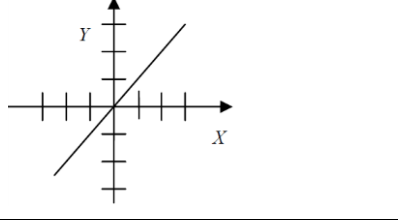


## Graphing Lines of the Form $y = mx$

1. Use the graphing calculator to graph each function and complete the table. An example is done for you.

Function	Value of $m$	Graph	$x$ -intercept	$y$ -intercept	Is the graph the same, steeper, or flatter than the graph of $y=x$ or $y=-x$ ?
$y=x$	1		(0,0)	(0,0)	Same as $y=x$
$y=-x$					
$y=2x$					
$y=-2x$					
$y=0.5x$					

2. Use the results to answer the following items.

- What point does every graph in exercise 1 have in common? \_\_\_\_\_
- Does the value of  $m$  affect the location of the  $x$ - or  $y$ -intercept? \_\_\_\_\_
- If the graph lies in quadrants I and III, then  $m$  is (positive, negative). Circle one answer
- If the graph lies in quadrants II and IV, then  $m$  is (positive, negative). Circle one answer
- Make a conjecture about the graph when  $m = 0$ . (what do you think it would look like?)

3. For each of the following, write an equation of a line that fits the characteristics. Verify your answers with the graphing calculator.

- a) A straight line in quadrants I and III steeper than  $y = 3x$ .

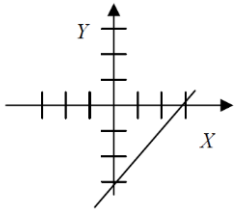
Equation: \_\_\_\_\_

- b) A straight line in quadrants II and IV flatter than  $y = -x$

Equation; \_\_\_\_\_

## Graphing Lines of the Form $y = mx + b$

1. Use a graphing calculator to graph each equation and complete the following chart. An example is solved for you.

Function	Value of $m$	Value of $b$	Graph	$x$ -intercept	$y$ -intercept
$y=x-3$	1	-3		(3,0)	(0,-3)
$y=x+4$					
$y=x+5.5$					
$y=2x-5$					
$y=2x+4.5$					
$y=-2x+1$					

2. Use the results to answer the following questions.

- If  $b$  has a positive value, then the  $y$ -intercept is (above, below) the  $x$ -axis. Circle one answer.
  - If  $b$  has a negative value, then the  $y$ -intercept is (above, below) the  $x$ -axis. Circle one answer.
  - What is the  $y$ -intercept of the equation  $y = 2x + 4$ ? \_\_\_\_\_
  - What is the  $y$ -intercept of the equation  $y = mx + b$ ? \_\_\_\_\_
3. Answer the following questions about the first three entries in Exercise 1.
- What is the same about all three graphs? \_\_\_\_\_
  - These lines never intersect so we say they are \_\_\_\_\_
  - How does changing the value of  $b$  affect graph? \_\_\_\_\_
4. Describe and compare the graphs of  $y = 3x - 1$  and  $y = 3x + 2$ . (Use a graphing calculator to help you see the graphs.) \_\_\_\_\_

Math 8 Honors

Name \_\_\_\_\_