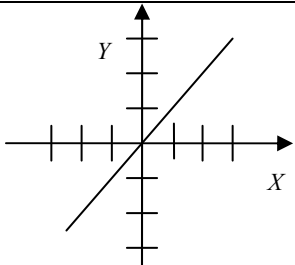


Activity 1

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

Objective: In this lesson you will see how the value of  $m$  affects the graph of a straight line.

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

Function	Value of $m$	Sketch	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)	The same as $y = x$ .
$y = -x$					
$y = 2x$					
$y = -2x$					
$y = 0.5x$					

### Exploring Linear Equations

Function	Value of $m$	Sketch	x-intercept	y-intercept	Is the graph the same, steeper, or flatter than the graph of $y = x$ (or $y = -x$ )?
$y = -8x$					
$y = -0.4x$					
$y = 0.05x$					

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
- If  $m$  is positive, predict what will happen to the graph as  $m$  gets larger. \_\_\_\_\_

f. If  $m$  is negative, predict what will happen to the graph as  $|m|$  (absolute value of  $m$ ) increases.

g. Make a conjecture about the graph when  $m = 0$ .

Check your prediction by graphing the function on your calculator.

h. Summarize the role of  $m$  in the graph of  $y = mx$ . \_\_\_\_\_