Name -----

Activity 1 Date ----- Per ----

Graphing Lines of the Form *y* = *mx* <u>Objective</u>: 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 <i>m</i>	Sketch	<i>x</i> -intercept	y-intercept	Is the graph the same, steeper, or flatter than the graph of y = x (or $y = -x$)?
<i>y</i> = <i>x</i>	1		(0,0)	(0,0)	The same as $y = x$.
<i>y</i> = - <i>x</i>					
<i>y</i> = 2 <i>x</i>					
<i>y</i> = -2 <i>x</i>					
<i>y</i> = 0.5 <i>x</i>					

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Function	Value of <i>m</i>	Sketch	<i>x</i> -intercept	<i>y</i> -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					

Exploring Linear Equations

2. Use the results to answer the following items.

a. What point does every graph in exercise 1 have in common? _

b. Does the value of *m* affect the location of the *x*- or *y*-intercept?

c. If the graph lies in quadrants I and III, then *m* is (<u>positive, negative</u>). Circle one answer

d. If the graph lies in quadrants II and IV, then *m* is (<u>positive</u>, <u>negative</u>). Circle one answer

e. 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 *Im*I (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.