

MS Algebra: 2.6.3

Warm-up

Any ?s on HW: page 230
#26-34, 47, 67-69

Goal: I can identify properties of linear functions, including slopes and intercepts .

HW: Worksheet 2.6.3



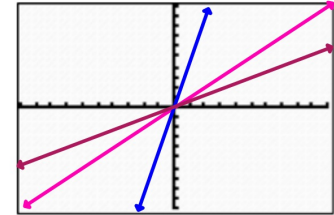
CW: 2.6.3 Graphing Calculator Exploration Name _____
materials needed: colored pencils, ruler, graphing calculator

1) The following equations are in the form $y = mx$. Graph each equation using the graphing calculator and then draw a sketch of it using a colored pencil. Fill in the o with the appropriate color to show what color you used for each equation/graph.

■ $y_1 = x$ $m = 1$

■ $y_2 = 3x$ $m = 3$

■ $y_3 = \frac{1}{2}x$ $m = \frac{1}{2}$



- a) What similarities do you see in the graphs?
same y-intercept; all lines go through (0, 0); they all go up to the right; the all have a positive slope
- b) Which line is the steepest? y_2
- c) Which line is the least steep/flattest? y_3

Why???

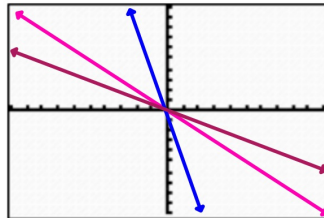
Multiplying by 3 changes faster than multiplying by 1 or 1/2. Multiplying by 1/2 changes the slowest.

2) Graph each equation using the graphing calculator and then draw a sketch of it using a colored pencil. Fill in the o with the appropriate color to show what color you used for each equation.

■ $y_1 = -x$ $m = -1$

■ $y_2 = -3x$ $m = -3$

■ $y_3 = -\frac{1}{2}x$ $m = -\frac{1}{2}$



- a) What similarities do you see in the graphs?
same y-intercept; all lines go through (0, 0); they all go down to the right; the all have a negative slope
- b) Which line is the steepest? y_2
- c) Which line is the least steep/flattest? y_3

Why???

Multiplying by -3 changes faster than multiplying by -1 or -1/2. Multiplying by -1/2 changes the slowest.

3) What effect does the slope (m) have on the graph?

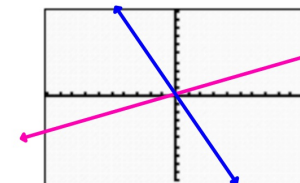
m effects the slant/angle/slope of the line.

4) Graph each pair of lines on the graphing calculator. Determine which line is the steepest.

■ $y_1 = \frac{1}{3}x$ $m = \frac{1}{3}$

■ $y_2 = -2x$ $m = -2$

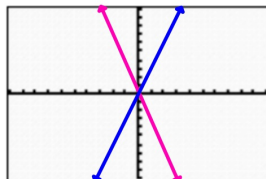
The steeper line is: y_2



■ $y_1 = -3x$ $m = \underline{-3}$

■ $y_2 = 3x$ $m = \underline{3}$

The steeper line is: neither - same steepness

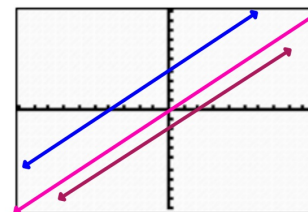


5) The following equations are in the form $y = mx + b$. Graph each equation using the graphing calculator and then draw a sketch of it using a colored pencil. Fill in the o with the appropriate color to show what color you used for each equation/graph.

■ $y_1 = x$ $m = \underline{1}$ $b = \underline{0}$

■ $y_2 = x + 4$ $m = \underline{1}$ $b = \underline{4}$

■ $y_3 = x - 2$ $m = \underline{1}$ $b = \underline{-2}$



a) What similarities do you see in the graphs?

They all have the same slant/angle; They all have a positive slope.

b) What differences do you see in the graphs?

They have different y-intercepts; cross the y-axis at different points; some lines are higher than the others.

c) How does the value of b affect the graph?

The b value changes where the graph crosses the y-axis

6) What effect does the y-intercept (b) have on the graph?

The y-intercept changes where the graph crosses the y-axis; it raises or lowers the graph.

7) Graph the two equations below in the graphing calculator. What do you notice?

• $y_1 = x^2$

• $y_2 = \frac{1}{x}$

They are not linear; not $y = mx + b$