Algebra 1: Unit 4 Problem Set A

Mr. Chamberlain

Name _____

Date _____ Period _____

FYI

INTERCEPTS REVIEW

The ***x***-intercept of a line is the point where the graph crosses the ***x***-axis; that is where ***y*** = 0. To find the ***x***-intercept, substitute 0 for ***y*** and solve for ***x***.

The ***y***-intercept of a line is the point where the graph crosses the ***y***-axis; that is where ***x*** = 0. To find the ***y***-intercept, substitute 0 for ***x*** and solve for ***y***.

1. Find the ***y***-intercepts for the following equations (which are in "y=" form):

a) $y = 2x+1$

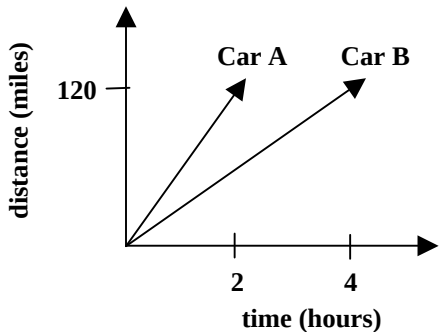
c) $y = x - 2$

b) $y = -x - 3$

d) $y = -2x + 3$

Do you notice any connection (coincidence) between the ***y***-intercept for each line and the equation of each line? Explain.

2. Use the graph at right to answer the following questions:



a) Which car is traveling at the greater rate of speed?

b) Estimate the (*x*, *y*) coordinates of:

Point A

Point B

c) What is the average rate of speed in miles per hour for :

Car A?

Car B?

REMEMBER!

Read ALL 3 links on the MathChamber Unit 4.4 Website; my link (4.4 Slope of a Line), Purplemath and Coolmath!

FYI

SLOPE - The slope of a line is a measure of the steepness of a line. Specifically, it is the ***RATIO*** of the change in the *y*-coordinate values to the corresponding change in the *x*-coordinate values between **ANY TWO POINTS** on the line.

$$\text{slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{change in y-values}}{\text{change in x-values}} = \frac{\text{Rise}}{\text{Run}}$$

Slope is often referred to as RISE over RUN.

Given the coordinates of ANY two points (x_1, y_1) and (x_2, y_2) on a line, the slope *m* can be calculated by:

$$\text{slope} = m = \frac{y_2 - y_1}{x_2 - x_1} \quad \text{where } x_2 \neq x_1$$

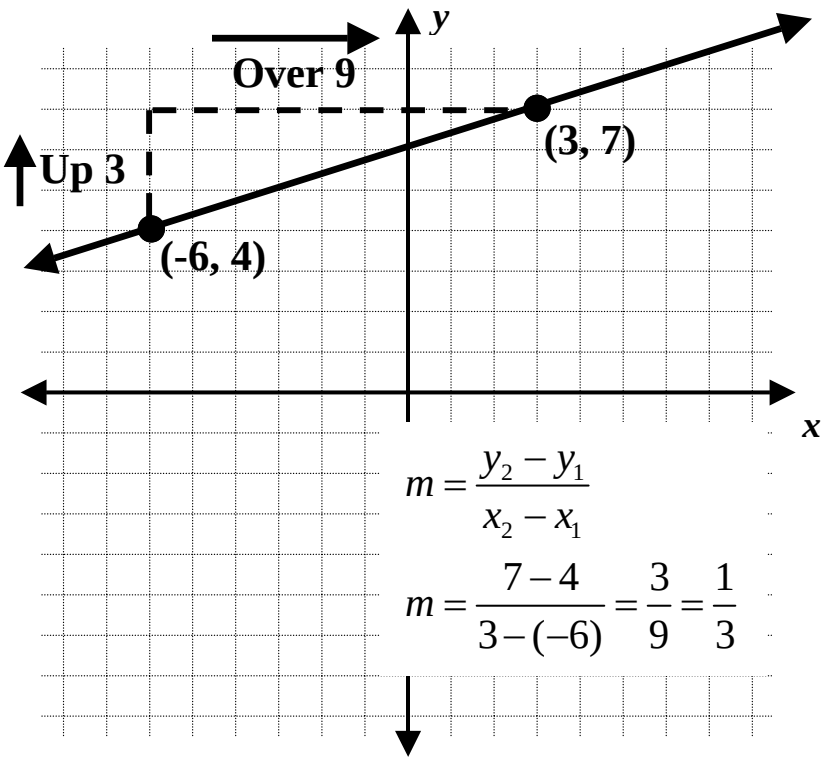
N.B. ***Think***… what would happen if $x_2 = x_1$??

Good News!!

You don't need to get hung up on formulas.

You can simply count the "up and over" a.k.a. the RISE over RUN for a given line.

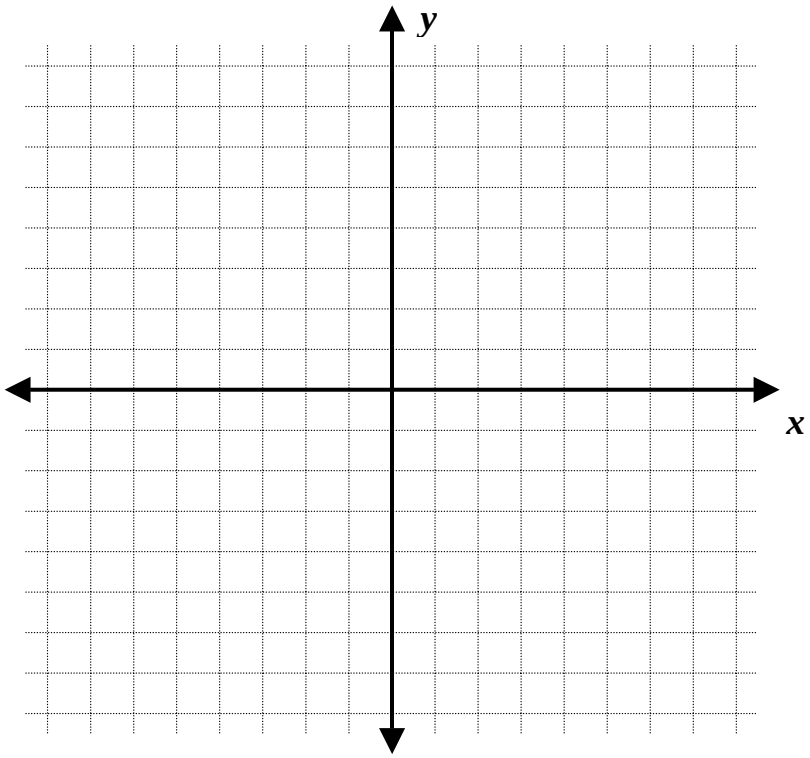
For example, to calculate the slope between the points (-6, 3) and (3, 6), simply count **UP 3** and **OVER 9**. Voila, the slope is $\frac{3}{9}$ or $\frac{1}{3}$



3. Graph the lines and find the slope between each pair of points. **SHOW YOUR WORK** using the SLOPE formula. Check your work by counting **UP and OVER**.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

a) (3, 4) , (4, 7)



b) (-5, -2) , (5, 3)

c) (-5, -6) , (-2, 3)

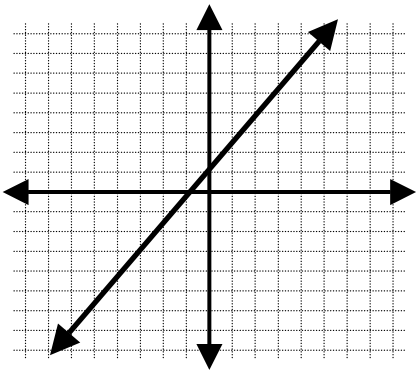
d) (2, -4) , (-2, 8)

4. *Word Bank:* ***POSITIVE*** ***ZERO*** ***NEGATIVE*** ***UNDEFINED***

Complete the sentences below:

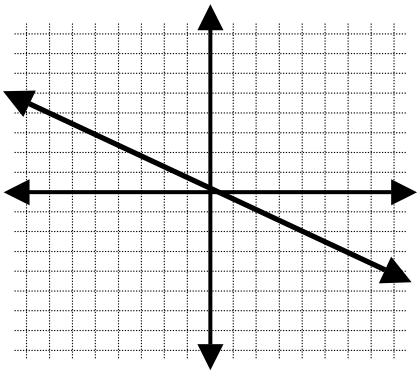
The slope of a line that **RISES** from left to right is…

ALWAYS _____.



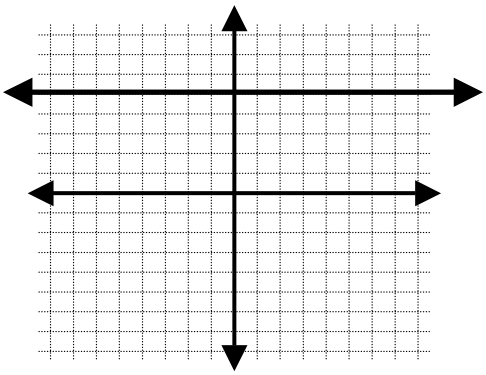
The slope of a line that **FALLS** from left to right is…

ALWAYS _____.



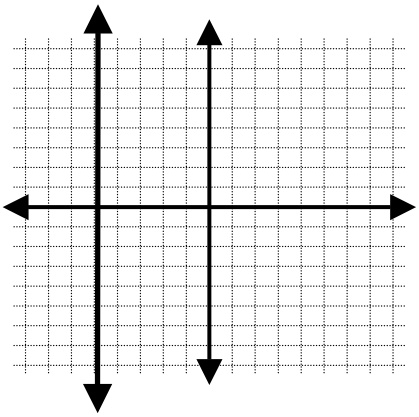
The slope of a **HORIZONTAL** line is…

ALWAYS _____.



The slope of a **VERTICAL** line is…

ALWAYS _____.



5. *Convert each of the following equations to"y=" form*

a. $x + y = 6$

b. $3x + y = 6$

c. $x - y = 6$

d. $3x - 2y = 12$

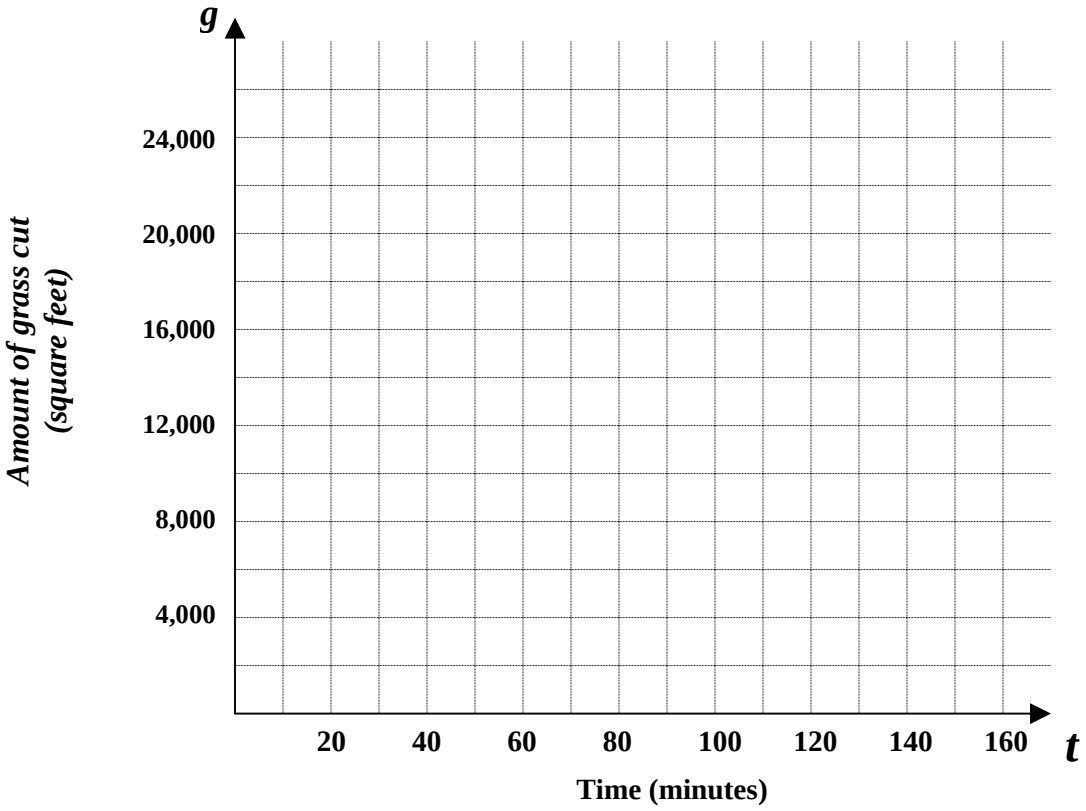
6. Last summer, you mowed Uncle Fred's 24,000 square foot lawn. You have done such a good job that Uncle Fred invites you back to mow his lawn on a regular basis. The last three times you have cut the lawn has yielded the following results:

A) You mowed the entire lawn in 120 minutes at a constant rate without a break.

B) Uncle Fred mowed half of the lawn for you before you got there (just because you are so wonderful). You mowed the rest of the lawn in 60 minutes at a constant rate without a break. The graph of your line should clearly show the "head start" you got from Uncle Fred.

C) Using Uncle Fred's MowMaster3000 riding mower, you mowed the entire lawn in just 80 minutes at a constant rate without a break.

Graph and label each line on the coordinate plane provided. **NOTE THE DIFFERENCE IN THE DEFINITION OF THE Y-AXIS** from our previous lab.



What is the slope of each line? **SHOW YOUR WORK!**

Line A) Line B) Line C)