

Today's Plan:

Learning Target (standard): I will describe the slope of a line as a rate of change. I will use this rate of change in applied problems.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

NAME _____

#36

BELL RINGER

$$y = mx + b$$

$I: (0, b)$

1.) Write an equation of the line that passes through the point $(0, -3)$ and has a slope of 2.

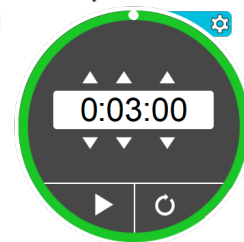
$$m = 2, b = -3$$

$$y = 2x - 3$$

2.) Add $(-5) + 3 + (-8)$.

$$\begin{array}{r} -5 + 3 - 8 \\ -2 - 8 \end{array}$$

$$-10$$



3.) Order the numbers from least to greatest: $\frac{1}{2}, \frac{3}{4}, \frac{7}{8}, 0.55, 0.1$

$$0.1, \frac{1}{2}, 0.55, \frac{3}{4}, \frac{7}{8}$$

Slope as a Rate of Change:



$$RoC = \frac{\Delta \text{dependent}}{\Delta \text{independent}}$$

$$RoC = \frac{\Delta y}{\Delta x} = \frac{\text{last}(y) - \text{first}(y)}{\text{last}(x) - \text{first}(x)} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$RoC = \text{slope}(m)$$

Equations in Two Variables:

- the graph of a linear equation always results in the graph of a line having a **slope**

- oblique line $y = mx + b$ $\swarrow m(+)$ $\nwarrow m(-)$

- horizontal line $y = \#$ $m(0)$

- vertical line $x = \#$ $m(\text{und})$
 \hookrightarrow undefined

Graph using a t -chart.

$$-6x - 5y = 30$$

 $+6x$
 $+6x$

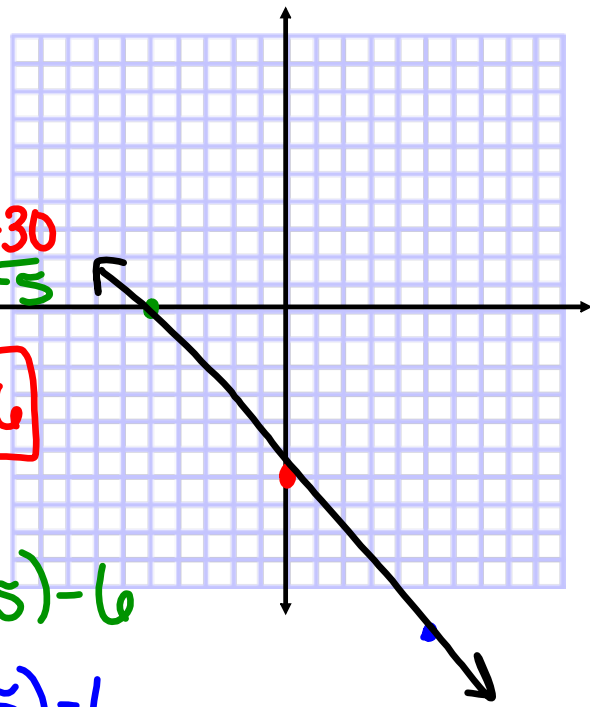
x	y
-5	0
0	-6
5	-12

$$-5y = 6x + 30$$

$$y = -\frac{6}{5}x - 6$$

$$y = -\frac{6}{5}(5) - 6$$

$$y = -\frac{6}{5}(5) - 6$$

Graph using a t -chart.

$$-3y + 4 = 16$$

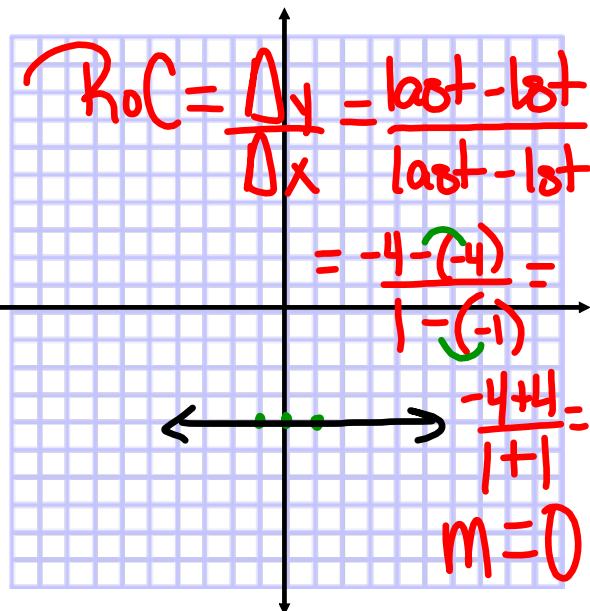
 -4

$$-3y = 12$$

 -3

x	y
-1	-4
0	-4
1	-4

$$y = -4$$



$$\text{RoC} = \frac{\Delta y}{\Delta x} = \frac{\text{last} - \text{1st}}{\text{last} - \text{1st}}$$

$$= \frac{-4 - (-4)}{1 - (-1)} =$$

$$\frac{-4 + 4}{1 + 1} = \frac{0}{2}$$

$$m = 0$$

Use the 6-step process to describe the rate of change.

Jenny filled 10 envelopes in 1 minute and 100 envelopes in 10 minutes.

① independent - time (minutes)
dependent - # of envelopes



$$\textcircled{2} \text{ RoC} = \frac{\Delta \text{dependent}}{\Delta \text{independent}}$$

$$\textcircled{3} \text{ RoC} = \frac{\Delta \text{envelopes}}{\Delta \text{time (minutes)}}$$

$$\textcircled{4} \text{ RoC} = \frac{100 - 10 \text{ envelopes}}{10 - 1 \text{ minutes}}$$

$$\textcircled{5} \text{ RoC} = \frac{90}{9} = \frac{10 \text{ envelopes}}{1 \text{ minute}}$$

⑥ Jenny can fill 10 envelopes every minute.

Find the slope of the line.

$$2x - 3y = 18 \quad \rightarrow \quad y = \underline{\underline{mx + b}}$$

$$\frac{-3y}{-3} = \frac{-2x + 18}{-3}$$

$$y = \frac{2}{3}x - 6$$

$$m = \frac{2}{3}$$



Slope of a Line:

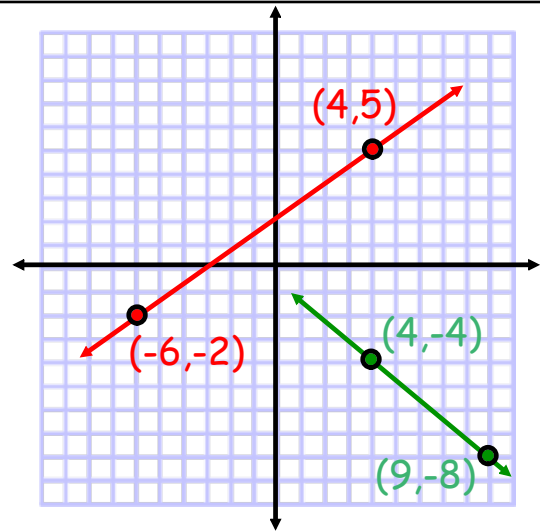
"Rate of Change"

(x_1, y_1) & (x_2, y_2)

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

$$m = \frac{5 - (-2)}{4 - (-6)} = \frac{7}{10} \quad m = \frac{7}{10}$$

$$m = \frac{-8 - (-4)}{9 - 4} = -\frac{4}{5} \quad m = -\frac{4}{5}$$



Each pair of points lies on a line with the given slope. Find the missing value.

$(2, 4), (x, 8)$

$m = -2$

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

$$-2 = \frac{8 - 4}{x - 2}$$

$$x - 2 \left[-2 = \frac{4}{x - 2} \right]$$

$$-2x + 4 = 4$$

$$-4 \quad -4$$

$$-2x = 0$$

$$x = 0$$

Each pair of points lies on a line with the given slope. Find the missing value.

$$(3, 5), (x, 2)$$

$$m = \text{undefined}$$

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

$$\frac{\#}{0} = \frac{2 - 5}{x - 3}$$

$$x - 3 = 0$$

$$x = 3$$

Assignment:

Slopes of Lines

#1-16

* model the examples in class *

* Write the slope formula on each problem *