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 _____ #33

BELL RINGER

$3(0)+4y=-20$

$4y=-20$

1.) Find the y-intercept for the linear equation $3x + 4y = -20$.

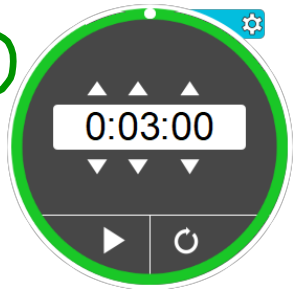
$I_y: (0,-5)$ $y=-5$

2.) Find the slope between the two points (3, 3) and (4, 3).

$m=\frac{y_2-y_1}{x_2-x_1}=\frac{3-3}{4-3}=\frac{0}{1}=0$ $m=0$

3.) Add $\frac{2}{5}+\frac{1}{10}$.

$\frac{4}{10}+\frac{1}{10}=\frac{5}{10}=\frac{1}{2}$



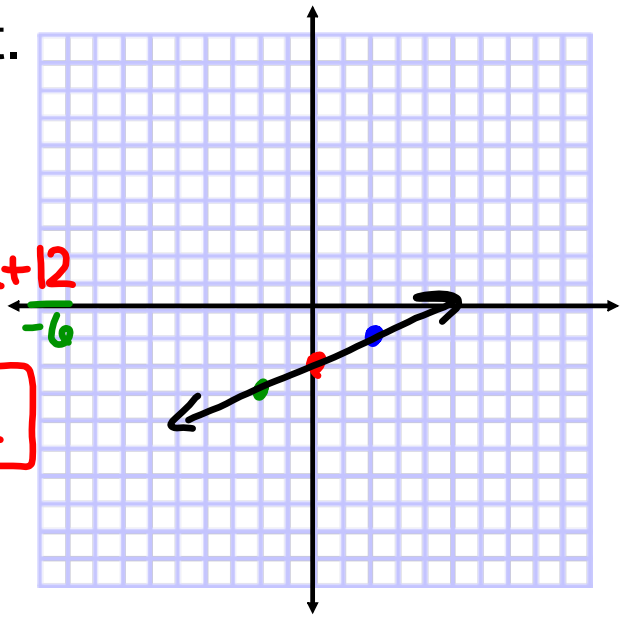
Graph using a *t*-chart.

$$3x - 6y = 12$$
$$-3x \qquad -3x$$

x	y
-2	-3
0	-2
2	-1

$$\frac{-6y}{-6} = \frac{-3x}{-6} + \frac{12}{-6}$$

$$\boxed{y = \frac{1}{2}x - 2}$$



$$y = \frac{1}{2}(-2) - 2$$

$$y = \frac{1}{2}(2) - 2$$

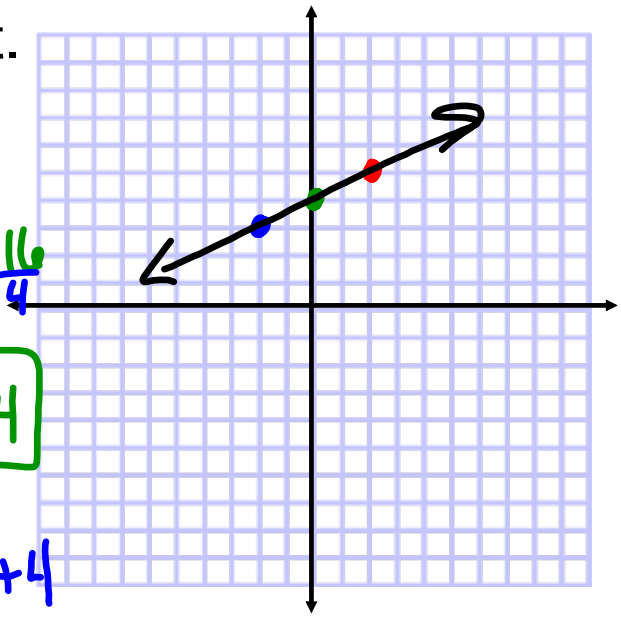
Graph using a *t*-chart.

$$-2x + 4y = 16$$
$$+2x \qquad +2x$$

x	y
-2	3
0	4
2	5

$$\frac{4y}{4} = \frac{2x}{4} + \frac{16}{4}$$

$$\boxed{y = \frac{1}{2}x + 4}$$



$$y = \frac{1}{2}(-2) + 4$$

$$y = \frac{1}{2}(2) + 4$$

"oblique"

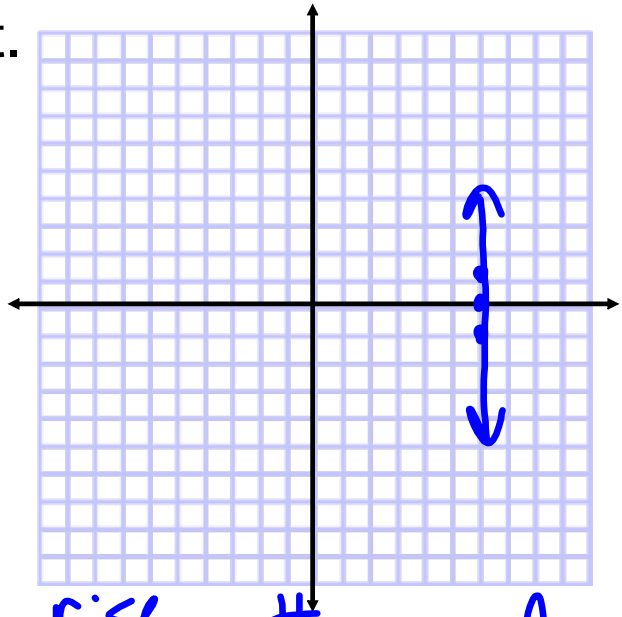
Graph using a *t*-chart.

$$3x - 6 = 12$$
$$+6 \quad +6$$

x	y
6	-1
6	0
6	1

$3x = 18$

$\boxed{x = 6}$



$m = \frac{\text{rise}}{\text{run}} = \frac{\#}{0} = \text{und}$

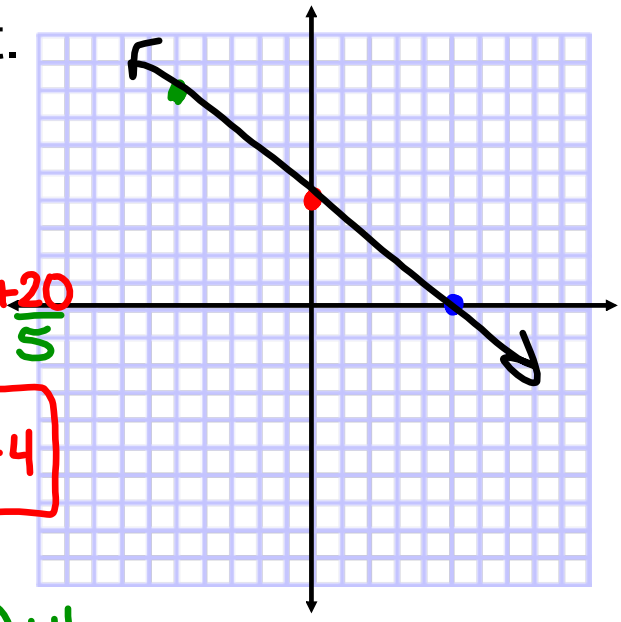
Graph using a *t*-chart.

$$4x + 5y = 20$$
$$-4x \quad -4x$$

x	y
-5	8
0	4
5	0

$\frac{5y}{5} = \frac{-4x}{5} + \frac{20}{5}$

$\boxed{y = -\frac{4}{5}x + 4}$



$y = -\frac{4}{5}(-5) + 4$

$y = -\frac{4}{5}(5) + 4$

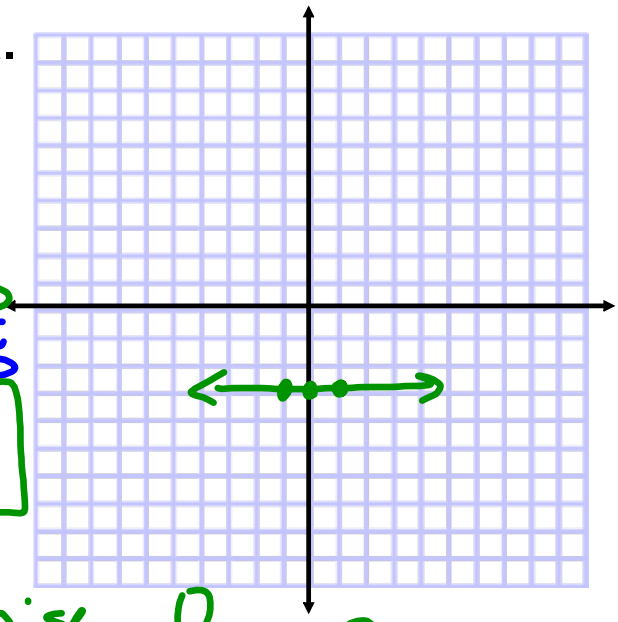
Graph using a *t*-chart.

$$-5y+5=20$$
$$\quad -5 \quad -5$$

x	y
-1	-3
0	-3
1	-3

$$\frac{-5y}{-5}=\frac{15}{-5}$$

$$\boxed{y=-3}$$



$$m=\frac{rise}{run}=\frac{0}{\#}=0$$

Rate of Change:

- shows the relationship between changing quantities
- when one quantity depends on the other, the following is true:

$$\text{rate of change} = \frac{\text{change in the dependent variable}}{\text{change in the independent variable}}$$

Δ "delta" (change) = last - first

$$\text{RoC} = \frac{\Delta dependent(y)}{\Delta independent(x)}$$

$$\text{RoC} = \frac{\Delta y}{\Delta x}$$

Rate of Change:

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- if the rate of change between data points in a set of data is constant, the data represents a linear relationship
- the rate of change is the slope of the line $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\Delta y}{\Delta x}$
- the independent variable is the quantity that impacts another quantity in a given situation
- the dependent variable is the quantity that is impacted by the other quantity in a given situation

Equations in Two Variables:

- the graph of a linear equation always results in the graph of a line having a slope
  - oblique line $y = mx + b$ m(+) m(-)
  - horizontal line $y = \#$ m(0)
  - vertical line $x = \#$ m(und) "undefined"

Rate of Change: "6-Step Process"

1) Determine and label the independent and dependent variables

2) Write out the formula for RoC $RoC = \frac{\Delta dependent}{\Delta independent}$

3) Label the formula with variables from the problem

4) Substitute the values in from the problem $\boxed{\Delta = last - first}$

5) Simplify and label units

6) Write a sentence about the meaning of the rate of change