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.

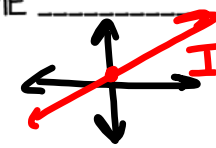
Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

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.

Have graphing activity out with the handout on top. I will staple and collect these as you are working on your bell ringer.

NAME _____ #33



BELL RINGER

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

$4y = -3x - 20$ $\quad -3x$

$y = -\frac{3}{4}x - 5$ $\quad Iy: (0,-5)$

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

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

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.

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

$+2x \qquad +2x$

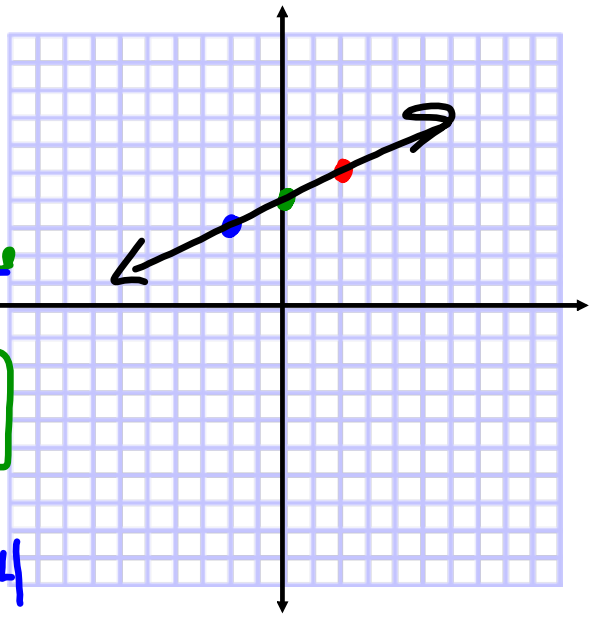
x	y
-2	3
0	4
2	5

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

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

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

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



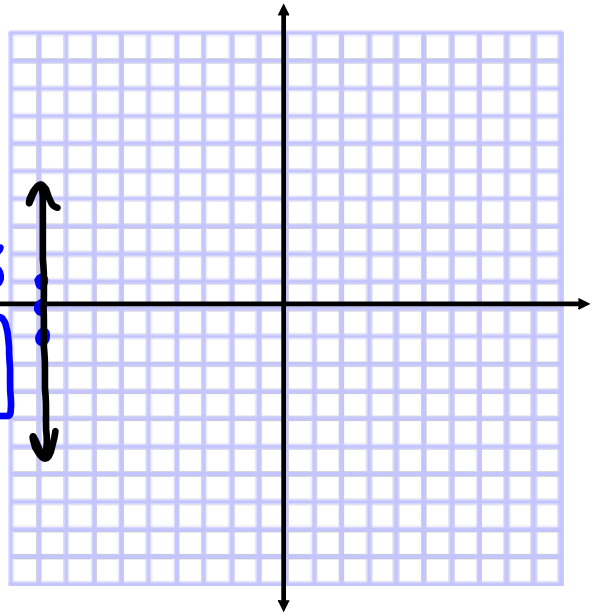
Graph using a *t*-chart.

$$-2x-6=12$$
$$+6 \quad +6$$

$-2x = 18$

$x = -9$

x	y
-9	-1
-9	0
-9	1



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

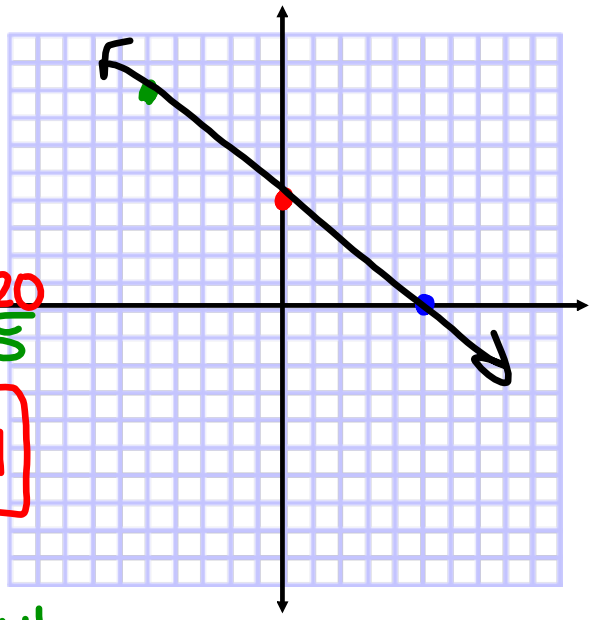
Graph using a *t*-chart.

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

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

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

x	y
-5	8
0	4
5	0



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

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

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: "6-Step Process"

1) Determine and label the independent and dependent variables

2) Write out the formula for RoC RoC =

3) Label the formula with variables from the problem RoC =

4) Substitute the values in from the problem RoC =

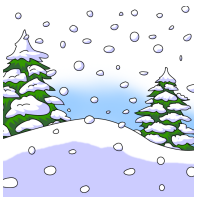
5) Simplify and label units RoC =

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

Every "independent," "dependent" happens.

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

Snow is 0.02 m deep after 1 hour and 0.06 m deep after 3 hours



① IV: time (hours)
DV: snow depth (meters)

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

③ $RoC = \frac{\Delta snow\ depth\ (m)}{\Delta time\ (hrs)}$

④ $RoC = \frac{0.06 - 0.02 m}{3 - 1\ hrs}$

⑤ $RoC = \frac{0.04 m}{2 hrs} = \frac{0.02 m}{1 hr}$

⑥ Every 1 hour, 0.02 meters of snow falls.

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

The cost of two pairs of shoes is $112.50 and the cost of three pairs is $168.75.

① independent – number of pairs of shoes
dependent – cost (dollars)

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

③ $RoC = \frac{\Delta\ cost\ (\$)}{\Delta\ number\ of\ pairs\ of\ shoes}$

④ $RoC = \frac{\$168.75 - \$112.50}{3 - 2\ pairs\ of\ shoes}$

⑤ $RoC = \frac{\$56.25}{1\ pair\ of\ shoes}$

⑥ Every pair of shoes cost $56.25.

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

Frank can run the length of the football field in 48 seconds.
He can run the length of the field 5 times in 4 minutes.

① independent – time (seconds)
dependent – # of lengths of the field

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

③ $RoC = \frac{\Delta \text{\# of lengths of football field}}{\Delta \text{time (seconds)}}$

④ $RoC = \frac{5-1 \text{ lengths of the field}}{240-48 \text{ seconds}}$

⑤ $RoC = \frac{4}{192} = \frac{1 \text{ football field}}{48 \text{ seconds}}$

⑥ Frank can run the length of one football field in 48 seconds.

Assignment:

* Use the 6 step process to describe the rate of change for each situation. *

1) A hockey team scored two goals in one game and six goals in three games.

2) A sports car traveled 28 miles on 1 gallon of gas and 196 miles on 7 gallons of gas.

3) A car wash attendant washed eight cars in two hours and sixteen cars in four hours.