$$\text{Rate of Change} = \frac{\text{Change in the Dependent Variable}}{\text{Change in the Independent Variable}}$$

$$\text{Rate of Change} = \frac{\triangle Y}{\triangle X}$$ Slope with units

Since the phrase Rate of Change applies when using "REAL" data you'll be expected to give units with your answer. Instead of fractions, give answers as decimals.

Find the rate of change. Given decimals answers to the nearest tenth. Include units!

1 Calories burned while jogging

# Minutes	# Calories burned
2	52
3	78
4	104
5	130
6	156

$\frac{\Delta Y}{\Delta X} = \frac{26}{1} = 26 \frac{cal}{min}$

2 Cost of Renting a Trailer

# hours	Rental Cost
3	$95
5	$125
7	$155
9	$185
11	$215

$\frac{\Delta Y}{\Delta X} = \frac{120}{8} = \$15/hr$

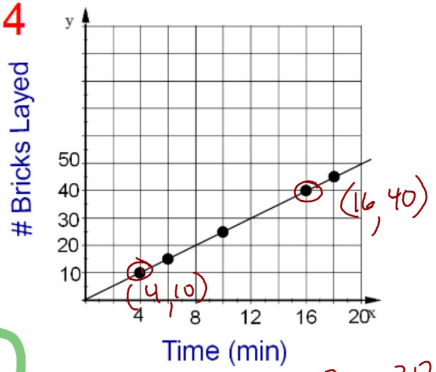
3 # Minutes remaining in the book

# Minutes	# Pages Remaining
4	571
8	566
20	551
24	546
30	538.5

$\frac{\Delta Y}{\Delta X} = \frac{-5}{4}$

-1.25 Pg/min

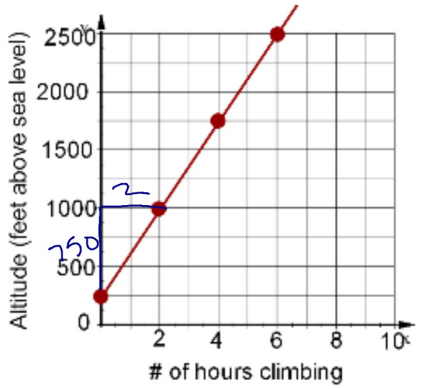
4



$\frac{40-10}{16-4} = \frac{30}{12}$

2.5 Brick/min

5

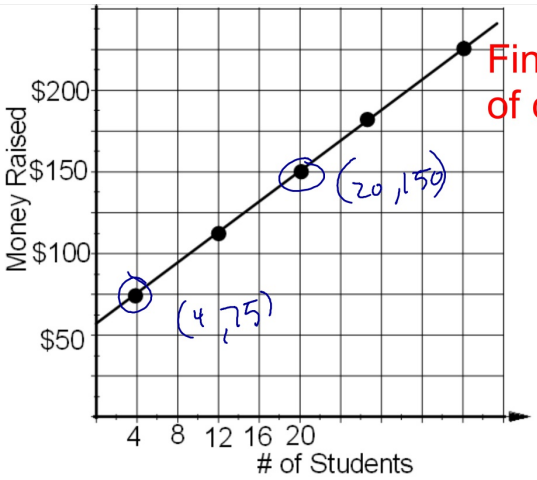


$\frac{\Delta Y}{\Delta X} = \frac{750}{2}$

375 feet/hr

If the rate of change is constant then what will the graph of the data look like?

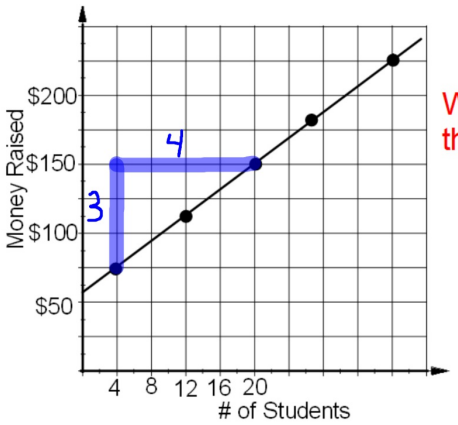
A linear function



Find the rate of change.

$$\frac{\Delta y}{\Delta x} = \frac{150-75}{20-4} = \frac{75}{16}$$

$= \$4.6875$/st



What would have to be true for the Rate of Change to be

$$\frac{3}{4}$$

The scale on the two axes MUST BE THE SAME

You can now finish Hwk #24: Sec 6-1

Pages 286-288

Problems 1-4, 8, 9, 20-25, 49, 61, 62

Due Thursday

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

rewrite this equation by mulitplying both sides by $x_2 - x_1$

$(x_2 - x_1)m = \frac{y_2 - y_1}{x_2 - x_1} \cdot (x_2 - x_1)$ $\Rightarrow y_2 - y_1 = m(x_2 - x_1)$

You have just created the

Point-Slope Form for the equation of a Line.

Point - Slope Form of a Linear Equation:

Definiton **Point-Slope Form of a Linear Equation**

The **point-slope form** of the equation of a nonvertical line that passes throught the point (x_1, y_1) with slope m is

$y - y_1 = m(x - x_1)$

Sec 6-4 Point-Slope Form for the equation of a line.

A line has a slope of m and passes through the point (x_1 , y_1)

The equation of this line in Point-Slope Form is:

$y - y_1 = m(x - x_1)$

- The y-coord of any point on the line
- Slope of the line
- The x-coord from the same point as the y-coord

Equations for a Line

- Slope-Intercept Form $y = mx + b$
- Standard Form $Ax + By = C$
- Point-Slope Form $y - y_1 = m(x - x_1)$