Guided Notes 6

5.3: Interpreting Rate of Change and Slope

Essential Question: How can we relate rate of change and slope in linear relationships?

A. Rate of change = $\frac{\text{change in y}}{\text{change in x}}$

B. The table shows the year and the cost of sending a 1-ounce letter in cents.

Years after 2000*(x)*	3	4	6	8	13
Cost (cents)	37	37	39	42	46

Find the rate of change, $\frac{\text{change in Postage}}{\text{change in year}}$, for each time period using the table.

C. Here is a plot of the points represented in the table. By connecting the points with line segments, we can make a "Statistical Line Graph." (Draw the graph)

D. Find the rate of change for each time period using the graph.

1. Label the vertical increase (rise) and the horizontal increase (run) between points (4,37) and (6,39). Then find the rate of change, $\frac{\text{rise}}{\text{run}}$.

2. Label the vertical increase (rise) and the horizontal increase (run) between points (6,39) and (8,42). Then find the rate of change, $\frac{\text{rise}}{\text{run}}$.

3. Label thee vertical increase (rise) and the horizontal increase (run) between the points (8,42) and (13,46). Then find the rate of change, $\frac{\text{rise}}{\text{run}}$.

E. Reflect

1. Between which two years is the rate of change $\frac{\text{Change in postage}}{\text{Change in years}}$ the greatest?

2. Compare the line segment between 2006 and 2008 with the line segment between 2008 and 2013. Which is steeper? Which represents a greater rate of change?

F. Determining the Slope of a Line

The _____ of a line is the ratio of rise to run for any two points on the line.

$$\text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{\text{difference in y-value}}{\text{difference in x-value}} = \frac{y2-y1}{x2-x1}$$

G. Determine the slope of each line.

1. Use the slope formula to find the slope of the graph. (Pg. 182 Example 1A)

2. Use the slope formula to find the slope of the graph. (Pg. 183 Example 1B)

H. Reflect

1. What is the slope of a horizontal line?

2. What is the slope of the vertical line?

3. If you have a graph of a line, how can we determine whether the slope is positive, negative, zero, or undefined without using the points on a line.

I. Find the slope of the line passing through the given points.

x	1	2	3	4
y	5	5	5	5

J. Find and interpret the slope for each real-world situation.

1. The graph shows the relationship between a person's age and his/her estimated max heart rate. (Pg. 185 Example 3A)

2. The height of a plant, y in centimeters after x days is a linear relationship, the point (30,15) and (40,25) are on the line.