



Math 78

Unit 9 Linear Models and Tables

Volume 1 Issue 9

References

Georgia Math Grade 8 Volume 2:

Chapter 8 Lessons 1-6

Georgia Math Online:

www.connectED.mcgraw-hill.com

Links:

<https://mathbitsnotebook.com/Algebra1/StatisticsReg/ST2ScatterPlot.html>

<https://mathbitsnotebook.com/Algebra1/StatisticsReg/ST2TwoWayTable.html>

<https://www.youtube.com/watch?v=6IdJ1aPFDCs>

Dear Parents

Below you will find a list of concepts that your child will use and understand while completing Unit 6 Linear Functions. Also included are references, vocabulary and examples that will help you assist your child at home.

Concepts Students will Use and Understand

- identify the rate of change and the initial value from tables, graphs, equations, or verbal descriptions
- write a model for a linear function
- sketch a graph when given a verbal description of a situation
- analyze scatter plots
- informally develop a line of best fit
- use bivariate data to create graphs and linear models
- recognize patterns and interpret bivariate data

Vocabulary

- **Model:** A mathematical representation of a process, device, or concept by means of a number of variables.
- **Interpret:** To establish or explain the meaning or significance of something.
- **Initial Value:** y -intercept.
- **Qualitative Variables:** A variable whose values are not numerical. Examples include gender (male, female), paint color (red, black, blue), type of bird (cardinal, blue bird, owl), and etc.
- **Linear:** A relationship or function that can be represented by a straight line.
- **Non-linear:** A relationship which does not create a straight line.
- **Slope:** The measure of steepness of a line.
- **Rate of Change:** The ratio of the change in the output value and change in the input value of a function.
- **Bivariate Data:** Two different response variables that are from the same population. This website has a good powerpoint (the 2nd one) that may help with the explanation.
<http://www.sophia.org/packets/bivariate-data-two-variables--2>
- **Quantitative Variables:** A variable whose values are numerical. Examples include height, temperature, weight, grades, and etc.
- **Scatter Plot:** The graph of a collection of ordered pairs that allows an exploration of the relationship between the points.
- **Line of Best Fit:** A straight line drawn through the center of a group of data points plotted on a scatter plot.
- **Clustering:** The partitioning of a data set into subsets (clusters), so that the data in each subset (ideally) share some common trait - often similarity or proximity for some defined distance measure.
- **Outlier:** An element of a data set that distinctly stands out from the rest of the data.

Math 8 Unit 6 Practice Problems

Formulas

Slope (m)

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

Slope-Intercept Form

$$y = mx + b$$

Y-intercept (b); (0,b)

Example 1

The table shows the balance of a bank account on different days of the month. Find the rate of change during each time interval.

Day	1	6	16	22	30
Balance (\$)	550	285	210	210	175

Example 2

Megan rolls a number cube and tosses a coin 200 times as part of an experiment. From her experiment, she records that a five was rolled 37 times and the coin landed on tails 107 times. On 88 occasions, neither a five was rolled nor did the coin land on heads. Complete the table.

	Five	Not a Five	Total
Head			
Tail			
Total			

Answer Key

Example 1

Rate of changes: (results in a non-linear graph)

$$\text{Day 1-6} = -53$$

$$\text{Day 6-16} = -7.5$$

$$\text{Day 16-22} = 0$$

$$\text{Day 22-30} = -4.375$$

Example 2

	Five	Not a Five	Total
Head	18	75	93
Tail	19	88	107
Total	37	163	200