Essential Topic 4: Statistics

Content Area: **Mathematics**
Course(s): **Algebra 1**
Time Period: **Semester 2**
Length: **3 weeks**
Status: **Published**

Standards

MA.S-ID.A.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).
MA.S-ID.A.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
MA.S-ID.A.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
MA.S-ID.A.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
MA.S-ID.B.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
MA.S-ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
MA.S-ID.B.6a	Fit a function to the data (including with the use of technology); use functions fitted to data to solve problems in the context of the data.
MA.S-ID.B.6b	Informally assess the fit of a function by plotting and analyzing residuals, including with the use of technology.
MA.S-ID.B.6c	Fit a linear function for a scatter plot that suggests a linear association.
MA.S-ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
MA.S-ID.C.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.
MA.S-ID.C.9	Distinguish between correlation and causation.
MA.S-IC.B.6	Evaluate reports based on data.

Enduring Understandings

1. Collecting and analyzing data can be used to understand relationships.
2. Misuse of data and statistics is common, making it important to be well informed of the appropriate ways to interpret data.

Essential Questions

1. How can a list of data be summarized by descriptive statistics?

2. How can a graph of data be summarized by descriptive statistics?
3. How can the results of a statistical investigation be used to support an argument?

Knowledge and Skills

- Evaluating the center of a list of data and/or a graph.
- Understanding how to interpret and construct a dotplot, stemplot, histogram, and boxplot.
- Comparing and contrasting measures of center and variability.
- Constructing a scatterplot and assessing a linear equation model.

Transfer Goals

- In this unit, students will be able to summarize data quickly. Students will be able to construct graphs, read graphs, and compare sets of data in order to make possible conclusions about populations.
- Students will recognize patterns in data and be able to show findings.

Resources

Holt Algebra 1 by Nichols Holt/1992 ISBN:0-03-005419-2
Algebra Structure and Method Book 1 by Brown McDougal Little/2000 ISBN:0-395-97722-3

graphing calculators

Khan Academy

PurpleMath

KutaSoftware

CK-12

Quizlet

Albert I/O

Desmos

Problem-Attic

Classkick