Unit #1: Theory of Statistics

Content Area: **Mathematics**
Course(s): **Statistics H**
Time Period: **Semester 1 & 2**
Length: **4 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.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.
9-12.HS-PS1-3.3.1	Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.
9-12.HS-PS1-7.5	Mathematical and computational thinking at the 9–12 level builds on K–8 and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.

Enduring Understandings

1) Becoming familiar with elementary statistical terms such as mean, median, mode, variance, standard deviation, etc.

2) Understand definitions and specific language associated with statistical tables, graphs, and calculations to use throughout the semester.

Essential Questions

1) What are the procedures for producing frequency and cumulative frequency distributions?

2) What steps are included for creating a histogram, frequency polygon, and ogive?

3) How will the students calculate all measures of central tendency, dispersion, and position?

4) What differences are there in the calculations for grouped and non-grouped data?

5) How can students differentiate between various distribution shapes?

6) How will students create stem & leaf and box & whisker plots?

7) How can DESMOS be utilized to find measures of center, dispersion, and position for both non-grouped and grouped data?

8) How can DESMOS assist with visualizations such as box & whisker plots, dot plots, and histograms to analyze center, dispersion, and shapes of data?

Knowledge and Skills

Students will be able to construct statistical tables and graphs, and make calculations about the measures of center, variation, and postion with various sets of data.

Students will be able to utilize technology such as DESMOS and the TI-84 graphing calculator to compile information, make calculations, and create visualizations.

Transfer Goals

1) Raw data needs to be filtered throough formulas in order to be understood.

2) Fully understanding nature of the distribution of data is more complex then just finding an "average."

Resources

Elementary Statistics 10th Edition

https://doralacademyprep.enschool.org/ourpages/auto/2015/8/18/48840047/Elementary%20Statistics%2010e.pdf