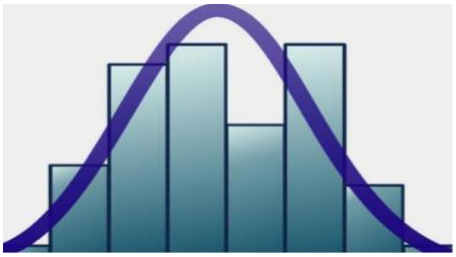
Advanced Algebra Concepts and Connections

Unit 1: Descriptive and Inferential Statistics



Overview:

This unit delves into interpretation of statistics, rather than pure computation of statistics. Students will learn best practices to plan, interpret, and critique studies using samples within a population to make inferences about the population, at-large.

Learning Targets:

In Unit 1, students will:

- Recognize the purposes of and different among sample surveys, experiments, and observational studies and explain how randomization leads to each
- Distinguish between primary and secondary data and how it affects conclusions
- Critically evaluate ethics, privacy, potential bias, and confounding variables when collecting and considering data
- Implement strategies for organizing and preparing big data sets
- Distinguish between population distributions, sample data distributions, and sampling distributions
- Use sample statistics to make inferences about population parameters and to communicate conclusions properly
- Calculate and interpret z-scores as a measure of relative standing and as a method of standardizing units
- Estimate percentages using the Empirical Rule, z-scores, and technology
- Model sample-to-sample variability in sampling distributions of a statistic using simulations from a population
- Develop and compare confidence intervals of different models to make conclusions about reliability
- Summarize and evaluate reports based on data for appropriateness of study design, analysis methods, and statistical measures used.

Key Vocabulary: (linked to GA DOE Interactive Glossary)

Central Limit Theorem	Confidence Interval	Confounding Variables	Descriptive Statistics
Error	Ethics	Experimental Study	Generalizable
Inferential Statistics	Law of Large Numbers	Margin of Error	Messy Data
Normal Distribution	Observational Study	Percentile	Population
Population Distribution	Potential Bias	Primary Data	Privacy
Probability	Randomization	Reliability	Sample
Sample Survey	Sample Data Distribution	Sampling Distribution	Sampling Variability
Secondary Data	Simulation	Standard Deviation	Standard unit
Trial	Validity	Variability	Z-Score

Supporting Resources:

http://ctlslearn.cobbk12.org/
https://gavirtual.instructure.com/courses/34342
Confidence Interval Practice
Z-Score Definition, Calculation, Interpretation