Statistics

Unit 1 The Nature of Statistics

Estimated Time Frame for Unit	Big Ideas	Essential Question	Concepts	Competencies	Lesson Plans and Suggested Resources	Vocabulary	Standards/Eligible Content
13 days	Data can be modeled and used to make inferences**.**	What makes a tool and/or strategy appropriate for a given task?	Nature of Probability and Statistics	Students should be able to demonstrate knowledge of statistical terms. Student should be able to differentiate between the two branches of statistics.	**Descriptive and Inferential Statistics** Elementary Statistics (Bluman) Section 1-1 Pgs. 1-1 to 1-6	Data Random variable Data set Data value Descriptive Statistics Inferential statistics probability Population Sample Hypothesis testing	CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments.
	Data can be modeled and used to make inferences	What makes a tool and/or strategy appropriate for a given task?	Nature of Probability and Statistics	Students should be able to identify types of data. Students should be able to identify the measurement level of each variable.	**Variables and Types of Data** Elementary Statistics (Bluman) Section 1-2 Pgs. 1-6 to 1-9	Qualitative Variable Quantitative variables Discrete variables Continuous variables	CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments

						Nominal level of measurement Ordinal level of measurement Interval level of measurement Ratio level of measurement	
	Data can be modeled and used to make inferences	What makes a tool and/or strategy appropriate for a given task?	Nature of Probability and Statistics	Students should be able to explain the difference between an observational and experimental study.	**Observational and Experimental Studies** Elementary Statistics (Bluman) Section 1-4 Pgs. 1-13 to 1-16	Observational Study Experimental study Quasi-Experimental study Independent variable (explanatory variable) Dependent variable (outcome variable) Treatment group Control group Confounding variable	CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments
	Data can be modeled and used to make inferences	What makes a tool and/or strategy appropriate for a given task?	Nature of Probability and Statistics	Students should be able to explain how statistics can be used and misused.	**Uses and Misuses of Statistics** Elementary Statistics (Bluman) Section 1-5	Suspect samples Ambiguous averages Changing the subject	CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments

					Pgs. 1-16 to 1-18	Detached statistics Implied connections Misleading graphs	
Review Unit 1 The Nature of Statistics							
Assessment Unit 1 The Nature of Statistics							
Unit 2 Frequency Distributions and Graphs							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**
14 Days	Data can be modeled and used to make inferences	What does it mean to estimate or analyze numerical quantities?	Data and Data Displays	Students should be able to organize data using frequency distributions.	**Organizing Data** Elementary Statistics (Bluman) Section 2-1 Pgs. 2-3 to 2-16	Frequency Distribution Categorical frequency distribution Group frequency distribution Lower class limit Upper class limit Class boundaries Class width Cumulative frequency	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.

						distribution Ungrouped frequency distribution	
	Data can be modeled and used to make inferences	What does it mean to estimate or analyze numerical quantities?	Data and Data Displays	Students should be able to represent data in frequency distributions graphically using histograms, frequency polygons and orgives.	**Histograms, Frequency Polygons, and Ogives** Elementary Statistics (Bluman) Section 2-2 Pgs. 2-17 to 2-34	Histogram Frequency polygon Ogive	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.
	Data can be modeled and used to make inferences	What does it mean to estimate or analyze numerical quantities?	Data and Data Displays	Students should be able to represent data using bar graphs, time series graphs and pie graphs.	**Bar, Time Series and Pie Graphs** Elementary Statistics (Bluman) Section 2-3 Pgs. 2-34 to 2-53	Bar graphs Time series graphs Pie graphs	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.
Review Unit 2 Frequency Distributions and Graphs							
Assessment Unit 2 Frequency Distributions and Graphs							
Unit 3 Data Description							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**

18 Days	Data can be modeled and used to make inferences	How can data be organized and represented to provide insight into the relationship between quantities?	Measures of Center and Variability	Students should be able to summarize data, using measures of central tendency, such as mean, median, mode, and midrange.	**Measures of Central Tendency** Elementary Statistics (Bluman) Section 3-1 Pgs. 3-3 to 3-21	Statistic Parameter Mean Median Mode Midrange Weighted mean Positively skewed distribution Negatively skewed distribution Symmetric distribution	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.
	Data can be modeled and used to make inferences	How can data be organized and represented to provide insight into the relationship between quantities?	Measures of Center and Variability	Students should be able to describe data, using measures of variation such as the range, variance, and standard deviation.	**Measures of Variation** Elementary Statistics (Bluman) Section 3-2 Pgs.3-21 to 3-39	Range Variance Standard deviation Coefficient of variation Range Rule of Thumb Chebyshev's theorem	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.
	Data can be modeled and used to make inferences	How can data be organized and represented to provide insight into	Measures of Center and Variability	Students should be able to identify the position of a data value in a data set,	**Measures of Position** Elementary Statistics (Bluman)	Z-score (standard score) Percentiles	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

		the relationship between quantities?		using various measures of position, such as percentiles, deciles and quartiles.	Section 3-3 Pgs. 3-40 to 3-60	Quartiles Deciles Interquartile range Outliers	CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.
	Data can be modeled and used to make inferences	How can data be organized and represented to provide insight into the relationship between quantities?	Measures of Center and Variability	Students should be able to use the techniques of exploratory data analysis, including boxplots and five-number summaries, to discover various aspects of data.	**Exploratory Data Analysis** Elementary Statistics (Bluman) Section 3-4 Pgs. 3-60 to 3-69	Five-number summary boxplot	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.
Review Unit 3 Data Description							
Assessment Unit 3 Data Description							
Unit 4 Probability and Counting							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**
20 Days	There are mathematical relationships that are always true and these relationships are	How can probability and data analysis be used to make predictions?	Compound Probability: Addition and Multiplication Rules	Students should be able to determine sample spaces and find the probability on an event, using classical probability	**Sample Spaces and Probability** Elementary Statistics (Bluman) Section 4-1	Probability experiment Sample space Tree diagram	CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data.

	used as rules of arithmetic and algebra and are useful for writing equivalent forms of expressions and solving equations and inequalities.			or empirical probability.	Pgs. 4-3 to 4-19	Event Equally likely events Complement of an event Empirical probability Subjective probability Law of Large Numbers	CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
	There are mathematical relationships that are always true and these relationships are used as rules of arithmetic and algebra and are useful for writing equivalent forms of expressions and solving equations and inequalities	How can probability and data analysis be used to make predictions?	Compound Probability: Addition and Multiplication Rules	Students should be able to find the probability of compound events using the addition rules.	**The Addition Rules for Probability** Elementary Statistics (Bluman) Section 4-2 Pgs. 4-19 to 4-30	Mutually exclusive events	CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
	There are mathematical relationships that are always true and these relationships are used as rules of arithmetic and algebra and are	How can probability and data analysis be used to make predictions?	Compound Probability: Addition and Multiplication Rules	Students should be able to find probability of compound events, using the multiplication rules**.**	**The Multiplication Rules and Conditional Probability** Elementary Statistics (Bluman) Section 4-3 Pgs. 4-31 to 4-44	Independent events Dependent events	CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of

	useful for writing equivalent forms of expressions and solving equations and inequalities						compound events in a uniform probability model.
	There are mathematical relationships that are always true and these relationships are used as rules of arithmetic and algebra and are useful for writing equivalent forms of expressions and solving equations and inequalities	How can probability and data analysis be used to make predictions?	Compound Probability: Addition and Multiplication Rules	Students should be able to find the total number of outcomes in a sequence of events, using the fundamental counting rule.	**Counting Rules** Elementary Statistics (Bluman) Section 4-4 Pgs. 4-44 to 4-57	Fundamental Counting Rule Factorials Permutations Combinations	CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
	There are mathematical relationships that are always true and these relationships are used as rules of arithmetic and algebra and are useful for writing equivalent forms of expressions and solving equations and inequalities	How can probability and data analysis be used to make predictions?	Compound Probability: Addition and Multiplication Rules	Students should be able to find the probability of an event, using the counting rules.	**Probability and Counting Rules** Elementary Statistics (Bluman) Section 4-5 Pgs. 4-47 to 4-62		CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
Review Unit 4 Probability and Counting							

Assessment Unit 4 Probability and Counting							
Unit 5 Discrete Probability Distribution							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**
12 Days	Bivariate data can be modeled with mathematical functions that approximate the data well and help us to make predictions.	Why is it important to understand the use of elementary probability functions and distributions to solve problems?	Discrete Probability Distribution	Students should be able to construct a probability distribution for a random variable.	**Probability Distributions** Elementary Statistics (Bluman) Section 5-1 Pgs. 5-3 to 5-9	Random variable Discrete probability Distribution	CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies. CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
	Bivariate data can be modeled with mathematical functions that approximate the data well and help us to make predictions.	Why is it important to understand the use of elementary probability functions and distributions to solve problems?	Discrete Probability Distribution	Students should be able to find the mean, variance, standard deviation, and expected value for a discrete random variable.	**Mean, Standard Deviation, and Expected Values from Probability Distributions** Elementary Statistics (Bluman) Section 5-2	Expected value	CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.CC.2.4.HS.B.6 Use concepts of independence and

					Pgs. 5-9 to 5-20		conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
	Bivariate data can be modeled with mathematical functions that approximate the data well and help us to make predictions.	Why is it important to understand the use of elementary probability functions and distributions to solve problems?	Discrete Probability Distribution	Students should be able to find the exact probability for X successes in n trials of a binomial experiment.	**Binomial Distributions** Elementary Statistics (Bluman) Section 5-3 Pgs. 5-20 to 5-33	Binomial Experiment Binomial Distribution	CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies. CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
	Bivariate data can be modeled with mathematical functions that approximate the data well and help us to make predictions.	Why is it important to understand the use of elementary probability functions and distributions to solve problems?	Discrete Probability Distribution	Students should be able to find probabilities for outcomes of variables using the Poisson distribution.	**Poisson Distribution** Elementary Statistics (Bluman) Section 5-4 Pgs. 5-33 to 5-42	Poisson Distribution	CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies. CC.2.4.HS.B.6 Use concepts of independence and

							conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
Review Unit 5 Discrete Probability Distribution							
Assessment Unit 5 Discrete Probability Distribution							
Unit 6 Normal Distributions							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**
16 Days	Bivariate data can be modeled with mathematical functions that approximate the data well and help us to make predictions.	Why is it important to understand the use of elementary probability functions and distributions to solve problems?	Discrete Probability Distribution	Students should be able to identify distributions as symmetric or skewed. Student should be able to identify the properties of a normal distribution. Student should be able to find the area under the	**Normal Distributions** Elementary Statistics (Bluman) Section 6-1 Pgs. 6-1 to 6-18	Symmetric distributions Negatively skewed Positively skewed Normal distribution Standard normal distribution	CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies. CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to

				standard normal distribution, given various z-values.			compute probabilities of compound events in a uniform probability model.
	Bivariate data can be modeled with mathematical functions that approximate the data well and help us to make predictions.	Why is it important to understand the use of elementary probability functions and distributions to solve problems?	Discrete Probability Distribution	Students should be able to find probabilities for a normally distributed variable by transforming it into a standard normal variable. Student should be able to find specific data values for given percentages, using the standard normal distribution.	**Applications of the Normal Distribution** Elementary Statistics (Bluman) Section 6-2 Pgs. 6-18 to 6-32		CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies. CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
	Bivariate data can be modeled with mathematical functions that approximate the data well and help us to make predictions.	Why is it important to understand the use of elementary probability functions and distributions to solve problems?	Discrete Probability Distribution	Students should be able to use the central limit theorem to solve problems involving sample means for large samples.	**Distribution of Sample Means-The Central Limit Theorem** Elementary Statistics (Bluman) Section 6-3 Pgs. 6-33 to 6-42	Sampling distributions of sample means Sampling errors The Central Limit Theorem	CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies. CC.2.4.HS.B.6 Use concepts of independence and conditional probability to interpret data. CC.2.4.HS.B.7 Apply the rules of probability to

							compute probabilities of compound events in a uniform probability model.
Review Unit 6 Normal Distributions							
Assessment Unit 6 Normal Distributions							
Unit 7 Confidence Intervals							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**
15 Days	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Confidence Intervals	Students should be able to find the confidence interval for the mean when sigma is known.	**Confidence Intervals for Means- Sigma Known** Elementary Statistics (Bluman) Section 7-1 Pgs. 7-3 to 7-15	Point estimate Unbiased estimator Consistent estimator Relative efficient estimator Interval estimate Confidence level Confidence interval Margin of error	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Numerical quantities, calculations and	In what ways are the mathematical attributes of	Confidence Intervals	Students should be able to find the confidence interval	**Confidence Intervals for Means- Sigma Unknown**	Degrees of freedom	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or

	measurements can be estimated and analyzed by using appropriate strategies and tools.	objects or processes measured, calculated and/or interpreted?		for the mean when sigma is unknown.	Elementary Statistics (Bluman) Section 7-2 Pgs. 7-16 to 7-23		measurement variable. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Confidence Intervals	Students should be able to find the confidence interval for a proportion. Students should be able to determine the minimum sample size for finding a confidence interval for a proportion.	**Confidence Intervals for Proportions** Elementary Statistics (Bluman) Section 7-3 Pgs. 7-23 to 7-31		CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Confidence Intervals	Students should be able to find a confidence interval for variance and standard deviation.	**Confidence Intervals for Variance and Standard Deviation.** Elementary Statistics (Bluman) Section 7-4 Pgs. 7-31 to 7-38	Chi-square distribution	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments

							CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
Review Unit 7 Confidence Intervals							
Assessment Unit 7 Confidence Intervals							
Unit 8 Hypothesis Testing – One Sample							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**
18 Days	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to understand definitions used in hypothesis testing. Students should be able to state the null and alternative hypotheses. Students should be able to find critical values for the z-test. Students should be able to state the	**Hypothesis Testing Process** Elementary Statistics (Bluman) Section 8-1 Pgs. 8-3 to 8-14	Hypothesis testing Statistical hypothesis Null hypothesis Alternative Hypothesis Statistical test Test value Type I error Type II error Level of significance	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

				five steps used in hypothesis testing.		Critical value Critical (rejected) region Noncritical (nonrejected) region One-tailed test Right-tailed test Left-tailed test Two-tailed test	
	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to test means when sigma is known. Students should be able to test means when sigma is unknown, using the t-test.	**Testing of Population Means** Elementary Statistics (Bluman) Section 8-2 Pgs. 8-15 to 8-29 Section 8-3 Pgs. 8-29 to 8-39	z-test P-value t-test	CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to test populations using the z-test**.**	**Testing for Population Proportions** Elementary Statistics (Bluman) Section 8-4 Pgs. 8-39 to 8-47		CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to test variances or standard deviations using the chi-square test.	**Testing for Population Variances and Standard Deviations** Elementary Statistics (Bluman) Section 8-5 Pgs. 8-47 to 8-59		CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
Review Unit 8 Hypothesis Testing – One Sample							

Assessment Unit 8 Hypothesis Testing – One Sample							
Unit 9 Hypothesis Testing – Two Samples							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**
16 Days	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to test the difference between sample means, using the z-test. Students should be able to test the difference between two means for independent samples, using the t-test.	**Testing the Difference Between Two Means – Independent z vs. t Distributions** Elementary Statistics (Bluman) Section 9-1 Pgs. 9-3 to 9-14 Section 9-2 Pgs. 9-14 to 9-22	Independent samples	CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to test the difference between two means for dependent samples.	**Testing the Difference Between Two Means – Dependent** Elementary Statistics (Bluman) Section 9-3 Pgs. 9-22 to 9-34	Dependent samples	CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments

							CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to test the difference between two proportions.	**Testing the Difference Between Two Proportions** Elementary Statistics (Bluman) Section 9-4 Pgs. 9-34 to 9-43		CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to test the difference between two variances or standard deviations.	**Testing the Difference Between Two Variances (F-Distribution)** Elementary Statistics (Bluman) Section 9-5 Pgs. 9-43 to 9-53	F-Test F-Distribution	CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys,

							experiments, and observational studies.
Review Unit 9 Hypothesis Testing – Two Samples							
Assessment Unit 9 Hypothesis Testing – Two Samples							
Unit 10 Correlation and Regression							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**
15 Days	Data Can be modeled and used to make inferences.	How can data be organized and represented to provide insight into the relationships between two quantities?	Correlation and Regression	Students should be able to draw scatter plots for a set of ordered pairs. Student should be able to compute the correlation coefficient. Students should be able to test the Null Hypothesis (H naught): P = 0**.**	**Scatter Plots and Correlation** Elementary Statistics (Bluman) Section 10-1 Pgs. 10-3 to 10-19	Correlation Regression Simple relationship Independent variable Dependent variable Multiple relationship Multiple regression Positive relationship Negative relationship Scatter plot	CC.2.2.HS.C.6 Interpret Functions in terms of the situations they model. CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.3 Analyze linear models to make interpretations based on the data. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify

						Correlation coefficient Population correlation coefficient	conclusions based on sample surveys, experiments, and observational studies.
	Data Can be modeled and used to make inferences.	How can data be organized and represented to provide insight into the relationships between two quantities?	Correlation and Regression	Students should be able to compute the equation of the regression line.	**Regression** Elementary Statistics (Bluman) Section 10-2 Pgs. 10-19 to 10-33	Line of best fit Marginal change Extrapolation Influential points Influential observations	CC.2.2.HS.C.6 Interpret Functions in terms of the situations they model. CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.3 Analyze linear models to make interpretations based on the data. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Data Can be modeled and used to make inferences.	How can data be organized and represented to provide insight into the relationships between two	Correlation and Regression	Students should be able to compute the coefficient of determination.	**Coefficient of Determination** Elementary Statistics (Bluman) Section 10-3	Coefficient of Determination	CC.2.2.HS.C.6 Interpret Functions in terms of the situations they model. CC.2.4.HS.B.2 Summarize, represent, and interpret

		quantities?			Pgs. 10-33 to 10-42		data on two categorical and quantitative variables. CC.2.4.HS.3 Analyze linear models to make interpretations based on the data. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
Review Unit 10 Correlation and Regression							
Assessment Unit 10 Correlation and Regression							
Unit 11 Advanced Hypothesis Testing							
Estimated Time Frame for Unit	**Big Ideas**	**Essential Question**	**Concepts**	**Competencies**	**Lesson Plans and Suggested Resources**	**Vocabulary**	**Standards/Eligible Content**
15 Days	Numerical quantities, calculations and measurements can	In what ways are the mathematical attributes of objects or	Hypothesis Testing	Students should be able to test a distribution for goodness of fit,	**Goodness of Fit** Elementary Statistics (Bluman)	Goodness-of-fit test Observed	CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative

	be estimated and analyzed by using appropriate strategies and tools.	processes measured, calculated and/or interpreted?		using chi-square.	Section 11-1 Pgs. 11-3 to 11-15	frequencies Expected frequencies	variables. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools.	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to test two variables for independence, using chi-square. Students should be able to test proportions for homogeneity using chi-square.	**Contingency Tables** Elementary Statistics (Bluman) Section 11-2 Pgs. 11-16 to 11-31	Independence test Homogeneity of proportions test	CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and	In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?	Hypothesis Testing	Students should be able to use the one-way ANOVA technique to determine if there is a significant difference among three or more	**One-Way Analysis of Variance** Elementary Statistics (Bluman) Section 12-1 Pgs. 12-3 to 12-14	Analysis of Variance Between group variance Within group variance	CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.B.4 Recognize and evaluate random

	tools.			means.		sum of squares between groups sum of squares within groups	processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
Review Unit 11 Advanced Hypothesis Testing							
Assessment Unit 11 Advanced Hypothesis Testing							