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

		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.

Data can be modeled and used to make inferences Data can be modeled and used to make inferences	What does it mean to estimate or analyze numerical quantities? What does it mean to estimate or analyze numerical quantities?	Data and Data Displays Data and Data Displays	Students should be able to represent data in frequency distributions graphically using histograms, frequency polygons and orgives. Students should be able to represent data using bar graphs, time series graphs and pie graphs.	Histograms, Frequency Polygons, and Ogives Elementary Statistics (Bluman) Section 2-2 Pgs. 2-17 to 2-34 Bar, Time Series and Pie Graphs Elementary Statistics (Bluman) Section 2-3	distribution Ungrouped frequency distribution Histogram Frequency polygon Ogive 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. 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,				
				Pgs. 2-34 to 2-53		represent, and interpret data on two categorical and quantitative variables.				
		Review Unit	t 2 Frequency Distrib	outions and Graphs						
Assessment Unit 2 Frequency Distributions and Graphs										
Unit 3 Data Description										

Competencies

Lesson Plans and

Suggested Resources

Estimated

for Unit

Time Frame

Big Ideas

Essential

Question

Concepts

Standards/Eligible

Content

Vocabulary

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 fivenumber 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	Big Ideas	Essential	Concepts	Competencies	Lesson Plans and	Vocabulary	Standards/Eligible
Time Frame for Unit		Question			Suggested Resources		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

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	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. 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 probability to 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

CC.2.4.HS.B.7 Apply tl	
rules of probability to compute probability compound events in a uniform probability model.	of

Review Unit 5 Discrete Probability Distribution

Assessment Unit 5 Discrete Probability Distribution

Unit 6 Normal Distributions

Estimated	Big Ideas	Essential	Concepts	Competencies	Lesson Plans and	Vocabulary	Standards/Eligible
Time Frame		Question			Suggested Resources		Content
for Unit							
16 Days	Bivariate data can	Why is it important	Discrete	Students should be	Normal Distributions	Symmetric	CC.2.4.HS.B.5 Make
	be modeled with	to understand the	Probability	able to identify		distributions	inferences and justify
	mathematical	use of elementary	Distribution	distributions as	Elementary Statistics	No setti od od od od od	conclusions based on
	functions that	probability		symmetric or	(Bluman)	Negatively skewed	sample surveys,
	approximate the	functions and		skewed.	Section 6-1	Positively skewed	experiments, and
	data well and help	distributions to			Pgs. 6-1 to 6-18	1 Ositively skewed	observational studies.
	us to make	solve problems?		Student should be		Normal	
	predictions.			able to identify the		distribution	CC.2.4.HS.B.6 Use
				properties of a			concepts of
				normal		Standard normal	independence and
				distribution.		distribution	conditional probability to
							interpret data.
				Student should be			
				able to find the			CC.2.4.HS.B.7 Apply the
				area under 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

uniform probability				compute probabilities of
				compound events in a
				uniform probability
model.				model.

Review Unit 6 Normal Distributions

Assessment Unit 6 Normal Distributions

Unit 7 Confidence Intervals

Estimated	Big Ideas	Essential	Concepts	Competencies	Lesson Plans and	Vocabulary	Standards/Eligible
Time Frame		Question			Suggested Resources		Content
for Unit							
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	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.
	N		0 61	6. 1 . 1 . 1 . 1	0 61 1 1	Margin of error	00.2 4 116 B 4 6
	Numerical	In what ways are	Confidence	Students should be	Confidence Intervals	Degrees of freedom	CC.2.4.HS.B.1 Summarize,
	quantities,	the mathematical	Intervals	able to find the	for Means- Sigma	needom	represent, and interpret
	calculations and	attributes of		confidence interval	Unknown		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.
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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 ztest. 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.

quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools. Testing Testing able to test means when sigma is known. Students should be able to test means when sigma is strategies and tools. Testing able to test means when sigma is known. Students should be able to test means when sigma is unknown, using the t-test. Testing able to test means when sigma is unknown. Students should be able to test means when sigma is unknown, using the t-test. F-value 1-test Testing Reans Represent, and interpred data on a single count measurement variables (Bluman) Section 8-2 Pgs. 8-15 to 8-29 Section 8-3 Pgs. 8-29 to 8-39 Testing Reans Represent, and interpred data on a single count measurement variables (Bluman) Section 8-3 Pgs. 8-29 to 8-39 CC.2.4.HS.B.4 Recognicated and variables. CC.2.4.HS.B.4 Recognicated and variables. CC.2.4.HS.B.5 Make inferences and justify	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and interpreted? Numerical quaprobles is testing. Numerical quantities, calculations and analyzed by using appropriate strategies and interpreted? Numerical quantities, calculations and measurements can appropriate strategies and interpreted? Numerical quantities, calculations and analyzed by using appropriate strategies and interpreted? Numerical quantities, the mathematical attributes of calculated and/or strategies and interpreted? Numerical quantities, the mathematical attributes of sobjects or processes measured, calculated and/or strategies and interpreted? Numerical (nonrejected) Right-tailed test Left-tailed test Two-tailed test Velocation Population Means Means P-value data on a single glementary Statistics (Bluman) Section 8-2 Festing of Population Means P-value data on a single glementary Statistics (Bluman) Section 8-2 Festing of Population Means P-value data on a single glementary Statistics (Bluman) Section 8-2 Section 8-2 Section 8-3 As 15 to 8-29 Section 8-3 And quantitative of data on two cate and quantitative and quantitativ	hypothesis testing. Critical value Critical (rejected) region Noncritical (nonrejected) region One-tailed test
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Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools. Numerical quantities, calculations and measurements can be estimated? Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools. Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools. Numerical quantities, calculaties of objects or processes measured, calculated and/or interpreted? Testing of Population Means Means Testing of Population Means Fellomentary Statistics (Bluman) Students should be able to test means when sigma is sunknown, using the t-test. Section 8-2 Pgs. 8-15 to 8-29 Pgs. 8-15 to 8-29 Pgs. 8-29 to 8-39 CC.2.4.HS.B.1 Summar represent, and interpredate on two categoric and quantitative variables. CC.2.4.HS.B.2 Section 8-3 Pgs. 8-29 to 8-39 CC.2.4.HS.B.4 Recogniand evaluate random processes underlying statistical experiments CC.2.4.HS.B.5 Make inferences and justify	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate appropriate strategies and sinterpreted? Numerical quantities, Calculated and/or interpreted? Numerical quantities, Students should be able to test means when sigma is known. Students should be able to test means when sigma is known. Students should be able to test means when sigma is known. Students should be able to test means when sigma is known. Students should be able to test means when sigma is section 8-2 Pyss. 8-15 to 8-29 Section 8-3	(nonrejected) region One-tailed test
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Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and tools. 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 of Population Means 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. Students should be able to test means when sigma is unknown, using the t-test. CC.2.4.HS.B.2 Summar represent, and interpredata on a single count measurement variable Cc.2.4.HS.B.2 Summar represent, and interpreted? CC.2.4.HS.B.2 Summar represent, and interpresent, and interpreted? Students should be able to test means when sigma is unknown, using the t-test. CC.2.4.HS.B.2 Summar represent, and interpresent, and interpresent, and interpresent, and interpresent and quantitative variables. CC.2.4.HS.B.4 Recogni and evaluate random processes underlying statistical experiments. CC.2.4.HS.B.5 Make inferences and justify	Numerical quantities, calculations and measurements can be estimated and analyzed by using appropriate strategies and sirributes? Numerical quantities, the mathematical and analyzed by using appropriate strategies and sirributes of large interpreted? Numerical quantities of the mathematical attributes of objects or processes measured, calculated and/or interpreted? Hypothesis Testing Students should be able to test means when sigma is section 8-2 Pgs. 8-15 to 8-29 Section 8-3 Left-tailed test Two-tailed test Testing of Population Means F-value data on a single measurement value (CC.2.4.HS.B.1 Surpresent, and in data on two cates and quantitative and quantitative).	Right-tailed test
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sample surveys, experiments, and	the t-test. CC.2.4.HS.B.4 Re and evaluate rar processes under statistical experi CC.2.4.HS.B.5 Minferences and ju conclusions base sample surveys,	able to test means when sigma is known. Elementary Statistics (Bluman) Students should be able to test means when sigma is unknown, using the t-test. Means Fevalue P-value t-test P-value t-test 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

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

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.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies. 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

					Correlation coefficient Population correlation coefficient Line of best fit	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	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	Big Ideas	Essential Question	Concepts	Competencies	Lesson Plans and Suggested Resources	Vocabulary	Standards/Eligible Content

Students should be

able to test a

distribution for

goodness of fit,

Goodness of Fit

(Bluman)

Elementary Statistics

Goodness-of-fit

test

Observed

CC.2.4.HS.B.2 Summarize,

represent, and interpret

data on two categorical

and quantitative

for Unit

15 Days

Numerical

quantities,

calculations and

measurements can

In what ways are

the mathematical

attributes of

objects or

Hypothesis

Testing

be estimated and analyzed by using	processes measured,		using chi-square.	Section 11-1 Pgs. 11-3 to 11-15	frequencies	variables.
appropriate strategies and tools.	calculated and/or interpreted?			Ü	Expected frequencies	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.	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	In what ways are the mathematical attributes of objects or processes	Hypothesis Testing	Students should be able to use the one-way ANOVA technique to determine if there	One-Way Analysis of Variance Elementary Statistics (Bluman)	Analysis of Variance Between group variance	CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.
analyzed by using appropriate strategies and	measured, calculated and/or interpreted?		is a significant difference among three or more	Section 12-1 Pgs. 12-3 to 12-14	Within group variance	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							