TX-Statistics	Scope and Sequence
Unit Lesson	**Objectives**
Data Analysis	
Introduction to Statistics	
	Identify an individual from a set of data.
	Identify a variable from a set of data.
	Classify a variable as categorical, discrete quantitative, or continuous quantitative.
Categorical Data Displays	
	Identify a frequency table and a relative frequency table given data.
	Determine if a graphical display is appropriate for a given data set.
	Interpret a bar graph or pie chart.
	Determine what makes a graph of categorical data deceptive.
Relative Frequencies	
	Complete a two-way table, and calculate marginal and conditional distributions.
	Given a two-way table, calculate marginal and joint relative frequency distributions.
	Given a two-way table, calculate conditional relative frequency distributions.
	Create marginal relative frequency distributions.
	Create conditional relative frequency distributions.
	Interpret frequencies appropriately when given data from samples that differ considerably in sample size for two categorical variables.
Comparing Two Categorical Variables	
	Compare distributions of categorical data using segmented or side-by-side bar graphs.
	Decide whether two categorical variables are associated using segmented or side-by-side bar graphs.
	Use appropriate phrasing in the depth and detail required by the College board to compare and contrast

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		categorical variables.
		Display three categorical variables in side-by-side bar graphs.
	Describing and Comparing Data with Dotplots and Stemplots	
		Identify and/or describe a dotplot.
		Identify and/or describe a stemplot.
		Compare two distributions using dotplots or stemplots.
	Describing and Comparing Data with Histograms	
		Identify the patterns, shape, and spread of a distribution using histograms.
		Relate measures of center to the shape of a distribution using histograms.
		Compare two distributions using histograms.
	Measures of Center and Location	
		Calculate measures of center, given a data set or a graphical display.
		Interpret the measures of center.
		Analyze the effect of extreme values on the value of the mean and median.
		Analyze the relationship between center and shape.
	Measures of Variability	
		Calculate the range, standard deviation, or interquartile range of a univariate data set.
		Interpret the range, standard deviation, or interquartile range of a univariate data set.
		Compare the spread given graphical displays of two univariate data sets.
		Use a graphing calculator to compute the numerical summary of a univariate data set.
	Boxplots and Outliers	

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Identify if a univariate data set contains any outliers.
		Represent univariate data using a boxplot.
		Compare distributions presented in parallel boxplots.
		Identify the percent and number of values lying in each portion of a boxplot.
		Create a boxplot using a graphing calculator.
	Unit Test	
The Normal Distribution		
	Calculating and Interpreting z-Scores	
		Calculate a z-score.
		Interpret a z-score.
		Compare performance using two or more z-scores.
		Calculate a data value given a z-score, standard deviation, and mean.
		Compare performance using three or more z-scores.
	Uniform Density Curves	
		Describe a density curve.
		Calculate probabilities using the appropriate area within a uniform density curve.
		Estimate the mean and median value of a density curve.
	Normal Distributions	
		Describe the properties of a Normal distribution.
		Describe a Normal distribution using the empirical rule.
		Calculate probabilities using the empirical rule.
	Finding Areas within a Normal Distribution	

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Estimate the proportion of values in a Normal distribution to the left of a value or to the right of a value using a Normal distribution table.
		Estimate the proportion of values in a Normal distribution between two values using a Normal distribution table.
		Estimate the proportion of values in a Normal distribution for inclusive intervals of less than or equal to, greater than or equal to, or between and including values.
		Estimate the proportion of values in a Normal distribution using a graphing calculator.
		Estimate the proportion of values in a standard Normal distribution using a graphing calculator.
	Finding Values from Probabilities	
		Determine the z-score for a given probability.
		Determine the data-value, x, in a Normal distribution for a given percentile.
		Determine the value in a Normal distribution that bounds a given area, using a graphing calculator.
	Unit Test	
Simple Linear Regression		
	The Relationship between Two Quantitative Variables	
		Identify the explanatory and response variable.
		Represent two quantitative variables using a scatterplot.
		Describe the direction, form, strength, and unusual observations given a scatterplot.
		Create a scatterplot using a graphing calculator.
	Correlation	
		Interpret the correlation of a linear relationship between two quantitative variables.
		Describe the effect of unusual observations on the correlation.
		Distinguish between correlation and causation.
	Making Predictions from a	

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Least-Squares Regression Line	
		Interpret the slope and y-intercept of a linear model.
		Make a prediction using a linear model.
	Calculating the Least-Squares Regression Line	
		Explain why the line that is the best fit for a linear relationship is called the least-squares regression line.
		Compute a least-squares regression line and correlation using technology.
		Identify a least-squares regression line using computer output.
	Residuals	
		Calculate residuals.
		Create a residual plot.
		Assess linearity based upon a residual plot.
		Create a residual plot on the graphing calculator.
	R-squared and s	
		Determine r^2 using a graphing calculator or computer output.
		Interpret r^2 and s in context.
		Identify s.
		Describe the effect that influential points have on the least-squares regression line.
	Transforming to Achieve Linearity	
		Transform a nonlinear data set using powers, roots, or logarithms.
		Write the equation of a least-squares regression line that describes a transformed data set given computer output.
		Predict the response variable based upon the equation of a least-squares regression line that describes a transformed data set.

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Choosing the Best Model	
		Assess how well a model fits a given data set.
		Choose an appropriate model for a bivariate data set given regression output and residual plots.
		Make a prediction based on the computer output provided for various regression models.
	Unit Test	
Sampling and Experimentation		
	Introduction to Sampling Methods	
		Describe a population and sample given a description of a study.
		Identify whether a study utilized convenience sampling or voluntary response sampling.
		Analyze a study to determine if bias is present and whether that bias leads to an overestimate or underestimate of the population parameter.
	Simple Random Sample	
		Describe the process of simple random sampling.
		Explain the process of generating a simple random sample using a table of random digits.
		Explain the process of generating a simple random sample using a random number generator.
	Other Sampling Methods	
		Describe the process and/or advantages and disadvantages of stratified random sampling.
		Describe the process and/or advantages and disadvantages of systematic random sampling.
		Describe the process and/or advantages and disadvantages of cluster sampling.
		Distinguish between stratified random sampling, systematic random sampling, and cluster sampling.
	Considerations When Sampling	
		Describe the sampling problems of undercoverage, nonresponse, response, and question-wording bias.
		Identify whether a study is affected by undercoverage, nonresponse, response, or question-wording bias.

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Describe the direction of the bias presented in a study.
	Observational Studies and Experiments	
		Distinguish between an observational study and an experiment.
		Describe the effect of confounding.
		Identify the explanatory variable, response variable, treatments, experimental units/subjects, factors, and levels of an experimental design.
	Additional Principles of Experimental Design	
		Identify the benefits of using the principle of comparison within an experimental design.
		Identify the placebo effect, as well as the benefits of blindness, within an experimental design.
		Identify the benefits of using the principle of random assignment within an experimental design.
		Identify the benefits of using the principle of control and replication within an experimental design.
	How to Experiment Well	
		Identify the reason for randomization for a well-constructed experimental design.
		Describe the randomization step within an experimental design using slips of paper.
		Describe the randomization step within an experimental design using a table of random digits.
		Describe the randomization step within an experimental design using a random number generator.
	Experimental Designs	
		Describe the structure of a completely randomized design, including details about the randomization process.
		Describe the structure of a randomized block design, including details about the randomization process.
		Describe the structure of the matched pairs version of a randomized block design, including details about the randomization process.
	Scope of Inference	

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Describe the concept of sampling variability with regards to the size of the sample.
		Determine if the results of an experiment are statistically significant based upon simulated results.
		Determine the appropriate scope of inference for the study design used.
	Unit Test	
Probability		
	Introduction to Probability	
		Interpret probability as the long-run relative frequency of an event.
		Describe the law of large numbers.
		Describe how a simulation is used to imitate a random process.
		Conduct a simulation using a graphing calculator.
	Probability Rules	
		Identify a probability model to describe a random process.
		Apply the basic probability rules, which indicate that the probability of an event is a number between 0 and 1 and that the sum of the probabilities of all outcomes in the sample space is 1.
		Apply the complement rule and the addition rule for mutually exclusive events.
	Applying Probability Rules	
		Determine probabilities using a two-way table.
		Determine probabilities using a Venn diagram.
	Conditional Probabilities	
		Calculate a conditional probability.
		Interpret a conditional probability.
		Determine if two events are independent.
	The Multiplication Rule for	

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Dependent Events	
		Calculate a probability using the general multiplication rule.
		Use a tree diagram to determine the sample space.
		Calculate a probability using a tree diagram.
	The Multiplication Rule for Independent Events	
		Calculate a probability using the multiplication rule for independent events.
		Calculate the probability of "at least one" using the multiplication rule for independent events or other multi-step probabilities.
		Determine if it is appropriate to use the multiplication rule for independent events, the addition rule for mutually exclusive events, or neither.
	Unit Test	
Cumulative Exam		
	Cumulative Exam Review	
	Cumulative Exam	
Random Variables		
	Introduction to Random Variables	
		Calculate the probability of an event given a probability distribution of a discrete random variable.
		Interpret the probability of an event given a probability distribution of a discrete random variable.
		Identify a probability distribution histogram of a discrete random variable.
		Describe the shape of a probability distribution histogram of a discrete random variable.
	Discrete Random Variables – Mean	
		Calculate the mean, median, and/or standard deviation of the probability distribution of a discrete random variable.

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Interpret the standard deviation of the probability distribution of a discrete random variable.
		Compare the shape, center, and/or variability given two probability distribution histograms.
	Combining Two Random Variables	
		Calculate the mean and standard deviation of the sum or difference of two or more random variables.
		Interpret the mean and standard deviation of the sum or difference of two or more random variables.
		Calculate a probability based upon the sum or difference of two or more random variables.
		Calculate the mean and standard deviation of a linear combination of random variables.
	Binomial Random Variables	
		Determine if a scenario describes a binomial setting.
		Calculate the mean and standard deviation of a binomial random variable.
		Describe the shape, center, and/or variability of a probability histogram of a binomial random variable.
	Binomial Probabilities	
		Calculate the binomial probability P(X = k) using the binomial probability formula.
		Calculate cumulative binomial probabilities using the binomial probability formula.
		Approximate binomial probabilities using a Normal distribution.
		Calculate the binomial probability P(X = k) using a graphing calculator.
		Calculate cumulative binomial probabilities using a graphing calculator.
	Geometric Random Variables	
		Determine if a scenario describes a geometric setting.
		Calculate a geometric probability using the geometric probability formula.
		Calculate the mean and standard deviation of a geometric random variable.
		Calculate a geometric probability using a graphing calculator.

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Simulations	
		Describe the simulation of a binomial probability distribution.
		Describe the simulation of a geometric probability distribution.
	Unit Test	
Sampling Distributions		
	Introduction to Sampling Distributions	
		Identify the population, parameter, sample, and statistic given a scenario.
		Identify a sampling distribution.
		Distinguish between the population distribution, sample distribution, and a sampling distribution of a statistic.
	Sampling Distributions – Center and Variability	
		Evaluate a claim about a population parameter based upon a sampling distribution of a statistic.
		Determine if a sample statistic is an unbiased estimator of the population parameter.
		Describe the variability of a sampling distribution as it relates to the size of the sample.
	Sampling Distribution of the Sample Proportion	
		Determine the shape, mean, and/or standard deviation of the sampling distribution of the sample proportion.
		Determine the shape, mean, and/or standard deviation of the sampling distribution of the difference in two sample proportions.
		Interpret the standard deviation of the sampling distribution of the sample proportion or the sampling distribution of the difference in two sample proportions.
	Calculating Probabilities for Sampling Distribution	
		Calculate a probability based upon the sampling distribution of p-hat.
		Calculate a probability based upon the sampling distribution of p-hat_1 – p-hat_2.

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Determine if there is convincing evidence against a claim based upon a calculated probability.
	Sampling Distribution of the Sample Mean	
		Describe the shape of the sampling distribution of the sample mean.
		Describe the shape, mean, and/or standard deviation of the sampling distribution of the sample mean.
		Describe the shape, mean, and/or standard deviation of the sampling distribution of the difference in two sample means.
	Using the Central Limit Theorem	
		Calculate probabilities given a Normal population based upon the sampling distribution of the sample mean or difference in sample means.
		Calculate probabilities given a non-Normal population, when appropriate, based upon the sampling distribution of the sample mean or difference in sample means.
	Unit Test	
Estimating Proportions with Confidence		
	Introduction to Confidence Intervals	
		Calculate the value of a point estimate and/or the margin of error of a given confidence interval.
		Interpret a confidence interval.
		Evaluate a claim about a population parameter given a confidence interval.
	More about Confidence Intervals	
		Interpret the confidence level.
		Determine how the margin of error and width of the interval is affected by the confidence level and sample size.
		Identify the sources of variability that are and are not accounted for by the margin of error in a confidence interval.
	Preparing to Estimate a Population Proportion	

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Verify if each of the conditions for calculating a confidence interval for a population proportion are met.
		Determine the critical value for a specific confidence level for a population proportion using a table and technology.
		Calculate the point estimate and standard error of the sample proportion.
	Estimating a Population Proportion	
		Construct a confidence interval for a population proportion.
		Evaluate a claim about a population proportion based upon a calculated confidence interval.
		Calculate the minimum sample size that is needed to construct a confidence interval for a population proportion with a given confidence level and a given margin of error.
	Estimating the Difference between Two Population Proportions	
		Determine whether the conditions for calculating a confidence interval for a difference in two population proportions are met.
		Construct a confidence interval for a difference in two population proportions.
		Evaluate a claim about a difference in two population proportions based upon a calculated confidence interval.
		Construct a confidence interval for a difference in two population proportions using a graphing calculator.
	Unit Test	
Testing Claims about Proportions		
	Introduction to Hypothesis Testing	
		State appropriate hypotheses for performing a hypothesis test about a population proportion.
		Interpret the P-value.
		Draw a conclusion based upon the P-value.
	Type I and Type II Errors	
		Describe and give a consequence of a Type I and Type II error.

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Estimate a P-value based upon the results of a simulation.
		Draw a conclusion based upon an estimated P-value.
	Preparing to Test a Claim about a Population Proportion	
		Determine if the conditions needed to carry out a significance test about a population proportion are met.
		Calculate the test statistic and the P-value for a significance test about a population proportion.
		Draw a conclusion based upon a calculated P-value.
	Testing a Claim about a Population Proportion	
		Conduct a hypothesis test about a population proportion.
		Conduct a hypothesis test about a population proportion given computer output.
		Describe the power of a test and/or what influences the power of a test.
		Calculate a test statistic and P-value for a hypothesis test about a population proportion using a graphing calculator.
	Testing a Claim about a Difference between Proportions	
		Perform one step of a hypothesis test for a difference in two population proportions.
		Conduct a hypothesis test about a difference in two population proportions.
		Calculate a test statistic and P-value for a hypothesis test about a population proportion using a graphing calculator.
	Unit Test	
Estimating Means with Confidence		
	Preparing to Estimate a Population Mean	
		Determine the t critical value needed to compute a C% confidence interval for a population mean.

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Determine if the conditions required to compute a C% confidence interval for a population mean are met.
		Calculate the standard error of the mean.
		Interpret the standard error of the mean.
	Estimating a Population Mean	
		Construct a confidence interval for a population mean.
		Evaluate a claim about a population mean based upon a calculated confidence interval.
		Describe how the margin of error of a confidence interval can be reduced.
		Construct a confidence interval for a population mean using a graphing calculator.
	Estimating a Difference in Two Population Means	
		Determine if the conditions required to compute a confidence interval for a difference in two population means are met.
		Construct a confidence interval for a difference in two population means.
		Evaluate a claim about the difference in the population means based upon a calculated confidence interval.
		Construct a confidence interval for a difference in two population means using a graphing calculator.
	Estimating the Mean Difference	
		Calculate the mean difference and the standard deviation of the differences for paired data.
		Construct a confidence interval for a mean difference.
		Evaluate a claim about a population mean difference based upon a confidence interval.
		Construct a confidence interval for a mean difference using a graphing calculator.
	Unit Test	
Testing Claims about Means		
	Preparing to Test a Claim about a Mean	

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
		State appropriate hypotheses for performing a hypothesis test about a population mean.
		Determine if the conditions needed to carry out a hypothesis test about a population mean are satisfied.
		Calculate the test statistic and the P-value for a hypothesis test about a population mean.
		Draw a conclusion based upon a calculated P-value.
	Testing a Claim about a Population Mean	
		Conduct a hypothesis test about a population mean.
		Interpret the P-value.
		Identify and give a consequence of a Type I and Type II error.
		Calculate a test statistic and P-value for a hypothesis test about a population mean using a graphing calculator.
	Significance Tests and Confidence Intervals	
		State a conclusion about a significance test for a population mean based upon a confidence interval.
		Describe the power of a test and/or what influences the power of a test.
	Testing a Claim about a Difference between Means	
		Perform one step of a significance test for a difference in two population means.
		Conduct a significance test about a difference in two population means.
		Calculate a test statistic and P-value for a significance test about a difference in two population means using a graphing calculator.
	Testing a Claim about a Mean Difference	
		Perform one step of a hypothesis test for a mean difference.
		Conduct a hypothesis test about a mean difference.
		Calculate a test statistic and P-value for a hypothesis test about a mean difference using a graphing calculator.

TX-Statistics		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Choosing the Appropriate Inference Procedure	
		Distinguish between one sample, two samples, and paired data.
		Determine the appropriate inference procedure.
	Unit Test	
Cumulative Exam		
	Cumulative Exam Review	
	Cumulative Exam	