TX-Advanced Quantitative Reasoning	Scope and Sequence
Unit Lesson	**Objectives**
Numeric Reasoning and Validity	
Weighted Averages	
Presidential Election of 1860	
Precision in Measurement	
	Indicate and compare the accuracy and precision of measurements.
	Determine the margin of error for a measurement.
	Use significant figures to determine the most precise result of an operation.
Conditional Statements and Equivalence	
	Identify the converse, inverse, and contrapositive of a given conditional statement.
	Translate between verbal and symbolic form of statements.
	Determine the truth value of a conditional statement.
Compound Statements	
	Translate between verbal and symbolic form of compound statements.
	Determine the truth value of a compound statement.
Unit Test	
Applications of Probability	
Sets and Venn Diagrams	
	Identify and represent elements of sets and subsets, including the empty and universal sets.
	Represent and interpret the union and intersection of sets using set notation and Venn diagrams.
Theoretical and Experimental Probability	
	Identify the sample space of an experiment and the complement of an event.

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Calculate theoretical and experimental probability.
	Independent and Mutually Exclusive Events	
		Identify mutually exclusive and independent events.
		Calculate probabilities using the addition rule.
		Calculate probabilities using the multiplication rule of independent events.
	Conditional Probability	
		Use calculations to determine if two events are independent.
		Calculate conditional probabilities using formulas and Venn diagrams.
		Calculate probabilities of compound events.
	Probability and Two-Way Tables	
		Construct a two-way table.
		Use a two-way table to determine if two events are independent.
		Compute conditional probabilities from data displayed in a two-way table.
	Probability with Combinations and Permutations	
		Identify expressions that represent probabilities of compound events.
		Use combinations to compute probabilities of compound events.
		Use permutations to compute probabilities of compound events.
	Applying Probability Rules	
		Determine probabilities using a two-way table.
		Determine probabilities using a Venn diagram.
	Conditional Probabilities	

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Calculate a conditional probability.
		Interpret a conditional probability.
		Determine if two events are independent.
	The Multiplication Rule for 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	
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.

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		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 categorical variables.
		Display three categorical variables in side-by-side bar graphs.
	Segmented Bar Graphs	
		Create a segmented bar graph using a relative frequency table with or without the use of technology.
		Interpret segmented 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.

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	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	
		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	
Linear Regression and Algebraic Reasoning		

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	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.
	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.
	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.
	Piecewise Defined Functions	
		Graph piecewise defined functions.
		Evaluate piecewise defined functions.
		Determine the domain, range, and continuity of piecewise defined functions.

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Exponential, Logistic and Logarithmic Models	
		Interpret the numeric values in an exponential, logarithmic, or logistic function in terms of a context.
		Model a problem using an exponential, logarithmic, or logistic function.
		Solve a problem using an exponential, logarithmic, or logistic function.
	Modeling with Exponential and Logarithmic Equations	
		Model and solve real-world problems using exponential and logarithmic functions.
	Modeling with Functions	
		Find the equation of a function that best models a data set.
		Use function models to solve problems.
	Performance Task: Production Schemes	
		Use an appropriate function model to describe random data.
		Determine the reasonableness of a function model.
		Use function models to make predictions about situations.
	Unit Test	
Cumulative Exam		
	Cumulative Exam Review	
	Cumulative Exam	
Statistics		
	Designing a Study	
		Classify study types.
		Classify sampling methods.

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Determine if a sample is biased.
		Analyze study types and sampling methods.
	Representing Data	
		Describe a data set using measures of central tendency and range.
		Determine if a representation of data is misleading.
	Properties of Probability Distributions	
		Identify properties of a probability distribution.
		Create probability distributions from a data set.
		Solve problems using probability distributions.
	Expected Value	
		Calculate expected values.
		Use expected values to make decisions.
	Binomial Distribution	
		Identify a binomial experiment.
		Identify the probability of success, probability of failure, and number of trials for a binomial experiment.
		Calculate binomial probabilities.
	Introduction to Normal Distributions	
		Describe normal distributions using the mean and standard deviation.
		Apply the z-score formula to solve problems.
		Solve problems using the empirical rule.
	Applications with Standard Normal Distribution	

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Solve problems using the standard normal table.
	Statistical Inferences	
		Make inferences about a population from a sample.
	Hypothesis Testing	
		Perform hypothesis tests on normally distributed data.
		Determine if a result is statistically significant.
	Unit Test	
Estimating and Testing Claims about Proportions		
	Preparing to Estimate a Population Proportion	
		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.

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Construct a confidence interval for a difference in two population proportions using a graphing calculator.
	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	
Right Triangles and Trigonometric Functions: Part One		
	Right Triangle Similarity	
		Complete the steps to prove the Pythagorean theorem using similar triangles.
		Identify similar right triangles formed by an altitude and write a similarity statement.
		Apply theorems to solve problems involving geometric means.

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Apply the Pythagorean theorem to find side lengths of a right triangle.
	Using Triangle Congruence Theorems	
		Identify the triangle congruency theorem that can be used to prove two triangles congruent.
		Complete the steps to prove angles, segments, and triangles are congruent using triangle congruence theorems and CPCTC.
	Using Triangle Similarity Theorems	
		Complete the steps to prove theorems involving similar triangles.
		Solve for unknown measures of similar triangles using the side-splitter theorem and its converse.
		Solve for unknown measures of similar triangles using the triangle midsegment theorem.
	Congruent and Similar Triangles in the Coordinate Plane	
		Apply coordinate geometry to prove properties of congruent triangles.
		Apply coordinate geometry to prove properties of similar triangles.
	Law of Sines	
		Complete the steps to prove the law of sines.
		Solve mathematical problems using the law of sines.
		Apply the law of sines to solve real-world problems.
	Law of Cosines	
		Complete the steps to prove the law of cosines.
		Solve mathematical problems using the law of cosines.
		Apply the law of cosines to solve real-world problems.
	Graphing Sine and Cosine Functions	

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Graph the sine or cosine function, attending to units on the horizontal axis.
		Graph a stretch, compression, or reflection over the x-axis of the sine or cosine function.
		Describe the result of a stretch, compression, or reflection over the x-axis on the sine or cosine function.
		Interpret key features of a sine or cosine function that models a real-world context.
	General Form of Sine and Cosine	
		Graph a vertical or horizontal shift of the sine or cosine function.
		Describe the result of a vertical or horizontal shift on the sine or cosine function.
		Interpret key features of a sine or cosine function that models a real-world context.
		Create an appropriate periodic function to model a real-world context.
	Unit Test	
Right Triangles and Trigonometric Functions: Part Two		
	Modeling with Periodic Functions	
		Model and solve real-world problems using periodic functions.
	Solving for Side Lengths of Right Triangles	
		Write equations using trigonometric ratios that can be used to solve for unknown side lengths of right triangles.
		Solve for unknown side lengths of right triangles using trigonometric ratios.
		Apply trigonometric ratios to solve real-world problems.
	Solving for Angle Measures of Right Triangles	
		Write equations that can be used to solve for unknown angles in right triangles.
		Solve for unknown angles of right triangles using inverse trigonometric functions.
		Apply inverse trigonometric functions to solve real-world problems.

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Right Triangle Trigonometry	
		Use the Pythagorean theorem, and the trigonometric functions and their inverses to solve right triangles.
		Use special right triangle relationships to solve right triangles.
	Triangle Classification Theorems	
		Classify a triangle using the converse of the Pythagorean theorem and triangle inequality theorems.
		Apply the converse of the Pythagorean theorem and triangle inequality theorems to solve problems.
		Determine an unknown side length or range of side lengths of a triangle given its classification.
	Trigonometric Ratios	
		Given an acute angle of a right triangle, label the hypotenuse, opposite, and adjacent sides.
		Given an acute angle of a right triangle, write ratios for sine, cosine, and tangent.
		Relate trigonometric ratios of similar triangles and the acute angles of a right triangle.
	Performance Task: Trigonometric Identities	
	Unit Test	
Matrices		
	Introduction to Matrices	
		Represent and interpret data in matrices.
		Identify types of matrices.
		Determine if two matrices are equal.
	Adding and Subtracting Matrices	
		Apply matrix addition to model problems and solve matrix equations.
		Identify and apply the properties of matrix addition.
		Perform matrix addition and subtraction.

TX-Advanced Quantitative Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Scalar and Matrix Multiplication	
		Perform multiplication of a scalar and a matrix.
		Perform multiplication of two matrices.
	Determinants	
		Evaluate determinants of 2 x 2 and 3 x 3 matrices.
		Apply determinants to solve problems.
	Matrices and Their Inverses	
		Find the inverse of a matrix.
	Modeling with Matrices	
		Model and solve real-world problems using matrices.
	Vector Multiplication Using Matrices	
		Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector.
		Solve problems involving transformations of vectors using matrices.
	Unit Test	
Cumulative Exam		
	Cumulative Exam Review	
	Cumulative Exam	