TX-Algebraic Reasoning	Scope and Sequence
Unit Lesson	**Objectives**
Linear Functions and Applications	
Slope-Intercept Form of a Line	
	Identify the slope and y-intercept of a linear function, and use them to graph the function.
	Write a linear function, in slope-intercept form, for a given relationship.
	Analyze how a change in a parameter of a linear function affects its graph or the scenario it represents.
Solving Equations	
	Simplify and solve multistep equations
	Create multistep equations in one variable and use them to solve problems.
Problem Solving	
	Apply problem solving strategies to analyze problems and construct equations.
	Solve equations and interpret the solutions in context.
Solving Mixture Problems	
	Use a table to organize information given in mixture problems.
	Write and solve one-variable linear equations to model and solve mixture problems.
Word Problems	
	Create equations to solve a variety of word problems such as mixture, time-distance-rate, and work.
	Solve a variety of word problems, and interpret the solutions in context.
Linear Functions	
	Determine if a function is linear.
	Represent a linear relationship numerically, algebraically, and graphically.
Writing Two-Variable Linear Equations	

TX-Algebraic Reasoning	Scope and Sequence
Unit Lesson	**Objectives**
	Create linear equations given information about points, slope, and intercepts.
	Solve problems by writing two-variable linear equations.
Two-Variable Linear Inequalities	
	Write a linear inequality to model a relationship between two quantities.
	Interpret the solution set of a two-variable linear inequality.
	Graph two-variable linear inequalities.
Unit Test	
Function Operations	
Function Operations	
	Combine functions using arithmetic operations, expressing the results both algebraically and graphically.
	Evaluate sums, differences, products, and quotients of functions.
Composition of Functions	
	Write an expression for the composition of functions.
	Find the domain of the composition of functions.
	Evaluate the composition of functions.
Function Inverses	
	Find the inverse of a function.
	Use composition to verify that functions are inverses.
Rate of Change	
	Calculate the average rate of change of a function over a specified interval.
	Interpret the average rate of change of a function over a specified interval.
	Solve problems involving direct variation.

TX-Algebraic Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Performance Task: Going on a Round Trip	
	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.
	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.
	Solving Matrix Equations	
		Solve matrix equations using operations with matrices.
		Solve matrix equations by taking the inverse of a matrix.

TX-Algebraic Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Cramer's Rule	
		Solve a system of equations using Cramer's rule.
	Matrices and Row Operations	
		Perform row operations in matrices.
		Solve a linear system using reduced row echelon form.
	Modeling with Matrices	
		Model and solve real-world problems using matrices.
	Unit Test	
Polynomials		
	The Cubing Function	
		Graph the parent cubic function and translations of the parent cubic function.
		Use technology to graph cubic functions.
		Approximate solutions to cubic equations from graphs.
	Factoring Polynomials Completely	
		Analyze polynomial expressions to factor them completely.
	Division of Polynomials	
		Use long division to find quotients of polynomials
		Use inverse operations to check the result of polynomial division
	Synthetic Division and the Remainder Theorem	
		Use synthetic division to divide a polynomial by a linear factor.
		Apply the remainder theorem.
	The Rational Roots Theorem	

TX-Algebraic Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Use the rational root theorem to determine possible roots of a polynomial function.
		Determine the roots of and factor a polynomial function.
	The Fundamental Theorem of Algebra	
		Apply the fundamental theorem of algebra to determine the number of roots of a polynomial function.
		Use the complex conjugate theorem to factor and solve polynomial equations.
	Graphing Polynomial Functions	
		Graph polynomial functions using key features.
	Solving Polynomial Equations using Technology	
		Use technology to solve or approximate solutions of one-variable polynomial equations.
	Composition of Polynomial Functions	
		Write the composition of polynomial functions.
		Evaluate the composition of polynomial functions.
	Unit Test	
Quadratic Relationships		
	Quadratic Functions	
		Find the line of symmetry and vertex of a parabola given its function rule.
		Identify a quadratic function from the function rule.
		Use key attributes of a quadratic function to solve word problems.
	Solving Quadratic Equations by Factoring	
		Find real solutions for quadratic equations using the zero product property.
		Use key attributes of a quadratic function to solve word problems.

TX-Algebraic Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Quadratic Inequalities	
		Find real solutions of quadratic inequalities algebraically and graphically.
		Create quadratic inequalities in one variable and use them to solve problems.
	Modeling with Quadratic Functions	
		Write quadratic functions to model problems.
		Use quadratic functions to solve mathematical and real-world problems.
	Modeling with Quadratic Equations	
		Use quadratic equations to model and solve real-world problems.
	Unit Test	
Cumulative Exam		
	Cumulative Exam Review	
	Cumulative Exam	
Rational and Radical Functions		
	Square Root Functions	
		Find the inverse of a quadratic function.
		Find the domain of a square root function.
	Rational Equations	
		Solve rational equations and determine extraneous solutions.
		Use rational equations to model and solve real-world problems.
		Determine the reasonableness of a solution to a rational equation.
	Graphing Rational Functions	
		Determine the horizontal asymptotes of a rational function.

TX-Algebraic Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Graph rational functions that have only vertical or horizontal asymptotes.
	Modeling with Rational Functions	
		Model and solve real-world problems using rational functions.
	Graphing Radical Functions	
		Relate transformations to the graphs of square root and cube root functions to their parent function.
		Determine the domain and range of square root and cube root functions.
	Radical Equations and Extraneous Roots	
		Model and solve mathematical and real-world problems using radical equations, and determine extraneous roots.
	Performance Task: Roller Coaster Design	
		Solve one-variable radical inequalities
		Write one-variable radical inequalities to model problems
	Unit Test	
Exponential and Logarithmic Functions		
	Graphing Exponential Functions	
		Identify exponential functions.
		Determine the domain and range of exponential functions.
		Graph exponential functions.
	Using Exponential Functions	
		Determine growth and decay factors for exponential functions represented by a table of values or an equation.
		Graph exponential functions defined by y = a(b)^x.
		Determine the doubling and halving time.

TX-Algebraic Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Population Growth	
		Determine annual growth or decay rate of an exponential function represented by a table of values or an equation.
		Graph an exponential function having equation y = a(1 ± r)^2.
	Modeling with Exponential and Logarithmic Equations	
		Model and solve real-world problems using exponential and logarithmic functions.
	Solving Exponential Equations by Rewriting the Base	
		Solve exponential equations by rewriting bases.
	Unit Test	
Exponential and Logarithmic Functions (Continued)		
	Graphing Logarithmic Functions	
		Identify logarithmic functions.
		Determine the domain and range of logarithmic functions.
		Identify and analyze the graphs of logarithmic functions.
	Evaluating Logarithmic Expressions	
		Evaluate logarithmic expressions by converting between logarithmic and exponential forms.
		Solve logarithmic equations by converting between logarithmic and exponential forms.
		Evaluate common logarithms using a calculator.
	Solving Logarithmic Equations using Technology	
		Rewrite logarithmic expressions using the change of base algorithm.
		Solve a one-variable equation containing logarithms by transforming it into a system of equations.

TX-Algebraic Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Properties of Logarithms	
		Evaluate, expand, and simplify logarithmic expressions using properties of logarithms.
	Solving Equations using Properties of Logarithms	
		Apply properties of logarithms to solve logarithmic equations.
		Determine extraneous solutions of logarithmic equations.
	Base e	
		Apply properties of logarithms and exponents to solve exponential and logarithmic equations having base e.
		Analyze exponential and logarithmic functions in base e to determine key features of the graph.
		Determine the domain and range of exponential and logarithmic functions in base e.
	Unit Test	
Function Analysis		
	Linear Growth vs. Exponential Growth	
		Use tables and graphs to compare the growth of an exponential function vs. a linear function over equal intervals.
		Use tables and graphs to show that exponential functions grow by equal factors over equal intervals.
	Comparing Exponential, Linear, and Quadratic Growth	
		Use tables and graphs to compare the growth of an exponential function to the growth of a linear function over equal intervals.
		Use tables and graphs to compare the growth of an exponential function to the growth of a quadratic or a polynomial function over equal intervals.
		Use tables and graphs to show that exponential functions grow by equal factors over equal intervals.
	Operations with Multiple Functions	
		Connect tables and equations when adding, subtracting, or multiplying polynomial functions in real-world and

TX-Algebraic Reasoning	Scope and Sequence	
Unit	**Lesson**	**Objectives**
		mathematical contexts.
		Compare the sum and product of two linear functions.
		Compare characteristics of a combined function with functions that can be used to build it.
	Domain and Range	
		Determine the domain and range of a function in both mathematical and real-world contexts.
	Domain and Range from Data	
		Compare and contrast the mathematical and reasonable domain of a function that models a real-world scenario.
		Compare and contrast the mathematical and reasonable range of a function that models a real-world scenario.
	Comparing Characteristics of Functions	
		Determine the similarities and differences in characteristics of multiple functions graphically.
		Determine the similarities and differences in characteristics of multiple functions tabularly.
		Determine the similarities and differences in characteristics of multiple functions symbolically.
		Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
	Comparing a Function and Its Inverse	
		Compare and contrast characteristics of a function and its inverse.
		Verify two functions are inverses of each other using graphs or tables.
	Combinations and Separations of Functions	
		Express a combined or separated function in a table.
		Express a combined or separated function in a graph.
		Express a combined or separated function in an equation.

TX-Algebraic Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Unit Test	
Modeling with Functions		
	Introduction to Modeling with Functions	
		Analyze a data set to determine a linear, quadratic, or exponential function to model it.
		Write exponential functions and expressions in equivalent forms, using the properties of exponents to justify steps.
	Modeling Functions Using Finite Differences	
		Compute finite differences to find the function that models real-world data.
		Compute finite differences to find the function that models mathematical contexts.
	Modeling Using Function Notation	
		Construct a composite function to model a real-world scenario.
	Polynomial Functions and Finite Differences	
		Determine the pattern of finite differences for a polynomial function.
		Classify a polynomial function given in a table as linear, quadratic, or cubic.
		Determine the polynomial function that models a table of related values.
		Determine the restricted domain and range of a polynomial function that models a table of related values.
	Analyzing Compositions of Functions	
		Find compositions of functions from a variety of function families.
		Determine the domain and range of the composition of functions.
	Modeling with Functions	
		Find the equation of a function that best models a data set.
		Use function models to solve problems.

TX-Algebraic Reasoning		Scope and Sequence
Unit	**Lesson**	**Objectives**
	Regression Models	
		Determine an exponential, quadratic, or linear model for a given data set using technology.
		Identify limitations of models in real-world contexts.
		Use a linear, quadratic, or exponential regression model to make a prediction.
		Interpret the graph of a regression model in the context of the problem.
	Unit Test	
Cumulative Exam		
	Cumulative Exam Review	
	Cumulative Exam	