TX-Algebra II	Scope and Sequence
Unit Lesson	**Objectives**
Introduction to Functions	
Domain and Range	
	Determine the domain and range of a function in both mathematical and real-world contexts.
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.
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.
Unit Test	
Absolute Value Functions, Equations, and Inequalities	
Absolute Value Functions and Translations	
	Graph the absolute value function and its translations.
	Analyze key features of the absolute value function and its translations.
Reflections and Dilations of Absolute Value Functions	
	Graph reflections and dilations of the absolute value function.
	State the domain and range of reflections and dilations of the absolute value function.

TX-Algebra II	Scope and Sequence
Unit **Lesson**	**Objectives**
Absolute Value Functions	
	Analyze absolute value functions to determine key features of the graph.
	Model and solve mathematical and real-world problems with absolute value functions.
Solving Absolute Value Equations	
	Solve absolute value equations using tables or algebra, pointing out solutions that are viable or not viable in a modeling context.
	Create absolute value equations to model and solve problems.
Absolute Value Inequalities	
	Rewrite absolute value inequalities as compound inequalities.
	Solve absolute value inequalities graphically and algebraically.
Unit Test	
Systems of Linear Equations and Inequalities	
Solving Linear Systems Graphically	
	Solve systems of two-variable linear equations graphically.
	Classify systems of two-variable equations as dependent, independent, consistent, or inconsistent.
	Solve systems of two-variable linear inequalities.
Solving 3 x 3 Linear Systems	
	Classify systems of three-variable equations as dependent, independent, consistent, or inconsistent.
	Solve 3 × 3 linear systems algebraically.
Modeling with Linear Systems	
	Model and solve real-world problems using systems of linear equations and inequalities.
Matrices and Row Operations	

TX-Algebra II	Scope and Sequence
Unit Lesson	**Objectives**
	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	
Expressions, Factoring, and Equations with Rational Exponents: Part One	
Addition and Subtraction of Polynomials	
	Perform addition and subtraction of polynomials.
Multiplication of Polynomials	
	Perform multiplication of polynomials.
Factoring Polynomials: Double Grouping	
	Factor a polynomial by double grouping or indicate that the polynomial is prime.
Sum and Difference of Two Cubes	
	Recognize a perfect cube and find its cube root.
	Factor the sum or difference of two cubes.
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.

TX-Algebra II	Scope and Sequence
Unit **Lesson**	**Objectives**
	Apply the remainder theorem.
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.
Unit Test	
Expressions, Factoring, and Equations with Rational Exponents: Part Two	
Quadratic in Form Polynomials	
	Identify fourth degree equations that are quadratic in form and use an appropriate u-substitution.
	Solve fourth degree equations that are quadratic in form.
Simplifying Perfect Roots	
	Identify numbers and variable expressions that are perfect powers.
	Simplify perfect roots.
Simplifying Nonperfect Roots	
	Simplify nonperfect roots without rationalizing.
Rational Exponents	
	Evaluate numeric expressions using properties of rational exponents.
	Simplify algebraic expressions using properties of rational exponents.
Adding and Subtracting Radicals	
	Identify like radicals.
	Add and subtract radical expressions.
Multiplying Radicals	
	Perform multiplication of radical expressions.

TX-Algebra II	Scope and Sequence
Unit Lesson	Objectives
Dividing Radicals	
	Perform division of radical expressions, rationalizing the denominator when necessary.
Unit Test	
Quadratic Relations, Equations, and Inequalities	
Operations with Complex Numbers	
	Identify the field properties of complex numbers.
	Perform addition, subtraction, and multiplication of complex numbers.
Completing The Square	
	Recognize the pattern of a perfect-square trinomial as the square of a binomial.
	Use the square root property to solve equations.
	Find complex solutions to quadratic equations by completing the square.
The Quadratic Formula	
	Find real and complex solutions of quadratic equations using the quadratic formula.
	Use the discriminant to determine the number and type of roots of a quadratic equation.
Transformations of Quadratic Functions	
	Use completing the square to write quadratic functions in the form $y = a(x - h)2 + k$.
	Describe the effects of changes in a, h, and k to the graph of a function in the form $y = a(x - h)2 + k$.
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.
Modeling with Quadratic Equations	
	Use quadratic equations to model and solve real-world problems.

TX-Algebra II	Scope and Sequence
Unit Lesson	**Objectives**
Mixed Degree Systems	
	Solve linear-quadratic systems of equations.
	Solve quadratic-quadratic systems of equations.
	Determine the reasonableness of solutions to systems of a linear equation and a quadratic equation in two variables.
Modeling with Systems	
	Model and solve real-world problems using linear-quadratic or quadratic-quadratic systems of equations.
Conic Sections: Parabolas	
	Use and determine the standard form of the equation of the parabola.
	Solve applied problems involving parabolas.
Quadratic Inequalities	
	Find real solutions of quadratic inequalities algebraically and graphically.
	Create quadratic inequalities in one variable and use them to solve problems.
Unit Test	
Cumulative Exam	
Cumulative Exam Review	
Cumulative Exam	
Square Root Functions and Equations	
Square Root Functions	
	Find the inverse of a quadratic function.
	Find the domain of a square root function.
Graphing Radical Functions	
	Relate transformations to the graphs of square root and cube root functions to their parent function.

TX-Algebra II	Scope and Sequence
Unit Lesson	**Objectives**
	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	
Cubic and Cube Root Functions and Equations	
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.
The Cube Root Function	
	Graph the cube root function, and translations and reflections of it.
	State the key features of the cube root function, and translations and reflections of it.
Solving Equations Containing Two Radicals	
	Solve equations containing two radicals, and determine extraneous solutions.
Unit Test	
Rational Functions and Equations	
Graphing Rational Functions	
	Determine the horizontal asymptotes of a rational function.
	Graph rational functions that have only vertical or horizontal asymptotes.

TX-Algebra II	Scope and Sequence
Unit Lesson	**Objectives**
Graphs of Rational Functions	
	Use algebraic techniques to determine key features of a rational function.
	Analyze key features of a rational function.
	Graph a rational function.
Multiplying and Dividing Rational Expressions	
	Perform multiplication and division of rational expressions.
Adding and Subtracting Rational Expressions	
	Perform addition and subtraction of rational expressions.
	Simplify complex rational expressions containing sums or differences.
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.
Vertical Asymptotes of Rational Functions	
	Determine the vertical asymptotes and holes in the graph of a rational function having the x-axis as its only horizontal asymptote.
	Solve problems involving inverse variation.
Modeling with Rational Functions	
	Model and solve real-world problems using rational functions.
Unit Test	
Exponential and Logarithmic Functions and Equations	
Graphing Exponential Functions	

TX-Algebra II	Scope and Sequence
Unit Lesson	Objectives
	Identify exponential functions.
	Determine the domain and range of exponential functions.
	Graph exponential functions.
Solving Exponential Equations by Rewriting the Base	
	Solve exponential equations by rewriting bases.
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.
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.

TX-Algebra II		Scope and Sequence
Unit	Lesson	Objectives
	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.
	Solving Exponential and Logarithmic Equations	
		Solve exponential and logarithmic equations using inverses, properties, and algorithms.
	Modeling with Exponential and Logarithmic Equations	
		Model and solve real-world problems using exponential and logarithmic functions.
	Recursive Formulas	
		Write the first n terms of a recursive function given a formula and a term.
		Write a rule for a recursively defined function.
	Unit Test	
Linear, Quadratic, and Exponential Data Models		
	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 with Functions	
		Find the equation of a function that best models a data set.
		Use function models to solve problems.
	Scatterplots	
		Use linear models to approximate data sets and make predictions.

Unit	Lesson	Objectives
		Determine the reasonableness of a model and the goodness of fit.
	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.
	Performance Task: Annual Salaries and Gender	
	Unit Test	
Cumulative Exam		
	Cumulative Exam Review	
	Cumulative Exam	