Algebraic Reasoning 2024- 2025

Algebraic Reasoning TEKS

Course Description: In Algebraic Reasoning, students will build on the knowledge and skills for mathematics in Kindergarten-Grade 8 and Algebra I, continue with the development of mathematical reasoning related to algebraic understandings and processes, and deepen a foundation for studies in subsequent mathematics courses. Students will broaden their knowledge of functions and relationships, including linear, quadratic, square root, rational, cubic, cube root, exponential, absolute value, and logarithmic functions. Students will study these functions through analysis and application that includes explorations of patterns and structure, number and algebraic methods, and modeling from data using tools that build to workforce and college readiness such as probes, measurement tools, and software tools, including spreadsheets. This course satisfies the 3rd or 4th year Mathematics credit.

Scope and Sequence 2025-2026

Semester One	
First 9 Weeks (40 Days)	TEKS Covered
Unit 1 : Patterns and Functions (21 Days) Arithmetic and Geometric Sequences Writing and Modeling Linear Functions Writing and Modeling Exponential Functions Writing and Modeling Quadratic Functions Writing and Modeling Cubic Functions	AR.2A, AR.2B, AR.2C, AR,2D
Unit 2: Analyzing Functions (20 Days) Transforming and Analyzing Linear Functions Transforming and Analyzing Quadratic Functions; Transforming and Analyzing Cubic Functions Transforming and Analyzing Absolute Value Functions Transforming and Analyzing Rational Functions Transforming and Analyzing Exponential Functions Comparing Sets of Functions	AR.3A, AR.7A

Second 9 Weeks (42 Days)	
Unit 2: Analyzing Functions (20 Days) Continued Transforming and Analyzing Linear Functions Transforming and Analyzing Quadratic Functions; Transforming and Analyzing Cubic Functions Transforming and Analyzing Absolute Value Functions Transforming and Analyzing Rational Functions Transforming and Analyzing Exponential Functions Comparing Sets of Functions	AR.3A, AR.7A
Unit 3: Inverse Functions (18 Days) Generating Inverse Functions Verifying Inverse Functions Square Root Functions Cube Root Functions Logarithmic Functions Comparing and Contrasting Sets of Functions	AR.3A, AR.3B, AR.3C
Unit 4A: Operations with Functions (16 Days) Adding Functions Using Tables and Equations Subtracting Functions Using Tables and Equations Adding and Subtracting Functions Using Graphs Multiplying Functions Dividing Functions Composing Functions	
Review and Finals (6 Days)	
Semester Two	
Third 9 Weeks (40 Days)	
Unit 4B. Operations with Functions (7 Days) Multiple Representations of Combined Functions Modeling with Combined Functions	AR.3D, AR.3E, AR.3F
Unit 5: Polynomial Functions (19 Days) Adding and Subtracting Polynomial Functions Multiplying Linear Functions	AE.4A, AR.4B, AR.4C, AR.4D

Multiplying Polynomials Comparing Addition and Multiplication of Linear Functions Applying Polynomial Functions Factoring Polynomials with Graphs and Tables Factoring Polynomials with Algebraic Methods Decomposing Polynomial Functions Dividing Polynomial Functions with Tables Dividing Polynomial Functions with Algebraic Methods	
Unit 6: Matrices (14 Days) Representing Data in Matrices Adding and Subtracting Matrices Scalar Multiplication of Matrices Multiplying Matrices Solving Systems of Two Linear Equations Solving Systems of Three Linear Equations	AR.5A, AR.5B, AR.5C, AR.5D, AR.5E
Fourth 9 Weeks (46 Days)	
Unit 7: Solutions of Equations (19 Days) Estimating Function Values Solving Equations Related to Linear Functions Solving Equations Related to Quadratic Equations Estimating Solutions from Graphs and Tables Solving Equations Related to Rational Functions Estimating Solutions of Exponential Functions Estimating Solutions of Logarithmic Functions Estimating Solutions from Square Root Functions	AR.6A, AR.6B, AR.6C
Unit 8: Modeling From Data (21 Days) Modeling With Linear Functions Modeling With Quadratic Functions Modeling With Exponential Functions Modeling With Rational Functions Comparing Function Models	AR.7A, AR.7B, AR.7C, AR.7D, AR.7E
Spring Review and Final (6 Days)	