Algebra I focuses on the mastery of critical skills and the recognition and understanding of key algebraic concepts. Through a "Discovery-Confirmation-Practice"-based exploration of these concepts, students are challenged to strengthen their computational skills, to deepen their understanding of key ideas and solution strategies, and to extend their knowledge through a variety of problem-solving applications.

Course topics include solving equations and inequalities; linear, exponential, and quadratic functions; transformations of functions; systems of linear equations; sequences, polynomials and factoring; bivariate data and regression.

This course supports all students as they develop computational fluency, deepen conceptual understanding, and apply mathematical process standards. Students begin each lesson by discovering new concepts through guided instruction, and then confirm their understanding in an interactive, feedback-rich environment. Modeling activities equip students with tools for analyzing a variety of real-world scenarios and mathematical ideas. Journaling activities allow students to reason abstractly and quantitatively, construct arguments, critique reasoning, and communicate precisely.

This course is built to the TEKS Algebra I Standards.

Length: Two Semesters

Unit 1: Foundations of Algebra

- Algebraic Properties and Expressions
- Writing Expressions and Equations
- Solving Linear Equations
- Foundations of Algebra Wrap-Up

Unit 2: Solving Equations and Inequalities

- Solving Multistep Linear Equations
- Solving Linear Inequalities
- Literal Equations
- Solving Equations and Inequalities Wrap-Up

Unit 3: Functions

- Domain and Range
- Identifying Functions
- Finding Domain and Range from a Graph
- Functions Wrap-Up

Unit 4: Linear Functions

- Slope

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- Direct Variation and Rate of Change
- Representing Linear Functions: Slope-Intercept Form
- Representing Linear Functions: Point-Slope and Standard Forms
- Parallel and Perpendicular Lines
- Linear Inequalities
- Linear Functions Wrap-Up

Unit 5: Systems of Linear Equations

- Solving Two-Variable Systems: Graphing
- Solving Two-Variable Systems: Substitution
- Solving Two-Variable Systems: Elimination
- Solving Two-Variable Systems of Inequalities
- Systems of Linear Equations Wrap-Up

Unit 6: Exponential Functions

- Exponents
- Representing Exponential Functions
- Graphing Exponential Functions
- Exponential Functions Wrap-Up

Unit 7: Semester 1 Exam

Unit 8: Sequences and Functions

- Arithmetic Sequences
- Geometric Sequences
- Application of Number Sequences
- Sequences and Functions Wrap-Up

Unit 9: Polynomials

- Adding and Subtracting Polynomials
- Multiplying Binomials
- Multiplying Polynomials
- Dividing Polynomials
- Polynomials Wrap-Up

Unit 10: Factoring Polynomials

- GCF and Factoring by Grouping
- Factoring x² + bx + c
- Factoring ax² + bx + c
- Special Cases
- Factoring and Graphing
- Factoring Polynomials Wrap-Up

Unit 11: Quadratic Equations and Functions

- Radical Expressions
- Solving Quadratic Equations: Factoring and Square Roots

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- Solving Quadratic Equations: Completing the Square
- Solving Quadratic Equations: Quadratic Formula
- Graphing Quadratic Functions
- Quadratic Equations and Functions Wrap-Up

Unit 12: Transformations of Functions

- Shifting Quadratic Functions
- Stretching, Compressing, and Reflecting Quadratic Functions
- Transformations of Linear Functions
- Transformations of Functions Wrap-Up

Unit 13: Data Modeling

- Two-Variable Data and Scatterplots
- Fitting Linear Models to Data
- Nonlinear Models
- Data Modeling Wrap-Up

Unit 14: Semester 2 Exam

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