Math 1 builds students' command of linear, quadratic, geometric, and exponential relationships, as well as statistics and modeling. Students learn through discovery and application, developing the skills they need to break down complex challenges and demonstrate their knowledge in new situations.

Course topics include problem solving with basic equations and formulas; measurement; an introduction to functions and problem solving; linear equations and systems of linear equations; exponents and exponential functions; sequences and functions; descriptive statistics; polynomials and factoring; quadratic equations and functions; and coordinate geometry.

This course supports all students as they develop computational fluency, deepen conceptual understanding, and apply the standards for mathematical practice. 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. Performance tasks prepare students to synthesize their knowledge in novel, real-world scenarios and require that they make sense of multifaceted problems and persevere in solving them. Throughout the course, students are evaluated through a diversity of assessments.

This course is built to the revised North Carolina Math standards adopted in 2016.

Length: Two Semesters

Unit 1: Expressions, Equations, and Inequalities

- Algebraic Properties and Expressions
- Solving One-Variable Equations
- Solving Multistep Linear Equations
- Solving Linear Inequalities
- Literal Equations
- Performance Task: Problem Solving with Inequalities
- Expressions, Equations, and Inequalities Wrap-Up

Unit 2: Functions

- Domain and Range
- Identifying Functions
- Graphs of Functions
- Adding and Subtracting Functions
- Functions Wrap-Up

Unit 3: Linear Equations

- Slope

- Slope-Intercept Equation of a Line
- Point-Slope Equation of a Line
- Parallel and Perpendicular Lines
- Linear Inequalities
- Linear Equations Wrap-Up

Unit 4: Systems of Linear Equations

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

Unit 5: Exponents and Exponential Functions

- Exponents
- Exponential Functions
- Graphs of Exponential Functions
- Exponents and Exponential Functions Wrap-Up

Unit 6: Sequences and Functions

- Arithmetic Sequences
- Geometric Sequences
- Exponential and Linear Growth
- Sequences and Functions Wrap-Up

Unit 7: Semester 1 Exam

Unit 8: Coordinate Geometry

- Midpoint Formula
- The Distance Formula
- Equations of Parallel and Perpendicular Lines and Proofs
- Coordinate Geometry with Polygons
- Area of a Triangle with Coordinate Geometry
- Area and Perimeter of Polygons with Coordinate Geometry
- Coordinate Geometry Wrap-Up

Unit 9: Polynomials

- What Is a Polynomial?
- Adding and Subtracting Polynomials
- Multiplying Binomials
- Multiplying Polynomials
- Polynomials Wrap-Up

Unit 10: Factoring Polynomials

- GCF and Factoring by Grouping
- Factoring x² + bx + c

- Factoring ax² + bx + c
- Factoring and Graphing
- Factoring Polynomials Wrap-Up

Unit 11: Quadratic Equations and Functions

- Solving Quadratic Equations
- Graphs of Quadratic Functions
- Nonlinear Systems of Equations
- Linear, Quadratic, and Exponential Functions
- Performance Task: Pricing for Profit
- Quadratic Equations and Functions Wrap-Up

Unit 12: Descriptive Statistics

- Measures of Center and Spread
- Dot Plots, Box Plots, and Histograms
- Describing Distributions
- Descriptive Statistics Wrap-Up

Unit 13: Data and Mathematical Modeling

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

Unit 14: Semester 2 Exam