Math 2 extends students' algebraic and geometric knowledge of functional relationships, geometric modeling, proofs, and probability. 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 polynomial, rational, and radical relationships, transformation of functions; trigonometry with triangles; proofs; constructions and transformations; and probability.

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: Functions

- What Is a Function?
- Functions and Tables
- Graphing Functions
- Linear Functions
- Linear and Nonlinear Functions
- Functions Wrap-Up

Unit 2: Rational Functions

- Rational and Irrational Numbers
- Exponents
- Inverse Variation
- Foundations of Algebra Wrap-Up

Unit 3: Radical Expressions and Functions

- Basics of Radicals
- Multiplying and Dividing Radicals
- Adding and Subtracting Radicals

- Rationalizing Denominators
- Solving Radical Functions
- Applications of Radical Equations
- Review of Complex Numbers
- Radical Expressions and Functions Wrap-Up

Unit 4: Polynomials

- Polynomial Basics
- Factoring x² + bx + c
- Factoring ax² + bx + c
- Polynomials Wrap-Up

Unit 5: Quadratic Equations and Functions

- Solving Quadratic Equations
- Completing the Square
- The Quadratic Formula
- 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 6: Semester 1 Exam

Unit 7: Undoing Functions and Moving Them Around

- Parent Functions
- Shifting Functions
- Stretching and Compressing Functions
- Transformations of Parent Functions
- Undoing Functions and Moving Them Around Wrap-Up

Unit 8: Proofs

- Introduction to Proofs
- Basic Postulates in Geometry
- Intersecting Lines and Proofs
- Parallel Lines and Proofs
- Proofs Wrap-Up

Unit 9: Triangles

- The Angles of a Triangle
- Congruence
- Congruence Postulates
- Similar Triangles
- Similarity Theorems and Proportional Reasoning
- Triangle Theorems
- Bisectors and Midsegments

- Triangles Wrap-Up

Unit 10: Right Triangles and Trigonometry

- The Pythagorean Theorem
- Special Right Triangles
- Trigonometric Ratios
- Right Triangles and Trigonometry Wrap-Up

Unit 11: Constructions and Transformations

- Constructions
- Transformations
- Symmetry
- Constructions and Transformations Wrap-Up

Unit 12: Applications of Probability

- What Is Probability?
- Basic Rules of Probability
- Conditional Probability
- Independence
- Applications of Probability Wrap-Up

Unit 13: Semester 2 Exam