Bridge Math is a fourth year math course focused on reinforcing core concepts from Algebra I, Geometry and Algebra II. Bridge Math is intended for students who need to review concepts before continuing their studies. It starts with a review of algebraic concepts before moving on to a variety of key algebraic, geometric, statistical, and probability concepts. Course topics include rational and irrational numbers, systems of linear equations, quadratic functions, exponential functions, triangles, coordinate geometry, solid geometry, conditional probability, independence, data analysis, scatterplots, and linear and non-linear models of data.

Throughout the course, students hone their computational skills and extend their knowledge through problem solving and real-world applications. Within each Bridge Math lesson, students are supplied with scaffolded note-taking study guides and are given ample opportunity to practice computations in low-stakes Checkup activities before moving on to formal assessment. Additionally, students will have the opportunity to formulate and justify conclusions as they extend and apply concepts through printable exercises and "in-your-own-words" interactive activities.

The course is built to state standards, including Tennessee's Bridge Math standards.

Length: Two Semesters

### Unit 1: Foundations of Algebra

- Rational and Irrational Numbers
- Solving Linear Equations
- Solving Multistep Linear Equations
- Solving Linear Inequalities
- Literal Equations
- Measurement and Units
- Performance Task: Problem Solving with Inequalities
- Foundations of Algebra Wrap-Up

### Unit 2: Functions

- What Is a Function?
- Graphing Functions
- Slope-Intercept Equation of a Line
- Point-Slope Equation of a Line
- Functions Wrap-Up

### Unit 3: Systems of Linear Equations

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


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## Unit 4: Quadratic Functions

- Factoring x<sup>2</sup> + bx + c
- Factoring ax<sup>2</sup> + bx + c
- Special Cases
- Solving Quadratic Equations
- Completing the Square
- The Quadratic Formula
- Graphs of Quadratic Functions
- Imaginary Numbers
- Nonlinear Systems of Equations
- Quadratic Functions Wrap-Up

## Unit 5: Polynomial Functions

- Polynomial Basics
- Polynomial Functions
- Synthetic Division
- Factoring Polynomials Completely
- Solving Polynomial Equations
- Graphing Polynomial Functions
- Polynomial Functions Wrap-Up

## Unit 6: Semester Exam

## Unit 7: Exponents and Exponential Functions

- Exponents
- Exponential Functions
- Examples and Applications of Exponential Functions
- Exponential and Linear Growth
- Exponents and Exponential Functions Wrap-Up

## Unit 8: Triangles

- What Is a Triangle?
- The Angles of a Triangle
- Similar Triangles
- Similarity Theorems and Proportional Reasoning
- Right Triangles
- Triangles Wrap-Up

## Unit 9: 2-D and 3-D Geometry

- Midpoint Formula
- The Distance Formula
- Area and Perimeter of Polygons with Coordinate Geometry
- What Is a Circle?
- Area and Sectors
- What Is a Polyhedron?


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- Surface Area
- Volume
- 2-D and 3-D Geometry Wrap-Up

### Unit 10: Applications of Probability

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

### Unit 11: Data and Mathematical Modeling

- Review of Graphical Analysis of Data
- Two-Variable Data and Scatterplots
- Fitting Linear Models to Data
- Nonlinear Models
- Data and Mathematical Modeling Wrap-Up

### Unit 12: Semester 2 Exam


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