

Mathematics Grade 8 delivers instruction, practice, and review designed to develop computational fluency, deepen conceptual understanding, and apply mathematical practices. In this course, students focus on understanding functions — what they are, how to represent them in different ways, and how to write them to model mathematical and real-world situations. In particular, students investigate linear functions by learning about slope and slope-intercept form. Students' understanding of linear functions is extended to statistics, where they make scatter plots and use linear functions to model data. They solve linear equations and equations involving roots, and explore systems of linear equations. Additional topics include exponents, powers of ten, scientific notation, and irrational numbers. Students learn about transformations, and extend that understanding to an investigation of congruence and similarity. Other geometric concepts explored include the Pythagorean theorem, angle relationships, and volumes of cylinders, cones, and spheres.

The two-semester course is arranged in themed units, each with three to five lessons. Each lesson includes a variety of activities such as direct instruction, application of skills, performance tasks, and formative and summative assessments. Students engage with the subject matter in an interactive, feedback-rich environment as they progress through standards-aligned content and demonstrate their learning through computer- and teacher-scored assignments. By constantly honing the ability to apply their knowledge in abstract and real-world scenarios, students build the depth of knowledge and higher-order skills required to demonstrate their mastery when put to the test.

This course is built to state standards.

Length: Two semesters

UNIT 1: NUMBERS AND OPERATIONS

- Lesson 1: The Real Number System
- Lesson 2: Approximating Irrational Numbers
- Lesson 3: Ordering Real Numbers
- Lesson 4: Properties of Exponents
- Lesson 5: Scientific Notation
- Lesson 6: Wrap-Up: Numbers and Operations

UNIT 2: LINEAR EQUATIONS AND INEQUALITIES

- Lesson 1: Solving Linear Equations
- Lesson 2: Solving Linear Inequalities
- Lesson 3: Writing Linear Equations and Inequalities
- Lesson 4: Systems of Linear Equations
- Lesson 5: Wrap-Up: Linear Equations and Inequalities

UNIT 3: PROPORTIONAL RELATIONSHIPS

- Lesson 1: Identifying Functions
- Lesson 2: Slope
- Lesson 3: Slope and Unit Rate
- Lesson 4: Representing Proportional Relationships
- Lesson 5: Wrap-Up: Proportional Relationships

UNIT 4: LINEAR FUNCTIONS

- Lesson 1: The Slope-Intercept Equation
- Lesson 2: Writing Equations for Linear Functions
- Lesson 3: Proportional and Non-Proportional Linear Relationships
- Lesson 4: Linear Models

- Lesson 5: Wrap-Up: Linear Functions

UNIT 5: DATA ANALYSIS

- Lesson 1: Measures of Center and Variation
- Lesson 2: Populations and Samples
- Lesson 3: Scatterplots and Association
- Lesson 4: Trend Lines
- Lesson 5: Wrap-Up: Data Analysis

UNIT 6: SEMESTER WRAP-UP

- Lesson 1: Semester Wrap-Up