

COURSE OVERVIEW

Grade 8 begins with congruence transformations on the coordinate plane, followed by exploration of similarity transformations, which contribute to students' conceptual understanding of slope. Students apply their previous understandings of ratio and proportional reasoning to the study of linear functions, equations, and systems of equations, including a deep understanding of slope. They explore negative integer exponents and irrational numbers, and they deepen their understanding of geometric concepts by investigating and applying the Pythagorean Theorem.

CRITICAL AREAS

In Grade 8, instructional time should focus on three critical areas:

1. formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations;
2. grasping the concept of a function and using functions to describe quantitative relationships;
3. analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

CORE 8 STANDARDS

The Number System

- Know that there are numbers that are not rational, and approximate them by rational numbers.

Expressions and Equations

- Work with radicals and integer exponents.
- Understand the connections between proportional relationships, lines, and linear equations.
- Analyze and solve linear equations and pairs of simultaneous linear equations.

Functions

- Define, evaluate, and compare functions.
- Use functions to model relationships between quantities.

Geometry

- Understand congruence and similarity using physical models, transparencies, or geometry software.
- Understand and apply the Pythagorean Theorem.
- Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Statistics and Probability

- Investigate patterns of association in bivariate data.

Standards for Mathematical Practice (SMP)

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

EXPECTED OUTCOMES

Students are expected to perform at a proficient level on a variety of tasks and assessments addressing the Standards for Mathematical Practice and the Maryland College and Career Readiness Standards addressed in Core Math 8.

RECOMMENDED GRADING ELEMENTS

Grading Element	Classroom Grading Policies
Product	Graded work assessing a student's mastery of mathematics such as: Tests, quizzes, project work that assesses a student's understanding
Process	Graded work that provides for practice and allows teachers to elicit evidence of student thinking: In class assignments, notes, warm-ups, participation, homework