



MATHEMATICS

GRADE 8

By the end of eighth grade, students will have had an opportunity to engage with the core concepts listed below.

- Expressions & Equations
 - Calculate slope from a graph, equation, or table, and understand slope as the rate of change
 - Use basic rules to simplify expressions with exponents
 - Connect graphs, tables, equations, and patterns, and move directly between them (for example, graph an equation without making a table first)
 - Write and solve linear equations to answer real-life problems
 - Solve equations that involve negatives, fractions, or multiple variables
 - Recognize when an equation has one solution, many solutions, or no solution
 - Write and solve systems of linear equations for real-life problems, and show the results with both equations and graphs
- The Number System
 - Simplify and approximate square roots and cube roots
 - Convert numbers into and out of scientific notation
 - Add, subtract, multiply, and divide numbers in scientific notation
 - Classify numbers as natural, whole, integer, rational, irrational, or real
- Geometry
 - Learn the Pythagorean Theorem to find missing side lengths in right triangles
 - Explain how angles are related when parallel lines are cut by another line
 - Use formulas to solve real-world problems involving the volume of cylinders, cones, spheres, and shapes made up of combinations of these figures
 - Perform transformations on shapes (flip, slide, rotate, resize) and identify which create similar figures and which create congruent figures
- Statistics & Probability
 - Create scatter plots to show relationships between two variables (like arm length and leg length)
 - Use a scatter plot and a "line of best fit" to make predictions



QUESTIONS TO ASK YOUR STUDENT

- "What new concepts are you learning right now in math? Which do you feel that can you do successfully?"
- "Where do you feel you need additional challenge and/or support?"
- "Have you checked in with your math teacher to ask for the support you'd like? How do you plan to do that?"
- "When you're solving a problem as a group, how do you make sure everyone's ideas get heard? How do you choose a strategy to use?"



WAYS TO CHALLENGE THEIR THINKING

- Provide multi-step problems to solve and graph linear equations with real-world scenarios that involve rates of change, such as comparing different cell phone plans or travel speeds.
- Provide problems involving simplifying square and cube roots, such as large or small numbers (such as distances in space or the size of bacteria), to help the student see the utility of scientific notation.
- Provide real-world problems that use the Pythagorean Theorem and use drawing tools to practice translations.
- Use real-world examples like sports statistics, test scores, or weather data to make scatter plots and lines of best fit for making predictions.