

To prepare for college and career, your child will study mathematics across a broad spectrum, from pure mathematics to real-world applications. Numerical skill and *quantitative* reasoning remain crucial even as students move forward with algebra. Algebra, *functions*, and geometry are important not only as mathematical subjects in themselves but also because they are the language of technical subjects and the sciences. And in a data-rich world, statistics and probability offer powerful ways of drawing conclusions from data and dealing with uncertainty. The high school standards also emphasize using mathematics creatively to analyze real-world situations — an activity sometimes called “mathematical modeling.”

The high school standards are organized into six major content areas: Number and Quantity; Algebra; Functions; Modeling; Geometry; and Statistics and Probability.

Skills Your Child Will Be Working On

NUMBER AND QUANTITY

- Working with *rational* and *irrational* numbers, including working with rational exponents
- Solving problems with a wide range of units and solving problems by thinking about units

ALGEBRA

- Solving real-world and mathematical problems by writing and solving *nonlinear* equations, such as quadratic equations ($ax^2 + bx + c = 0$)
- Interpreting algebraic *expressions* and transforming them purposefully to solve problems

FUNCTIONS

- Analyzing functions algebraically and graphically, and working with *functions* presented in different forms
- Working with function families and understanding their behavior (such as *linear*, *quadratic*, and *exponential* functions)

GEOMETRY

- Proving *theorems* about triangles and other figures (e.g., that the angles in a triangle add to 180°)
- Solving applied problems involving trigonometry of right triangles

MODELING

- Analyzing real-world situations using mathematics to understand the situation better and optimize, troubleshoot, or make an informed decision

STATISTICS AND PROBABILITY

- Making *inferences* and justifying conclusions from sample surveys, experiments, and observational studies
- Working with probability and using ideas from probability in everyday situations

Learning Activity to Use at Home

At the beginning of high school, sit down with your child’s teachers, counselor, or other advisor to discuss what it will take for your child to graduate, your child’s goals, and his or her plans after high school. Create a plan together to help your child reach these goals, and review it every year to make sure he or she is on track.

- An appropriate course sequence to meet your child’s goals. This includes both college and technical training programs.
- Help your child to be reflective and thoughtful in how he or she approaches schoolwork. Make sure that your child can set priorities for school work and other events such as a part-time job, relaxation and socializing. Show that you value the time your child spends investing in his or her education and talk about how time spent now will translate into long-term success.
- The most appropriate extracurricular activities for your child to participate in. For example, if your child is interested in journalism or photography, encourage him or her to sign up for the school newspaper or yearbook. These activities will help your child expand his or her learning outside of school and may help foster new hobbies or interests.
- Depending on your child’s career goals, encourage your child to research colleges, universities and trade schools. Have your child write for their catalogs and entrance requirements and begin studying what they will need to be successful in the career field in which he or she is interested.
- If your child will be taking the ACT or SAT, be sure to find test prep materials to help your child understand the types of questions he or she is likely to see on these important tests. Be sure to spend time building vocabulary and expanding the amount of words that your child can recognize and use in conversation.

Teacher and Parent Conferencing - Topics for ongoing conversations throughout the school year with your child’s teacher.

When you talk to the teacher, do not worry about covering everything. Instead, keep the conversation focused on the most important topics. In the high school years grade, these include:

- Can my child break a complex problem down into parts and apply the math he or she knows to problems outside of mathematics?
- Does my child use terms precisely and make logical arguments?
- Does my child have the knowledge to learn advanced mathematics after high school if he or she so chooses?