

Understanding the California Mathematics Standards

by Paul Giganti, Jr., CMC Math Festival Program



All students are capable of understanding mathematics, given the opportunities and encouragement to do so.

—*Mathematics Content Standards for California Public Schools, 1997*, California Department of Education

The most profound changes in mathematics education have come from the 1997 introduction of the California mathematics standards for kindergarten through grade 12. For the first time in California's history, the mathematics curriculum at each grade level is mandated by law to ensure that all students receive high-quality classroom programs and a firm foundation in mathematics. Student textbooks, state tests, and high school graduation requirements are now determined by these standards. They are *that* important!

Having standards means that the study of mathematics is more uniform from school to school. Students at the same grade level are learning similar mathematics skills no matter what school they are attending. For parents, standards provide the opportunity to know exactly what your child should be studying each year and what is required for advancement from grade to grade.

The *Mathematics Content Standards for California Public Schools* and *Mathematics Framework for California Public Schools* are two key documents that are readily available to parents. You'll find copies of these state publications in all local public schools and at the Sonoma County Office of Education. While the standards are much too long to include in this booklet, knowing a little bit about them can help you understand their importance to your child's education.

In developing the mathematics standards, California established six learning goals for students. Through participation in mathematics education, the state believes that every student should:

1. Develop fluency in basic computational skills;
2. Develop understanding of mathematical concepts and ideas;
3. Become mathematical problem solvers;

4. Learn to communicate using mathematical language, symbols, and graphs;
5. Reason mathematically by gathering and analyzing data and information; and
6. Make connections between mathematical ideas and ideas presented in other subject areas.


Students study five mathematics topics—sometimes called “strands”—as they move from kindergarten through seventh grade. Each topic area, described below, is rich with learning opportunities. Students engage in deeper and more sophisticated learning within each topic as they advance through the grade levels.

- ◆ **Number Sense:** When the standards refer to “number sense,” it means that schools should provide instruction in mathematics computation skills while teaching students the concepts behind those skills. It's critical that all students learn number skills effectively and are able to apply those skills with understanding and flexibility. Adding, subtracting, multiplying, and dividing are examples of number skills.
- ◆ **Geometry and Measurement:** Concepts in two- and three-dimensional geometry and measurement help students develop spatial reasoning. Students must learn to understand and use geometric concepts, tools, and terminology in order to visualize and explain the world around them.
- ◆ **Algebra and Functions:** Algebra enables us to translate concrete experiences into equations and formulas. Learning algebra has become a requirement for high school graduation and entrance into college. In algebra, students apply abstract thinking to make rules and generalizations about mathematical situations. They use analytical tools to communicate complex mathematical ideas to others.
- ◆ **Statistics and Probability:** Statistics and probability are the mathematics of prediction.

Students need to develop the ability to collect and investigate real and experimental data, then use statistics and probability to interpret, draw conclusions, and make decisions based on that information.

- ◆ **Mathematical Reasoning:** Through problem solving, students bring together a variety of mathematics skills and knowledge. Students learn mathematical reasoning, strategies, tools, and techniques to solve new and unfamiliar problems in mathematics and other subject areas.

After studying these five topic areas from kindergarten through seventh grade, students next begin to concentrate on specialized areas of mathematics in greater depth. There are standards for each specialized mathematics course offered to students in eighth grade and high school.

The California mathematics standards have challenged teachers to expect more from students in mathematics than ever before. In essence, the standards have “raised the bar” for student mathematics achievement and success in school. A parent’s role in meeting this challenge is to understand what students are expected to learn and to support your child in meeting or exceeding the standards that have been established. 

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