

## NCTM National Mathematics Standards

The following comes from the website [standards.nctm.org/document/chapter1/index.htm](http://standards.nctm.org/document/chapter1/index.htm)  
Introduction

We live in a mathematical world. Whenever we decide on a purchase, choose an insurance or health plan, or use a spreadsheet, we rely on mathematical understanding. The World Wide Web, CD-ROMs, and other media disseminate vast quantities of quantitative information. The level of mathematical thinking and problem solving needed in the workplace has increased dramatically.

In such a world, those who understand and can do mathematics will have opportunities that others do not. Mathematical competence opens doors to productive futures. A lack of mathematical competence closes those doors.

Students have different abilities, needs, and interests. Yet everyone needs to be able to use mathematics in his or her personal life, in the workplace, and in further study. All students deserve an opportunity to understand the power and beauty of mathematics. Students need to learn a new set of mathematics basics that enable them to compute fluently and to solve problems creatively and resourcefully.

*Principles and Standards for School Mathematics* describes a future in which all students have access to rigorous, high-quality mathematics instruction, including four years of high school mathematics. Knowledgeable teachers have adequate support and ongoing access to professional development. The curriculum is mathematically rich, providing students with opportunities to learn important mathematical concepts and procedures with understanding. Students have access to technologies that broaden and deepen their understanding of mathematics. More students pursue educational paths that prepare them for lifelong work as mathematicians, statisticians, engineers, and scientists.

This vision of mathematics teaching and learning is not the reality in the majority of classrooms, schools, and districts. Today, many students are not learning the mathematics they need. In some instances, students do not have the opportunity to learn significant mathematics. In others, students lack commitment or are not engaged by existing curricula.

Attaining the vision laid out in *Principles and Standards* will not be easy, but the task is critically important. We must provide our students with the best mathematics education possible, one that enables them to fulfill personal ambitions and career goals in an ever changing world.

*Principles and Standards for School Mathematics* has four major components. First, the Principles for school mathematics reflect basic perspectives on which educators should base decisions that affect school mathematics. These Principles establish a foundation for school mathematics programs by considering the broad issues of equity, curriculum, teaching, learning, assessment, and technology.

Following the Principles, the Standards for school mathematics describe an ambitious and comprehensive set of goals for mathematics instruction. The first five Standards present goals in the mathematical content areas of number and operations, algebra, geometry, measurement, and data analysis and probability. The second five describe goals for the processes of problem solving, reasoning and proof, connections, communication, and representation. Together, the Standards describe the basic skills and understandings that students will need to function effectively in the twenty-first century.

The ten Standards are treated in greater detail in four grade-band chapters: prekindergarten through grade 2, grades 3–5, grades 6–8, and grades 9–12. For each of the Content Standards, each of the grade-band chapters includes a set of expectations specific to that grade band.

Finally, the document discusses the issues related to putting the Principles into action and outlines the roles played by various groups and communities in realizing the vision of Principles and Standards.