
Position Statement on Mathematics Education

Adopted June 21, 2000

As part of everyone's daily routine, we are regularly presented with problems that require us to accurately compute sums, differences, products and quotients, analyze data, make predictions, recognize patterns and draw conclusions. In all of these instances, the abilities to compute accurately and to make reasonable estimates are required. A strong mathematics program provides for a comprehensive and sequential approach in which the acquisition of basic skills (addition, subtraction, multiplication and division) serves as the foundation for more complex problem solving and conceptual understanding.

The State Board of Education believes that the recent debate pitting the acquisition of basic skills against the development of conceptual understanding argues a false dichotomy. Rather, basic skills and conceptual understanding are intertwined, and both are necessary before students can successfully apply mathematics to the solution of problems. A strong mathematics program will enable students to do each with ease.

Unfortunately, not enough students in Connecticut or in the nation are sufficiently developing the facility, understanding, level of confidence and interest in mathematics to meet our present and future societal needs. Therefore, we must fully engage in the quest to provide every student with a strong mathematics program, beginning in the earliest grades.

Accordingly, the Connecticut State Board of Education believes that every student needs and deserves a high-quality, comprehensive mathematics education program that develops mathematical facility in the basic skills and quantitative literacy in numbers, measurement, algebra, geometry and statistics. To meet this goal and to best serve Connecticut's students, we encourage educators to adopt the following measures:

- overall, set higher expectations for **all** students to ensure earlier and more equitable opportunity to learn mathematics;
- in curriculum, provide a more rigorous study of mathematical skills and concepts and their applications in today's world for both career and personal decisions, and a more coherent and coordinated pre-K-12 program of instruction;
- in teaching, create classrooms that are stimulating learning environments in which **all** students have the opportunity to reach their full mathematical potential and in which, working collaboratively with families, **all** students are inspired to do so;
- in learning, provide more active student involvement with mathematics, including mathematical problems that relate to their present world and their future career needs and demands, and the use of a variety of mathematical tools for solving those problems;

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- in technology, foster more systematic and appropriate use of technological tools to enhance access to mathematics concepts;
- in professional development, provide more professional collaboration and teacher externships to provide a stronger focus on the underlying mathematics being taught; and
- in assessment, provide student evaluations that are continuous and based on many sources of evidence.

These measures, embodied in the goals and standards outlined in Connecticut's *Guide to K-12 Program Development in Mathematics* and in the *Connecticut Framework: Preschool Curricular Goals and Benchmarks*, should result in more mathematically powerful students who demonstrate the ability to:

- Compute (using addition, subtraction, multiplication and division, when appropriate, with whole numbers, fractions, decimals and percentages) and use mathematical concepts and skills to make and justify decisions and predictions, to identify patterns and trends, to pose questions from data and situations, and to formulate and solve problems.
- Select and use appropriate approaches and tools for solving computational, geometrical and algebraic problems, including estimation, mental computation, paper and pencil, manipulative materials, calculators, and computers with software for tabulating, charting, graphing, drawing, and transforming data and images.
- Use mathematical skills and concepts to describe and analyze data and measurements of physical and social phenomena from other disciplines.
- Communicate numerical, geometrical, algebraic and statistical ideas orally and in written forms with models, pictures, graphs and mathematical symbols, using paper and pencil, a variety of calculator displays, spreadsheets, graphing packages, word processing and other related computer software.
- Use inductive and deductive reasoning to make, defend and evaluate conjectures and arguments, to justify assertions and verify tentative conclusions, and to solve mathematical problems.
- Identify and use connections within mathematics to identify interrelationships and equivalent representations, to construct mathematical models, and to investigate and appreciate mathematical structure.

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We take these positions to ensure that all students, by the end of Grade 12, will apply proficiently a range of numerical, algebraic, geometric and statistical concepts and skills to formulate, analyze and solve real-world problems; to facilitate inquiry and the exploration of real-world phenomena; and to support continued development and appreciation of mathematics as a discipline.