***Counting on Excellence***

***How Parents Can Help Their Children Learn Mathematics***

***It is more important than ever that our students receive solid math instruction in the early grades to prepare them to take and pass algebra and other challenging courses in middle and high school.***
**—U.S. Secretary of Education Margaret Spellings**

In today's highly competitive economy, solid skills in mathematics, including algebra, are a necessity—not just for scientists and engineers, but for everyone. Being proficient in mathematics helps to improve students' college and career options and to increase their future income levels. Beyond the education, career and economic benefits, a solid background in mathematics helps students to better understand their world and to become good citizens.

As a parent, you may be anxious about your own math skills or perhaps feel challenged by the difficulty of your child's math homework, but your child will benefit greatly if you maintain a positive, encouraging attitude. And whether or not you completely understand your child's math assignments, you can still help as he or she progresses through school by asking the right questions, helping your child approach the problems with the right attitude, and getting extra help from the teacher or a tutor as needed.

We now know from the findings of the National Mathematics Advisory Panel that there are several things parents can do and must do to help ensure that their children succeed in mathematics. Read on for some suggestions.

***Just as with reading, the math knowledge children bring to school at an early age is linked with their performance in later grades.***

**—U.S. Secretary of Education Margaret Spellings**

## Positive Parent Attitudes About Mathematics Education Are Important to Student Success

Research shows that a child's goals for and beliefs about learning are related to his or her performance in mathematics. Even if you as a parent feel you are not good in math or perhaps feel uncomfortable with the mathematics being taught in a given day's lesson, you can still support your child's mathematics learning by showingyou value mathematics. Your child will follow suit.

Students who believe that their hard work makes them "smarter" are more likely to try harder in mathematics, and their efforts result in better performance. On the other hand, students who believe that intelligence is inborn generally do not achieve as well, and they do not take full advantage of feedback or constructive criticism regarding their performance.

### Mathematics Education Begins at Home

- In the early years, your child has an opportunity to jump-start his or her mathematics learning through informal activities. Talking about mathematics in a positive manner and involving your child in activities that incorporate basic mathematical concepts will lay the foundation for your child's success in mathematics at the preschool and elementary school levels.

- Before kindergarten, most children can acquire considerable knowledge of numbers and other core mathematical concepts. For example, young children can understand certain basic aspects about fractions, like sharing half a sandwich with a friend.

- The more mathematical knowledge that kindergartners bring with them to school, the greater their chances for success in mathematics in elementary, middle, and high school.

**Why Algebra Is Important**

- Math does make a difference. Whether your child is headed for college or the workforce, he or she needs to graduate from high school with solid mathematics skills. Job growth in the fields of science and engineering is outpacing overall job growth by a rate of three to one, which means there is a critical need for proficiency in higher-level mathematics now more than ever before.

- Students need to learn the mathematical building blocks for algebra. Algebra represents the key to entry into higher-level mathematics, which often correlates with success in higher education and the potential for greater earnings.

**In the Classroom**

- To prepare for algebra, whether in middle or high school, students must be proficient in the Critical Foundations of Algebra. This means they must have fluency in
    - Whole numbers;
    - Fractions (including decimals and percent); and
    - Particular aspects of geometry and measurement.

  While not meant to comprise all of what students should know prior to algebra, the Critical Foundations deserve ample time in any mathematics curriculum.

- Students with mathematical difficulties, including students with learning disabilities**,** show consistent, positive results in performing computation and in solving word problems when teachers provide *explicit* instruction. This includes providing clear models for solving a problem type, practice in the use of newly learned skills, opportunities to think aloud, and extensive feedback.

- Mathematically gifted students with sufficient motivation should be allowed to learn mathematics much faster than students proceeding through the curriculum at a normal pace.

- Using technology can make a difference. Technology-based drill and practice activities can improve student performance in specific areas of mathematics.

**Quick Tips**

***Attitudes About Mathematics Learning***

- Encourage your child to have a positive attitude about learning mathematics.
- Stress the importance of effort. Prompt your child to face challenges positively and to see mathematics as a subject that is important.
- Avoid statements like “I wasn’t good at math” or “Math is too hard.”

***Early Years***

- Introduce your baby and toddler to numbers, counting and shapes.
- Prior to kindergarten, help your child explore shapes and their features to gain a basic understanding of the language related to mathematics, such as “more than," "less than” and “equal to,” and “light” and “heavy.”
- Ask your child’s caregivers or preschool teachers about activities that can develop your child’s mathematical knowledge and skills, including beginning activities in counting and joining (adding) and separating (subtracting) objects.
- For a list of suggested activities please visit *Helping Your Child Learn Mathematics* online at www.ed.gov/parents.

***Elementary and Middle School Years***

- Review the National Math Panel's suggested benchmarks to monitor your child's progress toward the Critical Foundations of Algebra.
- Algebra is much more than a single course, and the way algebra is taught in schools can vary greatly. Talk to your child's teacher about the algebra topics being covered in class and how they compare with the Panel's Major Topics of School Algebra.
- Seek help from the school or teacher if your child needs additional support to acquire proficiency in the mathematics being taught.
- Learn about the classroom practices your child's teacher uses to support learning mathematics. Ask how you can enhance your child's learning outside of the classroom.
- Take advantage of opportunities to test your child's mathematical skills. For example, after a purchase, ask your child to estimate and then calculate the amount of change he or she should receive from the cashier. Make learning fun by creating mathematical problems to solve together at home or on trips.

**The National Mathematics Advisory Panel**

In April 2006, President George W. Bush created the National Mathematics Advisory Panel (National Math Panel) to improve the teaching and learning of mathematics in the United States. Expert panelists, including a number of leading mathematicians and educators, reviewed more than 16,000 research studies before preparing a final report containing policy advice on how to improve mathematics achievement for all students in the United States.

The National Math Panel's final report, issued on March 13, 2008, contains 45 findings and recommendations on curricular content, teachers and teacher education, instructional practices and materials, learning processes and assessments. Among these findings, the report offers benchmarks as guideposts for when students should acquire the foundational topics leading to algebra, noting, for example, that students should develop proficiency with addition and subtraction of whole numbers in the early grades, moving on to proficiency with fractions in middle school. The benchmarks should be interpreted flexibly to allow for the needs of students and teachers as students acquire the mathematical prerequisites necessary for algebra.

The information in this brochure is a summary of the relevant findings of the final report. The findings and recommendations of the Math Panel do not make particular claims for the best teaching methods or curriculum to be used.

To view the entire report online or to obtain a hardcopy and/or additional copies of this brochure in English or Spanish, please visit ***www.ed.gov/mathpanel.*** For further information, visit ***www.ed.gov*** or call 800-USA-LEARN.