



FEDERATION FOR CHILDREN
WITH SPECIAL NEEDS

Family **FACTS** on Education

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Volume I

Early Math Learning Begins at Home



How can families set the stage for children's success in Math?

This issue of *Family FACTS* highlights recent discoveries about math learning and its importance for young children. It suggests ways parents can powerfully instill basic math ideas through play during everyday routines.

Babies are born ready to learn, curious and eager to make sense of the world around them. Recent research has deepened our understanding of how this readiness to learn applies to math. Here are some research highlights:

- Math education begins at home. In 2008, researchers found that the *quality of the home learning environment* has a huge influence on young children's future math achievement.
- Babies as young as 5 and 6 months have a “built-in” nonverbal understanding of very small numbers. They notice that something is amiss when they are shown simple errors in addition and subtraction.
- Preschoolers have far more potential to develop informal math knowledge than was previously realized. A child's opportunity to learn developmentally appropriate skills greatly impacts their future math learning.
- Effort really counts. Children's beliefs about learning affect their math performance. Learning math is not a just matter of “being good” at math. Children who focus on *effort* rather than on *ability* work harder and do better.
- Children who begin school with a strong grasp of early math concepts do better through their entire school careers, not only in math but also in their general education studies.

[Source: National Mathematics Advisory Panel, 2008.]

Creating a Powerful Learning Environment

Parents are powerful. They can transform everyday routines into exciting learning opportunities that lay a strong foundation for future learning. Advanced math knowledge is not required to help your children develop a positive attitude about math and gain math skills. Everyday activities are full of teachable moments. These ideas from research can guide your efforts.

Attitude is key. A positive attitude toward math is the beginning of success. Parents' attitudes and actions shape their young children's lifelong attitudes about math. When parents point to examples of how math is all around us every day, they show they value math. Children are eager to make sense of the world. Exploration and discovery are exciting to them. Their enthusiasm is a powerful force for learning. Expressing negative attitudes toward math can easily diminish their natural enthusiasm.

Effort counts. Children's beliefs about their own ability to learn math is crucial. Research has shown that hard work and effort are more important to children's math success than ability. Give praise when your child shows effort and when learning is challenging.

Build on what children already know.

Children develop knowledge by building upon what they already know. Research has shown that young babies, for example, have an intuitive sensitivity to small numbers. By helping a baby or toddler learn the names of numbers, such as one, two, three, parents are naming things babies already have a sense of. Remember that children learn at their own pace. Follow their lead about what to teach when by noticing what interests and excites them.

Learning how to count is an important early milestone. Counting things seems simple to adults. But learning how to count—not just recite the numbers—is a complex process. Researchers suggest that parents start by helping kids recognize and distinguish among groups of one, two, and three things. Learning what “one” means and what “two” means makes learning to count easier.

Seize everyday teachable moments. Math is all around us. Ideal teaching moments for learning about math occur all day. Parents can help best by using everyday activities to focus children’s natural curiosity and enthusiasm. Math ideas to focus on during daily routines include:

- **Counting:** Use real things to count everything and anything. When dressing the baby, say, “Here is one shoe for one foot.” “You have one nose and two eyes.” This kind of counting helps babies learn the names (numbers) for something they already have a sense of. Older children can practice by counting one item at a time as they place it in an egg carton, or by counting stair steps as they go up. All kids love counting songs and nursery rhymes and learn from the repetition.
- **Sorting:** Ask children to sort objects by how they are alike and different. You could ask your toddler to pick the yellow shirt to go with the yellow socks, or to separate the shirts and socks into two piles. Look for ways to sort by color, shape, size, or other feature when playing with blocks, doing laundry, shopping, or setting the table.

- **Shapes:** Recognizing shapes is a math skill related to geometry. Babies learn about size and shape when they figure out that one shape fits into the shaper box and another does not. Point out rectangles, squares, circles, stars, and other shapes in books, street signs, or when cooking.
- **Patterns:** Patterns are things that repeat. Pattern recognition is a foundation for higher math. Singing songs, repeating nursery rhymes, and stringing beads or blocks in simple patterns, such as blue-red-blue, build pattern recognition.
- **Measuring:** A sense of size and weight is the beginning of understanding how to measure. When kids fill cups with water and then pour them out at bath time, they learn about full and empty, heavy and light, larger and smaller.

These are just a few ideas of everyday activities that can help children form basic concepts behind algebra, geometry, and even physics. Remember that the work of children is play. Stop while you are still having fun!

Sources /Resources for Learning Math:

“Counting on Excellence: How Parents Can Help Their Children Learn Mathematics: Recommendations from the National Mathematics Advisory Panel,” 2008. Online brochure in English and Spanish at www.ed.gov/mathpanel.

National Mathematics Advisory Panel. *Foundations for Success: The Final Report of the National Mathematics Advisory Panel*. U.S. Department of Education: Washington, DC, 2008. Online at www.ed.gov/mathpanel or by calling toll free 1-877-433-7827 for a free print copy. Also, email your request to edpubs@inet.edu

U.S. Department of Education. “Helping Your Child Learn Mathematics,” Online booklet at www.ed.gov/parents. (Updated 11/14/08). See also the Early Childhood STEM Learning through the Arts Program.



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