

## Early Math and Science: Key to Later Learning

• By Jessine Foss

“Math is a better predictor of a child’s educational success than even reading and literacy,” says Kelly Pijl, director of external affairs for the Orange County First 5 Commission.

### Why Math and Science Matter

Studies show children learn valuable skills through early math and science experiences that help them do better in school and later in life.

- Children’s early math knowledge is the strongest predictor of later learning.
- Science and math interactions teach children new words in meaningful contexts and improve communication as well as math skills.
- Play helps children develop math and science abilities, as well as investigative and problem-solving abilities. Nature play also develops children’s curiosity, learning, self-expression, and focus.

### How Children Learn Math Skills

Toddlers already think in mathematical ways—noticing the difference between two items and three items. Children need adult support to expand their math knowledge, in particular through vocabulary and open-ended questions, called “math talk.”

Early math learning should focus on two areas.

- **Numbers:** counting, understanding “one-to-one correspondence” (each cracker represents a number), sequence, addition, subtraction.
- **Geometry and measurement:** size, shape, quantity, measurement, patterns, grouping.

### Programs Improve Math Skills

Some programs are building on this research to help families, child care



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Children can also develop math and science skills through art.

programs, and schools foster children’s math skills.

- **Math is Everywhere:** Orange County First 5 is partnering with Sesame Street to introduce the *Math Is Everywhere* tool kit to parents and educators. Parents at 35 schools are being trained to help other parents implement free and low-cost math activities at home.
- **Pre-K Mathematics Intervention:** Three researchers now at WestEd developed a curriculum for child care and development programs to teach children informal math skills. Teachers guide small-group math activities. Parents receive activity ideas in English and Spanish. Studies show that children’s math knowledge improved at California preschools using the curriculum.
- **Math Pathways & Pitfalls:** WestEd has also developed a research-based math curriculum for grades K–8 that helps students think through ways to solve math problems. Studies show that students

using the curriculum do better in math and on standardized tests—and that teachers’ instruction improves. “I really like the thinking that lessons engender,” said a Hayward fifth-grade teacher in an evaluation of the curriculum. “[It] will help kids in academic areas and their everyday lives.” •

Reporting by Aimee Lewis Strain contributed to this article.

### Resources

- See pages 11 and 12 for hands-on activities
- Math is Everywhere, in English, [www.sesamestreet.org/parents/math](http://www.sesamestreet.org/parents/math); in Spanish, [www.sesamestreet.org/parents/math/spanish](http://www.sesamestreet.org/parents/math/spanish)
- Pre-K Mathematics Intervention, \$185, [http://ies.ed.gov/ncee/wwc/reports/early\\_ed/prek\\_math/info.asp](http://ies.ed.gov/ncee/wwc/reports/early_ed/prek_math/info.asp)
- Math Pathways & Pitfalls, \$165, 510-302-4249, [www.wested.org/mpp](http://www.wested.org/mpp)