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The Shape of Things to Come



By age 2, children are learning to recognize patterns and use logical reasoning in their play and day-to-day routines.

By Aviva Patz

kidcomplishment

We tend to think of math as being addition, subtraction, multiplication and division, which are far too advanced for preschoolers to grasp. But math is everywhere, and it comes to even young children quite naturally.

Researchers at Columbia University examined preschoolers' free-play activities and found that nearly half of every minute was spent doing some kind of math, usually patterns and shapes.

"Math is much more than numbers -- it's about space and measurement and the structure and geometry of space," says Douglas Clements, PhD, a professor of education at the State

University of New York at Buffalo. "It all starts with kids trying to stack blocks and realizing that with the triangular-shaped blocks, it just won't work."

The preschool stage is the time when early math skills develop, so it helps to know how you can reinforce those abilities in your budding mathlete at home.

Age 1-2

Emerging abilities: During their second year toddlers begin to recognize patterns and grasp the concept of shapes -- and may even start sorting favorite toys by category, such as hard or soft. At this age, they also begin to understand the idea of one and two (like when you say "take only one").

Skill-builder: Count "one, two," over and over as you tap each of baby's hands, feet, legs and arms. Occasionally count "one" for the single body parts -- head, nose, belly -- to show the difference. Also name the number of items in front of you, saying I have two carrots, instead of I have carrots. "All kids have the perceptual ability to understand numbers intuitively, but when you give them a name, it creates more awareness," Clements says.

Age 2-3

Emerging abilities: By age 2, children are learning to recognize patterns and use logical reasoning in their play and day-to-day routines. They can match and sort shapes, stack rings onto a peg in size order and even count up to five items (understanding that each item gets its own number). In filling up and dumping out containers, they're exploring the different characteristics of items (water, ice cubes, sand and dirt), which is a kind of basic measuring.

Skill-builder: Encourage your child to stack blocks congruently -- to create a tall tower or a path along the floor, say for a car to run a long or a doll to walk on. "Just putting blocks end to end is a good math activity because it shows alignment of shapes and their relationship to one another," Clements says.

Age 3-4

Emerging abilities: Three-year-olds are completing simple puzzles, counting up to five or even 10, and building three-dimensional objects with blocks. They may begin using words like big, small, long, heavy and fast to describe items in their environment, demonstrating an understanding of mathematical concepts such as height, area, volume, length, weight and speed.

Skill-builder: Play copycat pattern games: Ask your 3-year-old if he can repeat after you, and then do a simple sequence of sounds and moves -- like clap, clap, clap. Gradually make the sequences more complex -- like clap, clap, stomp, or clap, touch nose, clap.

Age 4-5

Emerging abilities: By this age, your child can count to 10 or even 40, recognize numbers up to nine, and even do simple adding and subtracting using objects (take one block away and now I have two). They can identify basic shapes, and find those shapes in pictures and their environment. They're also beginning to understand and use words -- larger, smaller, under, top, inside -- that help them compare and "measure" objects.

Skill-builder: Get your child sorting -- laundry, silverware, or items in the junk drawer or the toy box. Instead of dictating the categories (socks, T-shirts, jeans), let her devise her own classifications; then ask her to explain them. Why do these two items belong in the same pile? How are they different from items in other piles? You'll build her pattern recognition and reasoning skills -- and knock a household chore off your list at the same time.

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