



**O**n a frosty January morning, 5-year-old Miya found icicles hanging from the garage and decided to collect them. She noticed that the biggest icicles were much larger than the “baby” icicle.

“How much bigger?” asked her mother, Joanne. It was an opportunity for Miya and her mom to compare sizes: Was the biggest icicle twice as large as the smallest one, or more? By holding the icicles next to each other and “walking” the little one up the side of the big one five times, Miya could easily see how many times bigger the “papa” icicle really was.

Miya’s icicle encounter lasted only a few minutes, but in this Math Moment she learned an important principle that will help in her understanding of multiplication. For a phrase like “five times as big” to be meaningful, children must learn it in a way that has meaning to them, and usually that involves using actual objects (often called “manipulatives”). When parents use a phrase like “five times as big” in everyday conversation – not just in the context of homework – it becomes a natural way of thinking for the children.

Miya decided to arrange the icicles like stair steps, from smallest to largest. With the bottoms aligned horizontally, the tops made a sloped line. By ordering the icicles, Miya expressed an appreciation for mathematical order that is innate to young children.

Parents can develop that sense further – and develop mathematical vocabulary – by asking their children to make comparisons: Which is the smallest flower? The biggest toy? The heaviest dog? The shortest path through the park (while looking at a map)? Which holds more volume, this truck or that one? Can we arrange these flowerpots in order so they will nest inside each other? Ordering by size leads to discussions of numerical order, a pre-



**With a little parental prompting, Miya, 5, uses her fascination with icicles to exercise her comparative skills.**

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requisite for numerical computations and higher math.

### All in Order

Many family Math Moments will sharpen children’s understanding of order and help them see its relevance in their lives. Here are a few ideas:

- Play simple games of dice or cards (like the game of “War”) where players compare numbers. Make up variations – the player with the smallest card could be declared the winner of each round. (More complex variations can be seen at [www.pagat.com/invented/warvars.html](http://www.pagat.com/invented/warvars.html)).

- Put coins in order of their value. (Counting money is a more advanced skill, but this comes first.)

- Read route numbers (or distances) on highway signs and ask which is larger or smaller?

- Play numerical guessing games where one player thinks of a number and the other uses “greater than” and “less than” to narrow the field:

*Parent: I’m thinking of a number between 1 and 20.*

*Child: Is it more than 10?*

*Parent: Yes.*

*Child: Is it less than 15?*

And so on. Then switch roles. When appropriate, complicate the game with more advanced concepts like odd and even, prime numbers, multiples, etc.

*Child: I’m thinking of a number between 1 and 100.*

*Parent: Is it a multiple of five?*

During a game, compare scores to see who is ahead and by how much. Effortlessly, your child will slide into the world of computation.

These Math Moments take little time but they go a long way in helping children to think mathematically. Just as important, they make math a pleasurable aspect of daily life.

**Math Moments™** creator David Schwartz spends much of his time finding unusual, whimsical ways to make math and science come alive for kids and teachers, both through writing and through speaking at schools and conferences. He has written nearly 50 books for kids, including *How Much Is a Million?* and the “Look Once, Look Again” series. For more information about David’s math and science adventures, check out his Web site, [www.davidschwartz.com](http://www.davidschwartz.com).

### Share Your Math Moments

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