



MORE, ALL GONE, EMPTY, FULL: Math Talk Every Day in Every Way

Jan Greenberg

Will feeds Maya, an 8-month-old in his care. He pauses for a moment and Maya signs “more.” Will laughs. “You want more? Okay, here it comes!” He continues feeding her and when the bowl is empty, Will says and signs, “All gone. Maya ate her food. All gone.” Maya looks at him and smiles.

Jan Greenberg, BS, is a senior writer and training specialist with the Early Head Start National Resource Center, Washington, DC. Her past work includes product development, training and technical assistance, and teaching infants, toddlers, and preschool children in regular and special education programs.



WILL KNOWS that the development of math concepts and skills begins in the first years of life. In fact, from the moment they are born, children begin to construct ideas about mathematics through everyday routines, experiences, and, most importantly, caring interactions with trusted adults. A key aspect of these interactions involves language—how we talk math with infants and toddlers. It’s easier than you think. You might be talking math more than you realize! Being aware of early mathematical concepts helps you be more thoughtful and intentional about using these concepts in everyday experiences and interactions with infants and toddlers.

Where’s the math?

Math is everywhere! Mathematics is “a way of describing the world—a way of thinking, knowing, and problem-solving” (Virginia’s Early Childhood Development Alignment Project 2008, 83). You likely use math and math language all the time but may not be aware of it. For example, when you do laundry and wash clothes separately based on color, you’re using the math concepts of sorting and classifying. You also use math concepts when you keep score during sporting events and explain how much your team is ahead or behind (number and operations), or give someone verbal directions to get from one place to another (spatial relationships). As a teacher or caregiver, you likely play games and sing songs that use numbers and counting, use comparison words such as *big* and *little* (measurement), and explain the order of everyday routines and experiences (patterns). In the short vignette in the beginning, Will builds on Maya’s concept of *more* by feeding her more food. He also introduces a new math concept, “all gone.” Math is all around us; math talk brings it out and makes it known.

Infants and toddlers are natural mathematicians. Even without adult

support, we see infants and toddlers using math concepts to make sense of their world. For example, infants signal they want *more* food, as Maya does. *More* is one of the first math concepts that children construct (Ginsburg, Lee, & Boyd 2008). They tell us—often dramatically—that they know the difference between familiar and unfamiliar adults (sorting and classifying). Toddlers try to climb into boxes of various sizes (spatial relationships) and say words that are repeated in stories you read aloud or songs you sing (patterns) (Greenberg & Bickart 2008). An important role for teachers and other caregivers is to make the math that occurs in daily life concrete and visible to children. This is done through math talk.

Components of math

One way to recognize and talk about math opportunities is to know what math involves. Here are brief descriptions of five math components and examples of talking math for each (Greenberg & Bickart 2008; Virginia’s Early Childhood Development Alignment Project 2008).

Number and operations—understanding the concept of number, quantity, order, ways of representing numbers, one-to-one correspondence, and counting.

- “You have *two* eyes, and so does your bear. Let’s *count*: 1, 2.”
- “I have *more* crackers than you do. See, I have *three* and you have *two*. I’m going to eat *one* of mine. Now I have *the same* as you!”
- “That’s the *third* time I’ve heard you say ‘mama.’ You’ve said ‘mama’ *three* times!”

Shapes and spatial relationships (geometry)—recognizing, naming, comparing, and contrasting objects based on their geometric appearance; understanding the physical relationship (i.e., direction and position) between self and objects,

or between two or more objects, in one's environment.

- “Look, Jason went *under* the climber and Aliyah is *on top*!”
- “You’re sitting *next to* Carlos.”
- “Some of the crackers we have today are *square*, and some are *round*.”

Measurement—determining qualities such as size, weight, quantity, volume, and time, and using the appropriate tools to do so.

- “Moving that stool is hard. It’s *heavy*.”
- “You took a *long* nap today!”
- “Let’s *count how many steps* it takes to reach the playground.”

Patterns, relationships, and change (building blocks of algebra)—recognizing (seeing the relationships that make up a pattern) and/or creating repetitions of objects, events, colors, lines, textures, and sounds;

understanding that things change over time and that change can be described using math words.

- “Marcus has stripes on his shirt—white, blue, white, blue, white blue.”
- “I put the blocks in the bucket, you dump them out. I put the blocks back in the bucket, you dump them out!”
- “Our plant looks *taller* today. I think it grew overnight.”

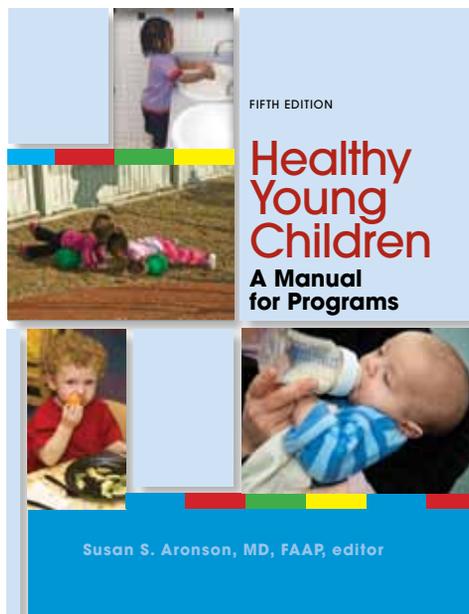
Collecting and organizing information (data collection and analysis)—gathering, sorting, classifying, and analyzing information to help make sense of what is happening in the environment.

- “You put the big lid on the big pot and the small lid on the small pot.”
- “You always smile when your mom sings to you!”
- “Let’s put the dolls in the basket and the balls in the box.”

Involving families

Families play an important role in helping infants and toddlers learn about math. They are their children’s first teachers. As you become more aware of and intentional about talking math throughout the day, share your knowledge with families and ask them what math they see happening at home. If needed, help them identify opportunities during their daily routines and experiences to talk math with their children. For example, diapering, meal and bath times, walks around the neighborhood, and shopping trips are ideal times to count, point out shapes and sizes, talk about patterns, and describe how things are the same and different. Encourage families to use their home language. When families speak in their home language, they strengthen their relationships with their children and are more likely to have meaningful conversations using rich, descriptive words (Office of Head Start 2008).

Coming soon!



Healthy Young Children: A Manual for Programs (5th ed.)

Susan S. Aronson, editor

The updated edition of this popular manual is used by early childhood programs to promote and protect the health and safety of children, staff, and families. Includes sample forms, letters, and checklists and information regarding nutrition, illness, emergencies, and facility maintenance.

ISBN: 9781928896821 • Item #369

\$35 • Member: \$28 20% savings

naeyc[®]

Order online at www.naeyc.org/store
or call 800-424-2460 option 5 (9:00 A.M. – 5:00 P.M. EST, Monday – Friday)

Putting it together

Math is all around us. There are countless opportunities during the day for children to hear new math words and deepen their understanding of math concepts. The more we talk math and share our enjoyment of the experience with infants and toddlers, the better chance they have to build a positive attitude toward math learning and learning in general.

THINK ABOUT IT

- Reflect on your daily routines and activities. Identify the math-related content, skills, and language involved.
- Reflect on your own feelings about math.

This last point is especially important. If your experiences with math were not so great, you may unintentionally avoid focusing on math with young children. If this is the case, you may have to exert extra effort to ensure you provide children with many opportunities to explore math.

TRY IT

- Identify opportunities during your program's daily routines and experiences when you might use math talk.
- Observe a coteacher or colleague for a period of time, and note when she uses math talk and what words she uses. Then ask her to observe you so that you have a sense of what you're already doing and what you might improve.
- Make a list of math talk words and phrases. Post some on the walls to help you notice math talk opportunities. Rotate the words and phrases so they stay fresh.
- Plan a way to share with colleagues and families what you've learned about math talk and play. You can learn much more about math talk and strategies by doing this!

All gone, more, empty, full, and many more math words you use will enrich the everyday math experiences that infants and toddlers enjoy. You will be surprised at how much they know and can learn. Your math talk today can help the young children in your care get ready to be successful in math as they get older.

References

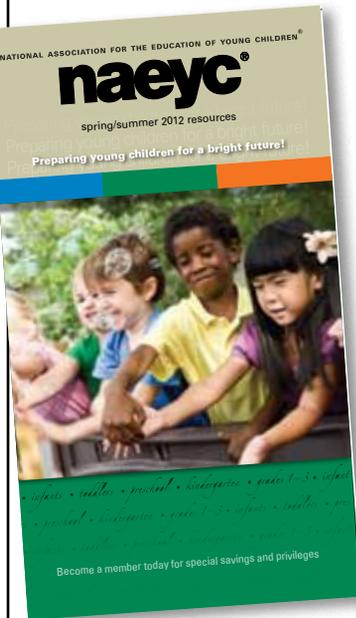
- Ginsburg, H.P., J.S. Lee, & J.S. Boyd. 2008. "Mathematics Education for Young Children: What It Is and How to Promote It." *Social Policy Report* 22 (1): 3–23. www.srcd.org/documents/publications/spr/22-1_early_childhood_math.pdf.
- Greenberg, J., & T.S. Bickart. 2008. *Math Right From the Start: What Parents Can Do in the First Five Years*. Washington, DC: Teaching Strategies.
- Office of Head Start. 2008. *A Family Note on Finding the Math*. Washington, DC: Health and Human Services/Administration for Children and Families. <http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/eecd/Domains%20of%20Child%20Development/Mathematics/AFamilyNoteon2.htm>.
- Virginia's Early Childhood Development Alignment Project. 2008. *Milestones of Child Development: A Guide to Young Children's Learning and Development from Birth to Kindergarten*. Richmond, VA: Office of Early Childhood Development, Virginia Department of Social Services. www.earlychildhood.virginia.gov/documents/milestones.pdf.

Resources

- Geist, E. 2001. "Children Are Born Mathematicians: Promoting the Construction of Early Mathematical Concepts in Children under Five." *Young Children* 56 (4): 12–19.
- Geist, E. 2003. "Infants and Toddlers Exploring Mathematics." In *Spotlight on Young Children and Math*, ed. Derry Koralek, 4–6. Washington, DC: NAEYC.
- Geist, K., E.A. Geist, & K. Kuznik. 2012. "The Patterns of Music: Young Children Learning Mathematics through Beat, Rhythm, and Melody." *Young Children* 67 (1): 74–79.
- Madison Metropolitan School District. 2011. "Math at Play: Resources for Infants, Toddlers and Twos." www.mathatplay.org/resources_itt.html.
- Zero to Three. "Developing Early Math Skills." n.d. www.zerotothree.org/child-development/early-development/supporting-early-math-skills.html.

Rocking & Rolling is written by infant/toddler specialists and contributed by ZERO TO THREE, a nonprofit organization working to promote the health and development of infants and toddlers by translating research and knowledge into a range of practical tools and resources for use by the adults who influence the lives of young children. The column appears in January, May, and September issues of *Young Children* and in an online archive at www.naeyc.org/yc/columns.

Copyright © 2012 by the National Association for the Education of Young Children. See Permissions and Reprints online at www.naeyc.org/yc/permissions.



The NAEYC Spring/Summer 2012 Resources catalog is now online!

Inside the spring/summer catalog are powerful resources tailored to meet the needs of early childhood educators at all levels of their service. Look for new and best-selling titles covering best practices, standards, and research along with applicable guidance to assist early education professionals in making a difference. Choose from a wide selection of professional books, multiple media, brochures, posters, and other resources.

NAEYC members save **20%** on all resources in this catalog.

naeyc

Visit www.naeyc.org/store to find the latest resources to help you reach your goals!