



Advancing Equity

Playful Ways to Extend Math Learning at Home

Jessica Mercer Young and Kristen E. Reed



Some things are essential to young children’s healthy development—things like caring relationships, plenty of time to play, and enriching environments, to name just a few. If you were filling out this list of essentials, would frequent opportunities to learn math make your top 10? We hope so!

Several studies have reported that early math skills are a strong predictor of later academic performance. In fact, math knowledge and skills in kindergarten are related to later math, science, and even reading skills. This is true regardless of gender, race, or family income.

Unfortunately, not all children have equal opportunities to engage with math concepts at home or in preschool settings. Children from under-resourced communities tend to start kindergarten with less math knowledge than their more advantaged peers. While this opportunity gap starts before kindergarten, it extends all the way to the college years. Yet there is no better way to close this opportunity gap than by providing high-quality early childhood education.

Mastering math: Make math playful!

Giving young children lots of meaningful and enriching math experiences, both in school and at home, can build a firm foundation for later math learning—and contribute to advancing equity in children’s long-term educational outcomes.

The home-school connection

Schools often advise families to read to their children every night. Shared book reading fosters children’s language and literacy skills, builds vocabulary, and instills a lifelong love of reading. We think it’s critical to give families a similar message about shared math experiences at home!



“After playing these games, my kids really started enjoying math. They get excited when I say I have a new math game! And now they’ll [play some games] on their own. They love it!”

—Fatimeh, Head Start
Preschool Teacher, Nashua,
New Hampshire

“I think the [math mini-books] are perfect! They don’t have anything inside them that can’t be understood. . . . Truly [they are] made so well that they are all recommendable!”

—Preschool Parent,
Lawrence, Massachusetts
(Translated from Spanish)

At first, many families may balk at the notion of doing math activities. Maybe their own math experiences were tense. Or maybe they don’t know what kind of math is right for young children or how to make math playful.

But we’ve seen that with teachers’ encouragement and guidance, families love engaging in math activities with their children. They find great joy in doing problem-solving games and puzzles, singing songs, and reading books that build children’s early math skills!

Children naturally engage in mathematical ways of thinking. For example, they look for patterns, classify, compare, and count as part of making sense of the world. With support from caregivers—that is, interactions with teachers, family members, and other important adults in their lives—these math-based ways of exploring the world can be extended to support school readiness skills like problem solving, puzzling, and perseverance.

Four ways to support family math

1. At back-to-school night and during parent–teacher conferences, talk about doing fun math activities at home and how they reinforce children’s math learning in school.
2. Remember that it’s important for children to explore and to feel safe making mistakes. Having the freedom to

make mistakes actually supports learning. Tell families about how much adults’ positive attitudes toward making mistakes—and toward math, in general!—matter. (See “Parent Tips,” on page 16).

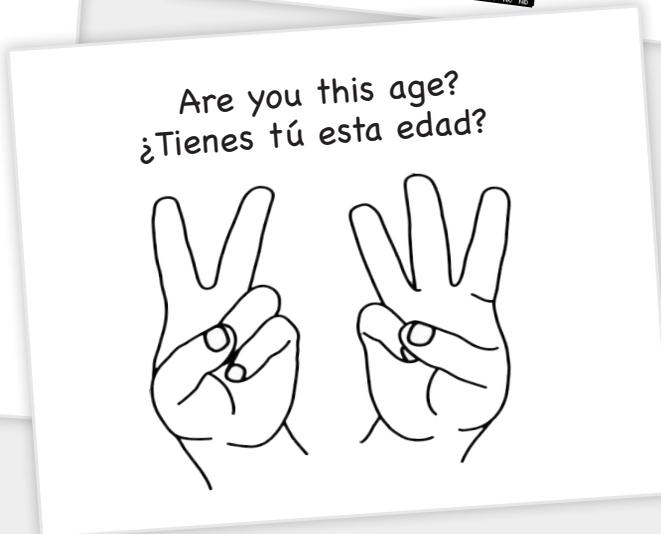
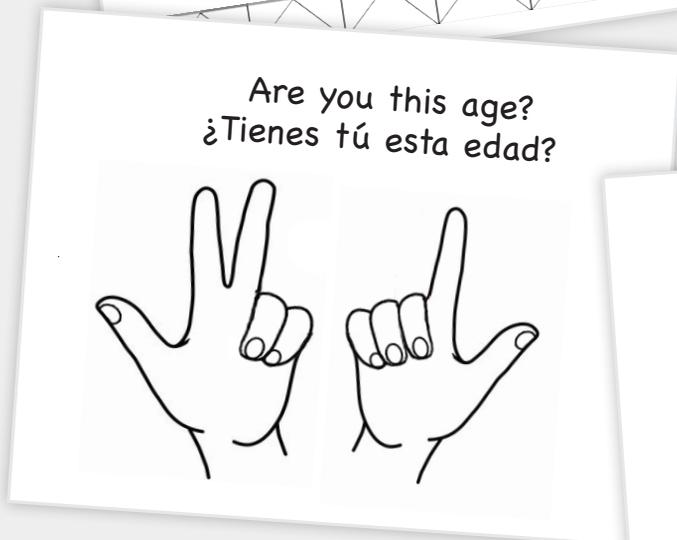
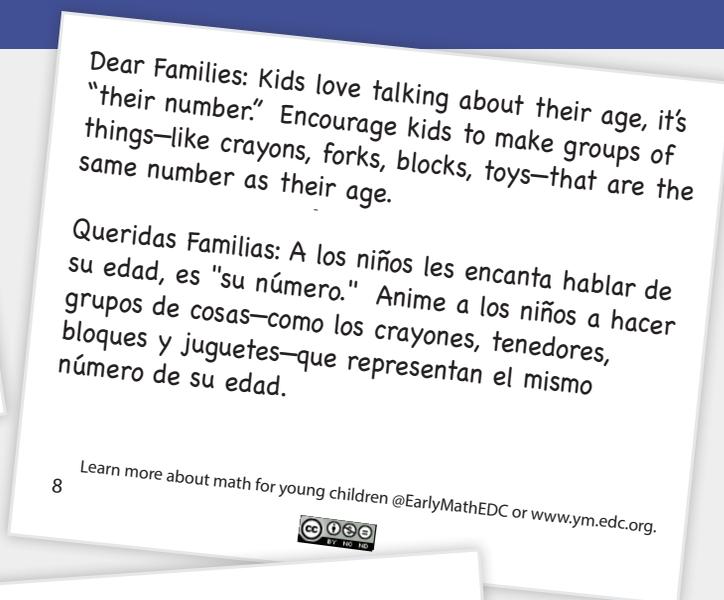
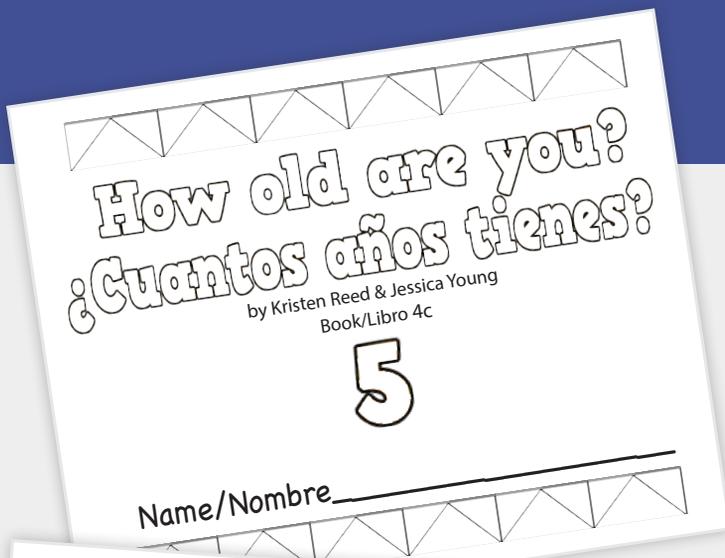
3. Share the Message in a Backpack (pp. 15–16) with families. It offers ideas for fun family math activities—and multiple opportunities for children to practice thinking mathematically. Post it on your class bulletin board and put it in materials that you send home. Parents might not even realize that some of their favorite family activities involve math!
4. Select math games for children to play in the classroom and at home. See the samples we share in “Math Games for School and Home” (pp. 13–14)—these are part of our free eight-page math mini-book series (available at youngmathematicians.edc.org). At the end of each mini-book, there is a short activity for families to do together. There’s also a note for parents about the key math concepts featured in the book and why they are important for young children’s mathematics learning.

Math Games for School and Home

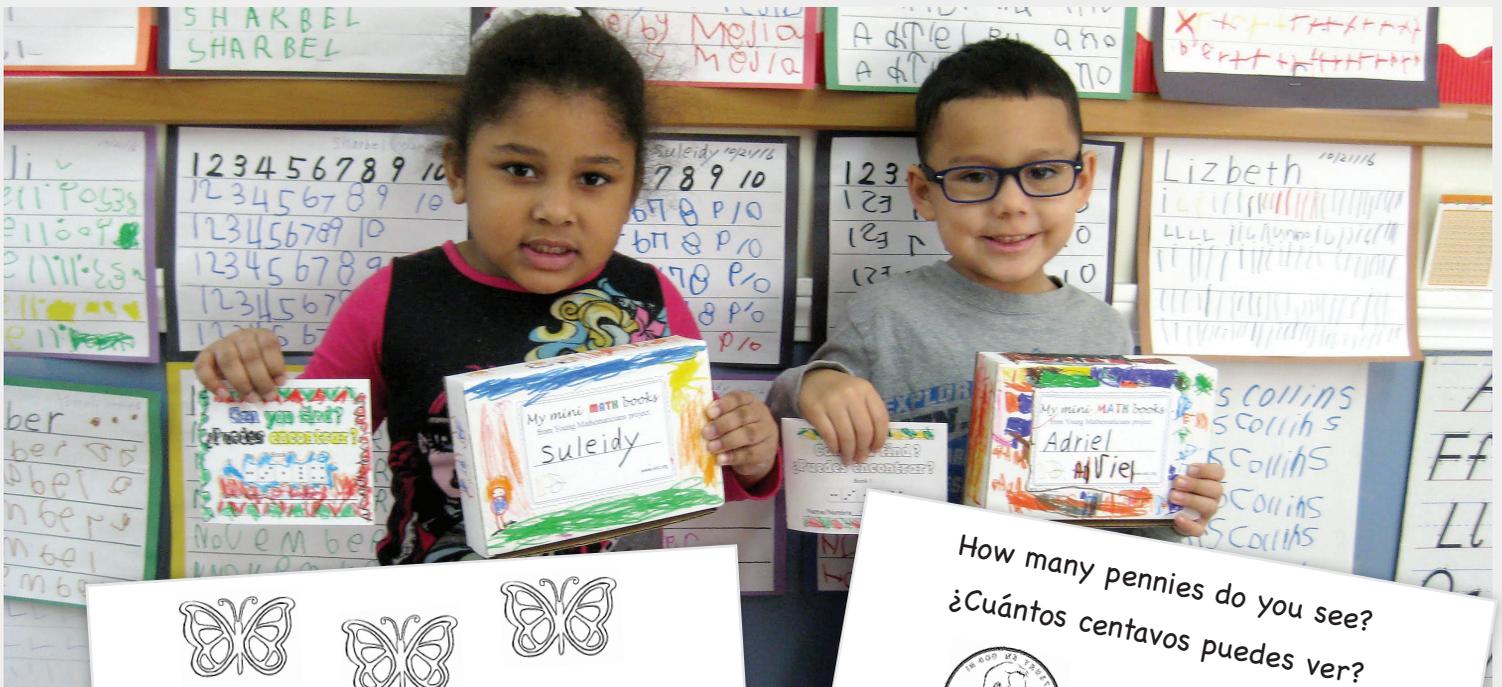
One effective strategy is to teach children a math game in the classroom and then send the game home for them to play with their families. Children are proud to share something they learned in school and to teach it to others. And families have a chance to learn more about what is happening in the classroom.

Visit <http://ym.edc.org> to find math mini-books (for teachers and families) with games on many math

topics—shape, number, patterns, and more—in both English and Spanish. The games are adaptable and are meant to be played again and again. Children's sophistication in game play—and in mathematical understanding—will increase over time. The simple explanations and notes that accompany the games help families build their own confidence in math and their understanding of how to help their children learn math.



It's easy to make a math mini-book! Visit <http://ym.edc.org/math-books/mini-books> for templates and instructions.





How Many Are Hiding? ¿Cuántos Se Están Escondiendo?

by Kristen Reed & Jessica Young
Book/Libro 6

Name/Nombre _____

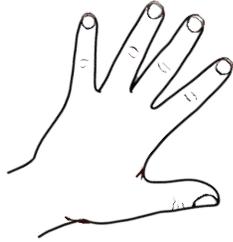
How many pennies do you see?
 ¿Cuántos centavos puedes ver?



I have 3 pennies in all.
 Tengo 3 centavos en total.

Photographs: © EDC

I hid some of my pennies! How many pennies do you see? How many are hiding?
 ¡Escondí algunos de mis centavos! ¿Cuántos centavos puedes ver? ¿Cuántas están escondidas?

JESSICA MERCER YOUNG is a senior research scientist and developmental and educational psychologist specializing in early learning at Education Development Center, in Waltham, Massachusetts.

KRISTEN E. REED is a senior project director and mathematics educator at Education Development Center.

What could be more fun than playing games? Find a treasure trove of math games in the Oct/Nov 2017, Feb/Mar 2018, and Apr/May 2018 issues of TYC. Visit [NAEYC.org/resources/pubs/tyc](http://naeyc.org/resources/pubs/tyc) today!



This information has been adapted from *Games for Young Mathematicians*, a program of research in early mathematics at the Education Development Center (EDC), supported by funding from the National Science Foundation and the Heising-Simons Foundation. For more math information and games, visit <http://ym.edc.org>.



This article supports the following
NAEYC Early Learning Program Accreditation standard and topic areas

STANDARD 2: CURRICULUM
2B: Social and Emotional Development
2F: Early Mathematics