

# Math Skills: Helping Handout for Home

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## INTRODUCTION

Like teachers, parents want their children to thrive mathematically. When children thrive mathematically, they perform well in school and they have positive attitudes toward math. Parents can awaken students' curiosities about mathematics, so that they use it to ask questions and seek answers. Parents can help students see how math applies to the world around them in nature, the arts, architecture, science, technology, and fashion. And, parents can work together with teachers to help students become interested in knowing and doing mathematics.

At times, students face difficulties with mathematics—some children more so than others. For example, students might not understand how to complete their homework, not understand the questions being asked or what the teacher expects, or have little interest in math. The recommendations in this handout are intended to help parents when their child has such difficulties.

## WHAT TO CONSIDER WHEN HELPING STUDENTS AT HOME

Although there is a lot to consider when working on mathematics with children, the following section highlights a few primary issues. One of the issues is for parents. It can be a challenge to help students with mathematics at home when the math looks different from how parents learned it when they were in school. Another set of issues can be found with the student, from having difficulty solving problems to lacking motivation to do mathematics.

## Changing Perspectives on the Teaching of Mathematics

When students bring home their math work and it looks different than what their parents experienced in school, parents will find it helpful to learn about some of the changes that have occurred during the past several decades in the teaching of mathematics. Central among those are changing perspectives toward mathematics. For example, more so than in the past, the following perspectives are likely to be emphasized in teaching mathematics:

- *Mathematics is more than practicing skills.* Doing math also involves choosing a method to solve the problem, explaining why that solution makes sense, finding patterns, and justifying why the pattern could be true among similar types of problems.
- *Calculating improves when students understand why the calculations work.* For that reason, teachers not only help students learn how to solve a problem, but also help students learn *why* a strategy makes sense.
- *Being good at mathematics is more than getting an answer quickly.* Faster is not smarter (Seeley, 2009). Someone who is smart at mathematics should be able to explain why an answer makes sense and why the strategy used is most appropriate.
- *Effort leads to growth in understanding.* This insight applies not just to mathematics but to other domains (Dweck, 2010). Mistakes or struggles are not a sign of low intelligence. They are a normal part of learning. When teachers engage students in struggling productively, students are likely to develop a deeper understanding of math.

### Why Might a Student Be Struggling in Mathematics?

When a student is having difficulties with math, multiple factors can be contributing to them. The student might lack foundational skills, such as low recall of basic facts or a lack of fluency in calculating. The student might not be interested in math, not be motivated to work on math, or might have limited study skills. There could also be elements in the child's environment that lead to difficulties in math. The classroom climate might not be encouraging for students, there might not be enough communication between home and school, or students' peers might not be good influences for academic success. A range of factors should be considered when thinking about how to support students in mathematics.

### RECOMMENDATIONS

Recommendations are divided into five general categories: (a) communicating and working with your child's teacher, (b) helping your child with schoolwork, (c) doing math at home—beyond schoolwork, (d) promoting positive attitudes toward mathematics, and (e) understanding underlying perspectives about mathematics. Note that not all recommendations would apply to every student or parent.

#### Communicating and Working With Your Child's Teacher

Teachers and parents benefit from working together to be joint problem solvers to support students' mathematics learning. Parents should meet with their child's teacher and be sure to ask about, or cover, the following strategies.

1. **Ask your child's teacher for specific recommendations so you can help your child progress in mathematics.** Those recommendations should be based on your child's strengths and weaknesses—so you know how to continue building and capitalizing on strengths, while also addressing specific weaknesses.
2. **Discuss with your child's teacher the plans the school has for helping your child.** Ask what the teacher might do differently, or more of? Are additional interventions and supports needed (if so, by whom, when, and where)? Is there a need for further assessment of your child's skills, or a more general assessment that might help guide any necessary interventions?
3. **Focus on specific math skills that need to be addressed.** Be sure to target specific skills, and not mathematics performance in general.

4. **Develop a communication plan that works for you and the teacher.** Arrange to communicate using e-mail, regularly scheduled phone calls, Twitter, or some other approach (e.g., using the app called Seesaw.)

#### Helping Your Child With Schoolwork

The following recommendations are for helping parents when they are working at home on their child's math schoolwork.

5. **Have the child do the mathematical thinking, rather than you doing it.** This means resisting telling your child how you would solve math problems. Instead, ask questions that prompt the child to explain mathematical thinking to you, such as the following: What is the problem you're being asked to solve? Tell me what you've done so far. If you're stuck, what if you tried drawing a picture or making a diagram to show what's happening in the problem? What did your teacher suggest that you do when you worked on a problem like this one?
6. **Use online video tutorials that explain how to execute procedures.** Some sample tutorials are found on the websites for Khan Academy and Learn Zillion. Schools may also provide access to online programs they have for students to practice procedures.
7. **Consider whether or when it is appropriate to seek a mathematics tutor for your child.** This is something you also might want to discuss with your child's teacher.

#### Doing Mathematics at Home—Beyond Schoolwork

To support students' interest and motivation in mathematics, it is important to communicate that math is not for school alone, but is part of our everyday lives. The more that students see math at work around them, the more they will value its role as the foundation of all science and technology. Perhaps students will even choose to do more mathematics outside of school if they come to see its value and relevance.

8. **Talk about math with your child when you are using it at home or on errands.** These uses might include making financial decisions, cooking, or measuring and building something. For instance, present a math problem when baking cookies: "You need  $\frac{3}{4}$  cup of sugar, but you only have a  $\frac{1}{2}$  cup measure. How would you get  $\frac{3}{4}$  cup?"

(<https://talkingmathwithkids.com/2014/08/19/cookies-under-constraints/>).

9. **Talk about ways to mathematize the world.** Activities might include noticing the shapes of signs, perspective in art, and patterns in architecture; estimating distances; or seeking different paths to get from one place to another.
10. **Listen and respond to your child's "mathematical wonderments."** When your child wonders about something that involves mathematics, be sure to discuss related ideas. For example, when thinking about a trip, a child might wonder, "If we're going for three nights, is that 2 days and 2 half-days?" Rather than answering yes, and stopping there, ask, "How did you think about that?" (<https://talkingmathwithkids.com/2014/06/25/nights-of-camping/>)
11. **Play games that require, or support, mathematical thinking.** Many board games require children to synchronize counting with moving a certain number of spaces. This helps them learn about sequencing numbers. Likewise, games using dice can prompt discussions about probability as they think about which types of rolls are more likely to occur. Games also can help improve fluency with addition when adding scores.
12. **Carefully select software, computer games, or apps that help develop math skills.** When looking for computer-based activities, shop carefully, read reviews, and ask the child's teacher for recommendations. Choose options that promote understanding rather than speed and practice. For example, an exploratory app for young children, <http://touchcounts.ca/>, is structured as a play space.

### Promoting Positive Attitudes Toward Mathematics

Although the following recommendations apply to all children, they are especially appropriate for those who have mathematics anxiety, who express aversions to mathematics due to past experiences, and who become easily frustrated when doing mathematics.

13. **Provide frequent encouragement, praise, and positive feedback.** It helps to encourage children not to give up and to let them know that others believe they can succeed. Have high expectations, but also communicate that you think your child can meet them. Be sure to praise wisely and strategically: Praise children for their effort, progress, and hard work much more so than for

their correct answers. Also, use praise in a manner that provides positive and specific feedback, such as by pointing out where the child has used the correct steps even when the answer is incorrect (see *Using Praise and Rewards Wisely: Helping Handout for School and Home*).

14. **Explain that everyone struggles at times, and that mistakes can help us learn.** Let your child know that everyone struggles when learning something new, and that everyone makes mistakes. By analyzing your mistakes, you can learn more. Look at a mistake as an opportunity to understand why the work is not correct.
15. **Model positive thoughts and behavior toward mathematics.** When children witness negative attitudes toward mathematics, they often adopt them. Try to serve as a positive role model. Supporting the role of math, and encouraging enjoyment, includes refraining from criticizing your child's teacher at home.

### Understanding Underlying Perspectives About Mathematics

Supporting students involves understanding what they are being asked to do at school. For parents who have questions about the teacher's or school's approach, it is worth trying to understand the mathematics program at the school and the intentions of teachers.

16. **Ask the school administration about their mission and vision for students' mathematics learning.** Many schools have a philosophy, and their vision for students' learning of mathematics falls within it. In addition to asking about the school's aims, discuss the administration's plan for assessing students' progress in mathematics.
17. **Learn about your child's textbook and other curriculum materials.** Some textbook series produce a parent guide. Ask your child's teacher if one is available and request a copy.
18. **Learn more about the teaching of mathematics.** Learning about how your school and the school district approach the teaching of mathematics will give you insights into how your child is learning. For example, do they follow your state's standards for mathematics and does your state follow the Common Core State Standards for Mathematics? Meet with your child's teachers to ask about the approach used in your school, and by your child's teacher, to teach mathematics, and find out what the goals are for your child's grade level.

## RECOMMENDED RESOURCES

### Websites

[http://figurethis.nctm.org/fc/family\\_corner.htm](http://figurethis.nctm.org/fc/family_corner.htm)

This Family Corner page from the National Council of Teachers of Mathematics (NCTM) website includes questions for caregivers to ask the teacher, as well as suggestions for questions to ask students that will help them with homework and allow them to do the mathematical thinking themselves.

<http://www.hunt-institute.org/nctm-mathematics-video-series-for-parents/>

The NCTM has created a video series for parents about mathematics learning in the era of Common Core mathematics.

<https://learnzillion.com/resources/99913-math-instructional-videos>

Learn Zillion provides video tutorials that explain how to solve problems at a range of grade levels.

### Books and Articles

Boaler, J. (2015). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching*. San Francisco, CA: Jossey-Bass.

This book has practical strategies that can help reduce mathematics anxiety among students.

Whitenack, J. W., Cavey, L. O., & Henney, C. (2015). *It's elementary: A parent's guide to K–5 mathematics*. Reston, VA: National Council of Teachers of Mathematics.

This book is written in jargon-free language that not only decodes current teaching practices but also demystifies the fundamental concepts that children need to understand to be successful mathematics learners.

<https://www2.ed.gov/parents/academic/help/math/math.pdf>

This document from the U.S. Department of Education highlights mathematics games to play with children (see pp. 6–58).

### Related Helping Handouts

Homework, Organization, and Study Skills: Helping Handout for Home

Using Praise and Rewards Wisely: Helping Handout for School and Home

## REFERENCES

Dweck, C. S. (2010). Even geniuses work hard. *Educational Leadership, 68*, 16–20.

Seeley, C. L. (2009). *Faster isn't smarter: Messages about math, teaching, and learning in the 21st century: A resource for teachers, leaders, policy makers, and families*. Sausalito, CA: Math Solutions.

## ABOUT THE AUTHORS

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