Family Guides to Support Learning

JUNIOR HIGH MATH

Santa Barbara Unified
Every child, every chance, every day.

ABOUT THIS GUIDE

Parents and caregivers want their junior high student to succeed in school – to be engaged and excited about learning; to build strong relationships with their teachers and peers; and to learn each year the knowledge and skills they need to be successful academically.

But it hasn't always been easy for parents and caregivers to figure out what children should know and be able to do by the end of each grade – and how to discuss these topics with their children and their teachers.

Moreover, while families are usually able to help if kids get stuck in the early grades, the content gets more challenging as students get older. Suddenly, parents and caregivers may feel like they don't have much help to offer. But that's not the case. Research confirms that families still have a big role to play in helping students learn. It's just a different role.

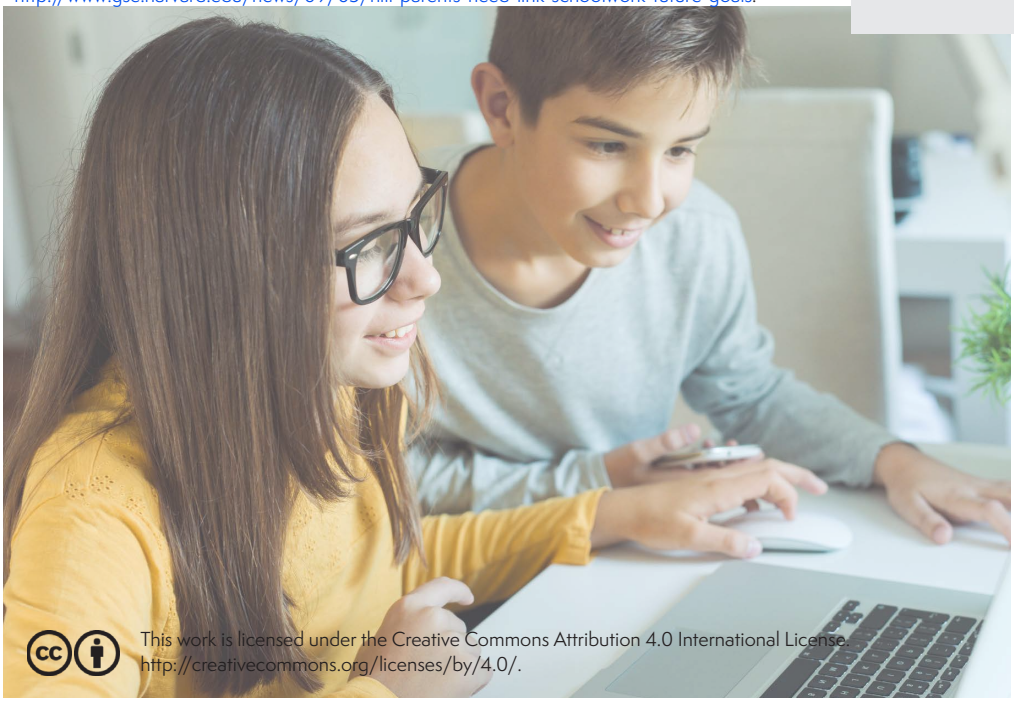
In addition to providing encouragement, a study of more than 50,000 students found that relating what middle and high school kids are learning in school to their future life goals is one of the most effective ways families can help. What doesn't work? Trying to be directly involved with schoolwork. It can feel to middle school students like you're interfering or even confusing them. And this IS the time to encourage students to take more responsibility and be more independent; helping them take charge of their learning is important.

These Family Guides provide parents and caregivers with the information and tools they need to support their children academically in literacy and math, which are the building-block subjects for everything else. With these Guides, families can engage more deeply in their middle schoolers' education, advocate for them, and build partnerships with their teachers – thus developing the strong bond between students, families, and teachers that ensures kids thrive.

[i]Harvard Graduate School of Education (2009). Hill: Parents need to link schoolwork to future goals. http://www.gse.harvard.edu/news/09/05/hill-parents-need-link-schoolwork-future-goals.

THIS GUIDE INCLUDES

- **What Junior High Students Are Learning** – What experts say is the most important content (knowledge and skills) for students to learn in math by the end of junior high.
- **Talking About Math with Your Junior High Student** Ways families can talk with their 7th grader about what they are learning in school, find related resources, and connect learnings to the world around them.
- **Tips for Talking with Teachers** – How you and your child's teachers can work together to help students grow.
- **Tools and Resources to Help** – We've chosen a few internet resources that best match each grade's content.



STUDENT ACHIEVEMENT PARTNERS

MATHEMATICS

WHAT 7TH GRADERS ARE LEARNING

Throughout the school year, 7th grade students will spend the most time working on the following topics. They should understand them well by the end of the year.

- Analyzing **proportional relationships** (for example, by graphing in the **coordinate plane**), and distinguishing **proportional relationships** from other kinds of mathematical relationships (for example, buying 10 times as many items will cost you 10 times as much, but taking 10 times as many aspirin will not lower your fever 10 times as much).
- Solving percent problems including, but not limited to, tax, tips, and markups and markdowns.
- Adding, subtracting, multiplying, and dividing positive and negative numbers. Solving related word problems.
- Solving word problems that have a combination of whole numbers, fractions, and decimals. (For example, an employee making $25 per hour receives a 10% raise. The employee will make an additional 1/10 of $25 per hour, or $2.50, for a new salary of $27.50.)
- Solving **equations** (such as 1/2 (x – 3) = 3/4) quickly and accurately, and writing **equations** of this kind to solve word problems. (For example, "I knocked over a carton of milk, and 3 cups were spilled before I set the carton upright again. When I poured out the remaining milk equally into two measuring cups, there was 3/4 of a cup of milk in each one. How much milk was in the carton originally?")

TALKING ABOUT MATH WITH YOUR 7TH GRADER

- Encourage your 7th grader to talk to you about the math they feel they can successfully do. What new concepts are they learning? Where do they feel they need additional challenge and/or support?
- Help your 7th grader find resources that they feel are relevant and helpful. Ask them to talk to their teachers about the resources, extensions, and practice activities that they find.
- Have your child name topics of study that are directly relevant to their world. For example, from Grade 7 math, where do they see rates in the real world besides in their math materials (such as comparing costs between two internet plans offered in your neighborhood)?
- Encourage your 7th grader to think about questions and problems they would like to solve and how those connect to jobs they might like to have when they are an adult. Help them learn about how math is a part of these jobs.

TIPS FOR TALKING WITH TEACHERS

Math

- What topics are 7th graders learning about in math?
- Ask for specific updates on how your 7th grader is progressing in their understanding of the key content of the grade.
- What should my 7th grader be able to understand and talk about as a result of what they have learned?
- Is my 7th grader able to demonstrate to you that they understand what they are learning? If not, what challenges are they facing?
- How can I support and encourage my 7th grader to build a strong relationship with you and take age-appropriate responsibility for their own learning?

TOOLS AND RESOURCES TO HELP

Math

- Parent roadmap: What should children be learning in 7th Grade? How can families support their learning?
  https://www.cgcs.org/Page/244
- Activities and games to help students practice variables, graphing, and other topics in Grade 7 math
  https://teacher.desmos.com/collection/5e72d28669f1f80f4025bcc1
- Two activities to help students understand **proportional relationships** and decimal expansion of fractions
  https://achievethecore.org/category/416/mathematics-tasks?&g%5B%5D=7&sort=name
- A readiness check to find out how your 7th grader is doing
  https://bealearninghero.org/readiness-check/
- Tasks for ratios and **proportional relationships**, expressions and **equations**, and a variety of other math topics at the 7th grade level
  http://tasks.illustrativemathematics.org/content-standards/7

MATHEMATICS

WHAT 8TH GRADERS ARE LEARNING

Throughout the school year, 8th grade students will spend the most time working on the following topics. They should understand them well by the end of the year.

- Solving **linear equations** in one variable. For example, $(-x + 5(x + 1/3) = 2x - 8)$ and in word problems like, "You rent a bike for $10 for the 1st hour, and each additional hour is $5.50. What is the cost of renting the bike for 6 hours?"
- Analyzing and solving systems of **linear equations** ($x + 6y = -1$ and $2x - 2y = 12$), emphasizing the real-world reasons these equations were created.
- Understanding **functions** (rules that assign to each input exactly one output); analyzing **functions** represented in different ways (for example, table, graph, verbal description, equation); interpreting equations for linear and nonlinear **functions** by graphing; and using **functions** to solve real-world problems. (For example, analyze and graph a company's profit over a set number of months. If in one month a company profited $1,200, what is the slope or change when, after five months, the company profits $5,800?)
- Applying the **Pythagorean Theorem** to solve real-world problems.

TALKING ABOUT MATH WITH YOUR 8TH GRADER

- Encourage your 8th grader to talk to you about the math they feel they can successfully do. What new concepts are they learning? Where do they feel they need additional challenge and/or support?
- Help your 8th grader find resources that they feel are relevant and helpful. Ask them to talk to their teachers about the resources, extensions, and practice activities that they find.
- Have your child name topics of study that are directly relevant to their world. For example, from Grade 8 math, can they describe the relationship between quantities in the world around them (such as comparing water levels in a collection of cylinders to the number of pebbles placed in each cylinder)?
- Encourage your 8th grader to think about questions and problems they would like to solve and how those connect to jobs they might like to have when they are an adult. Help them learn about how math is a part of these jobs.

TIPS FOR TALKING WITH TEACHERS

Math

- What topics are 8th graders learning about in math?
- Ask for specific updates on how your 8th grader is progressing in their understanding of the key content of the grade.
- What should my 8th grader be able to understand and talk about as a result of what they have learned?
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TOOLS AND RESOURCES TO HELP

Math

- Parent roadmap: What should children be learning in 8th Grade? How can families support their learning?
  https://www.cgcs.org/Page/244
- Activities and games to help students practice linear **functions**, whole number **exponents**, and other topics in Grade 8 math
  https://teacher.desmos.com/collection/5e72d58a20ae4e061b73b546
- Two activities to engage students with linear **functions**, variables, and equations
  https://achievethecore.org/category/416/mathematics-tasks?&g%5B%5D=8&sort=name
- How much does that pizza really cost? Use slope, y-intercept, and **linear equations** to calculate.
  https://www.mathalicious.com/lessons/domino-effect
- A readiness check to find out how your 8th grader is doing
  https://bealearninghero.org/readiness-check/
- Tasks for real-world math problems, including the volume of cylinders, cones, and spheres and a variety of other math topics at the 8th grade level
  http://tasks.illustrativemathematics.org/content-standards/8