

Parent Tips of the Week

Week 1

Welcome to College Preparatory Mathematics, CPM. Your student will be involved in interesting and stimulating mathematics this school year. To help you understand what is happening in your child's math class, you will be receiving a Tip of the Week.

CPM believes all students can be successful in mathematics as long as they are willing to work and ask for help when they need it. We encourage you to contact your child's teacher if you or your student has additional questions.

During class your child will often be working in a small group called a study team. Study teams are designed to encourage students to engage in mathematical conversations. Collaboration allows students to develop new ways of thinking about mathematics, increases students' abilities to communicate with others about math, and helps strengthen their understanding of concepts and ideas by having to explain their thinking to others. Each student in the study team has an assigned role with a clear set of expectations, which are listed in the student text.

Because students are expected to work together to solve problems, the main role of the teacher is to be a supporting guide. Instead of just showing a process and having students mimic it, your child's teacher will be introducing the concept of the day and then circulating the classroom, listening to team discussions, asking questions of teams, and initiating a closure activity at the end of each lesson to ensure the intended math content has been addressed.

The main objectives of Chapter 1 are to introduce the course to the students, allow them to apply previous learning in new ways, and review ideas from previous math courses. You will notice boxes titled "Math Notes". Math Notes boxes contain definitions, explanations, and/or examples. Your student's teacher will explain how these notes will be used in class. The homework is given in a section titled "Review and Preview".

Week 2

CPM offers resources for parents and students at its website www.cpm.org. You might find it useful to take a look at the following sections:

- Learn About CPM
- Student Support
- Parent Support

In the Learn About CPM section, you will find an introduction to CPM, more information about the program, research supporting the program, and more information about the curriculum.

In the Student Support section, you will find help with homework, resource pages that connect to the lessons, links to technology, and extra practice problems.

In the Parent Support section, there are suggestions of ways to help your student, parent guides to lessons, and tips for learning. There are also videos of students in the classroom that will give you an idea of what your child's math class might look like. If you have questions about CPM, an excellent resource is at www.cpm.org/support.

Week 3

Communication between parents and the teacher is important for student success. If you have not already had an open house or back-to-school night at your school, you might want to contact your student's teacher to open the channels of communication. You can support the teacher and your child by :

- Discussing the importance of mathematics for your child's future.
- Instilling in your child the belief that they can learn mathematics.
- Encouraging your child to study, take notes, and do their homework.
- Encouraging your child to ask questions in class and to communicate with teammates.

Week 4

Practice and discussion are required to understand concepts in mathematics. When your student comes to you with a question about a homework problem, often you may simply need to ask them to read the problem aloud, and then ask what the problem is about. When you are working problems together, have your child talk about the problems, stating what she is thinking as she works. Remember to have your child practice on his own too.

Below is a list of general questions you can ask your child to help if she gets stuck:

- What have you tried? What steps did you take?
- What didn't work? Why didn't it work?
- Explain what you know right now.

If your student has made an attempt at starting the problem, try these questions.

- What do you think comes next? Why?
- What is still left to be done?
- Is that the only possible answer?

If your student does not seem to be making any progress, you might try these questions.

- Let's look at your notebook, class notes, and Toolkit. Do you have them?
- Were you listening to your team members and teacher in class? What did they say?

Be sure to include other appropriate questions. Remind them to use the index, glossary, Checkpoint materials, homework help, Math Notes boxes, and their Learning Logs. All are useful tools in the process of learning.

Week 5

Mistakes are an important step in the process of learning. Don't let your child give up when she makes one! Encourage your child to persevere, try another strategy, think outside the box, or talk problems over with someone. Sometimes it is hard to watch our children make mistakes, but struggling helps brains grow, and for your child to become smarter and more resilient. Very successful people often report that many mistakes were made along the way to their success, and these mistakes were an

important and much overlooked part of the journey. Your student does not need to be fast at math, so speed should not be a goal. She just needs to think deeply about it. This should also be the goal when responding to math questions. Encourage your child to think about his answer. Does it make sense? (Paraphrased from Jo Boaler)

Week 6

By this time in the school year, your child may have taken a team test at some point before taking an individual test. Team tests provide students an opportunity to check their depth of understanding through collaborative problem solving. They also help teachers identify general areas of concern that need to be addressed prior to the individual test. Students who take notes during the team test process, who ask follow-up questions during class discussions, and who correct their test often experience dramatic improvements on individual tests.

Week 7

There are several types of problems your student sees when doing the classwork and the homework. The classwork problems have been designed to encourage students to work together with their teammates to solve interesting and challenging problems (with teacher support). At times, these problems require students to use previous learning. Some problems will require the use of manipulatives, such as blocks, number cubes, Algebra Tiles, or models to help develop understanding. Other problems introduce students to new ideas. All of the problems have been carefully constructed to further a student's understanding of mathematics.

The homework problems are both for review and preview. Often the first problem or two will cover the work that was done in class that day. Then there are problems that review concepts from previous courses or lessons. There are also problems that are designed to prompt students to think about a mathematical idea that will be introduced in a future lesson. If your student is struggling with homework, suggest checking the CPM online Homework Help and other resources found at www.cpm.org.

Week 8

Your student may have told you about working with new team members. In a student-centered classroom, teachers have students change teams periodically. This allows students to collaborate with others. Research has shown that students who work

in a collaborative problem-solving situation show higher achievement, increased retention, greater intrinsic motivation, higher self-esteem, and a better attitude toward teachers and school, to name a few. If you would like further information about team work, it can be found at www.cpm.org, “Synthesis of Research”.

Week 9

There will be some topics that your student understands quickly and some concepts that may take longer to master. The big ideas of the course take time to learn. This means that students are not necessarily expected to master a concept when it is first introduced. When a topic is first introduced in the textbook, there will be several practice problems to do. Succeeding lessons and homework assignments will continue to practice the concept or skill over weeks and months so that mastery will develop over time and long-term learning will occur.

If your student still needs extra practice on some topics, either current or previously learned, make sure that you go to the cpm.org website and look for *Parent Guides* and *Extra Practice*. You can select the current or past course and look at the table of contents to find the topics you need. You will also find the checkpoint problems there. They are also for review and practice of concepts.

Week 10:

To be successful in mathematics, students need to develop the ability to reason mathematically. To do so, students need to think about what they already know and then connect this knowledge to the new ideas they are learning. Many students are not used to the idea that what they learned yesterday or last week will be connected to today’s lesson. When students understand that connecting prior learning to new ideas is a normal part of their education, they will be more successful in mathematics. Your student can maximize their learning by:

- Actively contributing in whole class and study team discussions.
- Explaining what he has learned to someone else.
- Completing all assigned problems and turning in assignments in a timely manner.
- Checking and correcting problems on assignments (usually with their study partner or team) based on answers and solutions provided in class and online.
- Asking for help when needed from a study partner, team, and/or teacher.
- Attempting to provide help when asked by other students.

- Taking notes and using his/her Toolkit or Learning Log when recommended by the teacher or the text.
- Keeping a well-organized notebook.
- Not distracting other students from the opportunity to learn.

Week 11

Ask your student to teach you some math that he feels he has mastered, or is particularly proud of. Or ask your student to show you some class work from last week. This will give her an opportunity to feel proud of her work, and it will give you an opportunity to assist in your student's learning. By giving your student the opportunity to explain their thinking, you are encouraging them to be more confident, use new vocabulary, and identify any confusion they may have. Also, by explaining their thinking to someone else, they are making that knowledge clearer for themselves.

Week 12

If you were to visit a CPM classroom, you would see the teacher doing more than standing in front of the class, telling students what they should know. After reading the objectives of what will be learned that day, the students would be asked to begin the lesson by connecting to what they already know. As the students interact with the others in their team, the teacher circulates throughout the classroom. During this time, the teacher listens to the discussions in the teams, asks clarifying questions and ensures that everyone is on task. If there seems to be class confusion about a problem, the teacher may stop the class and spend a few minutes clarifying. Near the end of class there may be brief student presentations. There will also be a closure activity which will help summarize the activity and may inform the teacher of the depth of student understanding at the end of class.

Week 13

This week would be a good time to revisit the three videos that are available in the Parent Support section at www.cpm.org. The first video is about the CPM program. The second video shows students discussing study team guidelines. Interactions between study team members is the topic of the third video. All three will provide you with a

snapshot of a CPM classroom in action.

Week 14

As you may have seen in the videos from an earlier Tip, the role of the student has changed. Instead of listening to the teacher lecture and explain the mathematics for most of the period, the students do most of the sense-making and talking about the math. They explain their thinking about a problem to their teammates and to the teacher, when asked. An effective team allows everyone an opportunity to ask questions and explain their ideas. They listen to one another. Toward the end of class, students will be asked to explain to the rest of the class what learning has taken place. The teacher's responsibility is to see that all students are engaged, involved, supported and that each student is moving forward in their understanding of the concepts and skills of the course. A teacher will check for understanding throughout the lesson but also at the end of the lesson so he or she knows how to plan for upcoming lessons.

Week 15: While working on the mathematics lesson, each student has a team-related job. The Resource Manager seeks input from each person and then calls the teacher over to ask a team question. The Facilitator begins the team discussion and keeps everyone involved in the discussion. The Recorder/Reporter shares the team's findings with the class, makes sure that everyone knows what to write down, and encourages agreement. The Task Manager keeps everyone focused on the problem, listens for reasons, and asks for justification from team members. Ask your child what their role is this week.

Week 16: In each chapter there is one or more topics that are identified as a Checkpoint skill. It is a skill that students should be close to mastering when they reach that problem in the book. It is marked in the book with a graphic check mark. The answers to the problem are in the Checkpoint Materials at the back of the book. Included are more examples and more practice problems. You can look at the unit your child is in now to find the Checkpoint Problem(s) for that unit.

Week 17: Growth Mindset vs Fixed Mindset. Can everyone learn math or are some people “just good at it”? Recent research shows that a student with a Growth Mindset is a flexible learner. Even students who don’t appear to have strong skills in an area can become very proficient if they can develop a Growth Mindset towards a topic. A student with a Growth Mindset (GM) will take on challenges, learn from mistakes, accept feedback and criticism, practice and apply strategies to accomplish goals, persevere, ask questions and take risks. As a result, they reach ever-higher levels of achievement. A student with a Fixed Mindset (FM) won’t. The FM learner thinks that our character, intelligence and creative ability can’t be changed in any meaningful way. As a result, the FM learner may plateau early and achieve less than their full potential. There is a Mixed Mindset where a student is working from a Fixed Mindset to a Growth Mindset. Observe your child to see what mindset characteristics he or she exhibits. For more information about this go to www.mindsetworks.com. Carol Dweck says that we are in charge of our own growth. We can change our mindset and reach our potential. Another source of information about Growth Mindset can be found at [Carol Dweck - Mindset](#)

Week 18: CPM teachers use many strategies to encourage students to work together successfully. Some are strategies have them talk about the mathematics and some use writing as a way to communicate. Some of the strategies include movement around the classroom. Movement is very important as it helps the students’ brains to grow. Ask your student to share how they participated during an activity that involved a team or teaching strategy.

Week 19: Assessment in a CPM classroom is happening continuously . The teacher assesses student understanding as they circulate the classroom while teams are working. At the end of class, students will be asked to do one of several closure activities. Sometimes it is writing about what was learned that day. Sometimes teachers will have teams display their work in the classroom and the students do a Gallery Walk. During this walk, the students discuss the work done by other teams.

The kind of assessment a teacher is doing in these situations is called Formative Assessment. By listening and watching carefully and asking questions, the teacher is able to determine at what level the students are understanding the material. S/he will know when to bring the class together to clarify a misunderstanding that may be occurring in a more than one team. Or, s/he may see that one team can be pushed to try a deeper challenge while another needs to back up and revisit an earlier part of the problem with some help. This kind of assessment will help a teacher know what students know and what they don't know.

Week 20: In the CPM program instruction is differentiated by the way students approach problems. Theorist Jerome Bruner states that the ideal progression of activities for learners is to go through the enactive stage (this would be using concrete materials-- integer tiles, algebra tiles, models including computer-generated ones, etc.), then the iconic stage, in which students draw pictures or use mental imagery developed from their experience with the concrete materials, and then move to the use of symbols to represent the concrete. In a CPM classroom students are allowed to move on to the iconic and then the symbolic stage as they are ready, while the physical models remain available for those who need them.

Week 21: In recent years, there has been significant research on how the brain is related to student learning.

Each brain is unique.

Behaviorally and cognitively, emotions run the show.

The brain is highly adaptable and can change.

The brain rarely gets it right the first time. Instead we make rough drafts of new learning.

Humans are social/emotional learners.

As a result of this research, we need to look at how information is stored in the brain. Memories are stored in different parts of the brain and have different durations. Short term memory lasts approximately 30 seconds. Working memory lasts up to 20 minutes and long term memory can last much longer if we practice what we learned. Because we want memories to last long term, we need to know how to move content into long term memory. Content must be understood and have meaning. In order to retrieve information accurately and completely, we must look at *how it is stored in the first place*, not how we study it later. Sometimes we can improve our recall of information by doing a cross-lateral movement, such as tugging on the left ear with the right-hand. This research is significant because it connects to the teaching strategies used in a CPM classroom. Spiraled topics and mastery over time are both substantiated by what we have learned about how the brain stores and retrieves information. For more information about brain-based learning go to [Brain-based learning](#)

Week 22: This week would be a good time to check your student's classwork and homework. It should be neat, complete and easy to understand. Ask them to explain one of the problems they have recently done in class that they enjoyed doing. If the work is incomplete or difficult for you to read, you might want to check the work more often or talk to your student's teacher for additional ideas on how to help.

Week 23: As we transition into the Common Core State Standards for Mathematics

(CCSSM), there is something very important to understand; the CCSSM has common content standards are written so that what children are learning in 5th grade is the same in all the states that have adopted CCSSM. More information about CCSS is available at www.corestandards.org/Math/

This link has Jo Boaler explaining why students need this.

<https://mail.google.com/mail/u/0/?ui=2&ik=382152e027&view=att&th=146dd822e56ba0ba&attid=0.1&disp=inline&safe=1&zw>

Week 24: Whether your state has adopted CCSSM or not, there is a lot more to it than the content standards. There are Practice Standards. These are really best practices in teaching. These standards began with research-based learning progressions centered around what is known about students' mathematical development. They concentrate on a clear set of mathematical skills and concepts and encourage students to solve real-world problems like the ones your student is encountering in their math class. This link [Resources - Supporting the Math Practices](#) has lots of links and shows that many different places/groups are working on implementation. Plus this is more focused on the Practices.

Read this list and see if you would like your student to do these things. We will address these practices in the next tips.

The Standards for Mathematical Practice are:

Standard 1: Make sense of problems and persevere in solving them.

Standard 2: Reason abstractly and quantitatively.

Standard 3: Construct viable arguments and critique the reasoning of others.

Standard 4: Model with mathematics

Standard 5: Use appropriate tools strategically.

Standard 6: Attend to precision.

Standard 7: Look for and make use of structure.

Standard 8: Look for and express regularity in repeated reasoning.

Week 25: In Week 24, we listed the Common Core Standards for Mathematical

Practices. The first one was “Make sense of problems and persevere in solving them”.

Mathematically proficient students find meaning in problems. They look for entry points, analyze, conjecture and plan solution pathways. The students monitor and adjust their work and verify answers. They ask themselves the question “Does this make sense?”

Where have you seen examples of opportunities for your student to make sense of problems and persevere in finding a solution in their math work this year? Observe your child while s/he is doing homework. Does s/he work thoughtfully or is s/he just trying to get finished as quickly as possible? Does s/he look back to see if the answer makes sense in terms of the question or s/he satisfied to have any answer? By encouraging students to develop the practice of looking for meaning in every problem, we can significantly improve their performance. That’s what mathematics is all about!

Week 26: In Week 24, we listed the Common Core Standards for Mathematical Practices. The second standard is “Reason abstractly and quantitatively”.

Mathematically proficient students make sense of quantities and their relationships in problems. They learn to understand the meanings of all the parts of a mathematical problem and can see how the parts relate to each other. They also learn to use symbols to represent a situation and to think about the symbols as separate from the situation. They can create a coherent representation of a problem.

Many problems in CPM have asked your child to reason abstractly and quantitatively. You might ask your child to explain a more involved classwork problem from a recent chapter and have him/her show you how the concepts were represented symbolically. You don’t have to understand all of the math for this to be a useful activity for your student. You will be able to tell if s/he is clear about the ideas by how confidently s/he explains the work.

Week 27: In Week 24, we listed the Common Core Standards for Mathematical Practices. The third standard is to “Construct viable arguments and critique the reasoning of others”. Mathematically proficient students understand and use information to construct arguments. They make and explore the truth of conjectures. They can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. Students at all

grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments. How has working with a team helped your student meet this standard?

Week 28: In Week 24, we listed the Common Core Standards for Mathematical Practices. “Model with mathematics” is the fourth standard. Mathematically proficient students can apply the mathematics to solve problems in everyday life. They can make assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation. They routinely interpret their results in the context of the situation and reflect on whether the results make sense. Where have you seen evidence that your student has used mathematics in everyday life?

Week 29: In Week 24, we listed the Common Core Standards for Mathematical Practices. The fifth standard is to “Use appropriate tools strategically”. Mathematically proficient students consider the available tools when solving problems. Proficient students are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a website, and other technological tools). They make sound decisions about when each of these tools might be helpful. They are able to use technological tools to explore and deepen their understanding of concepts. What tools has your student used this year to become mathematically proficient?

Week 30: In Week 24, we listed the Common Core Standards for Mathematical Practices. The sixth standard is to “Attend to precision”. Mathematically proficient students communicate precisely to others. They use clear definitions, state the meaning of the symbols they choose and are careful about specifying units of measure, and labeling axes. They calculate accurately and efficiently. Has your student improved the ability to attend to precision?

Week 31: In Week 24, we listed the Common Core Standards for Mathematical Practices. “Look for and make use of structure” is the seventh standard. Mathematically proficient students look closely to discern a pattern or structure. They can step back for an overview and shift perspective. These students see complicated things as single objects or as being composed of several objects. Ask your student to share a pattern that was recently investigated in class and describe its structure.

Week 32: In Week 24, we listed the Common Core Standards for Mathematical Practices. The last standard is “Look for and express regularity in repeated reasoning”. Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results. Ask your student if they have developed a shortcut to doing some of the problems and ask them to explain it to you.

Week 33: Student presentations are an ongoing part of the mathematics program. Students are expected to participate in both formal and informal presentations. Informal presentations can be done by individual students or teams. Usually they are centered around a problem or idea that they investigated that day in class. The more formal presentations are usually connected to an investigation that has taken several days to complete. Both formal and informal presentations can be used to assess student understanding.

Week 34: The main goal of CPM is to have mathematics make sense. We want students to learn to use the textbook as a resource, not just a bunch of problems to solve, but to gain information. We expect students to take responsibility for their education by actively working at learning mathematics. The goal is to retain information and skills and develop strong problem solving skills. We also want students to develop a way to choose the best strategy for solving a problem.

Week 35: Mathematics educator Jo Boaler, of Stanford University, offers suggestions

on how parents can help students learn mathematics. While her discussion is based on work she did in England, her observations hold true for the United States as well. She also had a MOOC for students this past summer. You can read her suggestions at [Jo Boaler](#)

Week 36: As the school year draws to a close, you and your student might want to reflect upon the mathematical learning that has taken place. Has your student developed more of a Growth Mindset? Is he or she willing to stick with a problem until they have a solution? What concepts have they mastered? Which concepts seem to be in progress? Ask your student to tell you the most memorable learnings from this year in mathematics. If your student is continuing with the CPM program, you might want to encourage him/her to keep their notes from this year as a reference for next year.