PARENT TIP 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 look at the following sections:

- About Us
- Textbook Resources - https://cpm.org/courses/
- Parent Support - https://cpm.org/parent-support

In the About Us tab, you will find an introduction to CPM, more information about the program, the research base that supports the program, and more information about the curriculum.

In the Textbook Resources section, you will find homework help, resource pages that connect to the lessons, links to technology, and extra practice problems. Just click on the book your child uses.

In the Parent Support section, there are suggestions of ways to help your child, parent guides to lessons, and tips for learning.

WEEK #3

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.

Communication between parents and the teacher is important for student success. 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 independently as well.

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?

WEEK #5

Mistakes are an important step in the process of learning. Don't let your child give up when they make 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 children make mistakes, but struggling helps brains grow, and is necessary for your child to become smarter and more resilient. Very successful people often report that they made many mistakes along the way to their success, and these mistakes were an important and often overlooked part of the journey. Your child does not need to be fast at math, so speed should not be a goal. They just need to think deeply about it. This should also be the goal when responding to math questions. Encourage your child to think about their answer. Does it make sense?

WEEK #6

By this time in the school year, your child may have taken a team review “test” at some point before taking an individual test. Team review “test" 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 with 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 begin by connecting the lesson to what they already know. As the students interact with 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 that 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 http://cpm.org/teamsupport. 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 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

You might have heard or read about "differentiating instruction." This refers to the process of adjusting lessons to best meet students' needs. 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 – such as 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 when they are ready, while the physical models remain available for those who need them.

WEEK #21

In recent years, there has been a significant amount of research on the brain and student learning. Here are some tidbits about the brain, from Eric Jensen's Teaching with the Brain in Mind:

- Each brain is unique.
- Both 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 and emotional learners.

Information and memories are stored in different parts of the brain and have different durations. Short-term memory lasts approximately 30 seconds, while working memory lasts up to 20 minutes and long-term memory can last much longer if what was learned is practiced. Because we want learning to become long term, we need to know how to move information 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 access it later. Sometimes we can improve our later recall of information by doing a cross-lateral movement at the time that we learn it. One way of doing this is 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. Interleaving topics (also known as spaced practice) and mastery over time are both substantiated by what has been learned about how the brain stores and retrieves information. For more information about brain-based learning go to the Brain-based learning site.

WEEK #22

This week would be a good time to check your child'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 child's teacher for additional ideas on how to help.

WEEK #23

As many states have transitioned into the Common Core State Standards for Mathematics (CCSSM), you might be hearing a lot about what this could mean for your child. The CCSS Math content standards were written so that there is consistency of what children are learning across the country. These standards began with research-based learning progressions on 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 child is encountering in their math class. Remember though, that standards tell teachers what needs to be covered. Standards are not textbooks, nor do they tell teachers how to teach something. For more information about CCSS go to www.corestandards.org/Math/

WEEK #24

There is a lot more to the CCSSM than the content standards. The CCSSM also contain the Standards for Mathematical Practice. Although they are often just referred to as the "math practices," these are really just best practices in teaching. The math practices describe the behaviors that would be expected in successful mathematics students. For more information on the practices and their implementation, follow this link: Resources - Supporting the Math Practices.

Listed below are the eight Standards for Mathematical Practice. Read this list and see if you would like your child to do these things. These practices will be addressed in more detail in the upcoming 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 State 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 child to make sense of problems and persevere in finding a solution in their math work this year? Observe your child while they are doing homework. Do they work thoughtfully or are they just trying to get finished as quickly as possible? Do they look back to see if the answer makes sense in terms of the question, or are they simply 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. Finding meaning is what mathematics is all about!

WEEK #26

In Week 24, we listed the Common Core State 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 them 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 child. You will be able to tell if your child is clear about the ideas by how confidently they explain the work.

WEEK #27

In Week 24, we listed the Common Core State 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 investigate 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 child meet this standard? Ask them!

WEEK #28

In Week 24, we listed the Common Core State Standards for Mathematical Practices. Model with mathematics is the fourth standard.

Mathematically proficient students can apply 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 child has used mathematics in everyday life?

WEEK #29

In Week 24, we listed the Common Core State 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 child used this year to become mathematically proficient?

WEEK #30

In Week 24, we listed the Common Core State Standards for Mathematical Practices. The sixth standard is to Attend to precision.

Mathematically proficient students communicate clearly and 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 child improved the ability to attend to precision?

WEEK #31

In Week 24, we listed the Common Core State 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 to see an overview and shift perspective. These students see complicated things as single objects or as being composed of several objects.

Ask your child to share a pattern that was recently investigated in class and describe its structure.

WEEK #32

In Week 24, we listed the Common Core State 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 child if they have developed a shortcut for doing some problems and ask them to explain it to you.

WEEK #33

Student presentations are an ongoing part of the CPM mathematics program. Students are expected to participate in both formal and informal presentations. Informal presentations can be done by individual students or teams and usually cover a problem or an idea investigated that day in class. More formal presentations are usually connected to an investigation that has taken several days to complete.

WEEK #34

One of the main goals of a CPM course 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 a way to gain information. We expect students to take responsibility for their education by actively working at learning mathematics. We want students to retain information and skills and develop strong problem-solving skills. One such skill is to develop a way to choose a strategy for solving a problem.

We strive to support creative problem solvers who know how to collaborate and communicate clearly.