

## How Can Parents Help Their High School Students with Mathematics?

### 1) What are the Maryland College-and-Career-Ready Standards?

Maryland's College- and Career-Ready Standards (MDCCR Standards) form the foundation for Maryland's new State curriculum framework. These standards incorporate the Common Core State Standards.

### 2) Why are the MDCCR Standards important for my student?

The MDCCR Standards are important because they were designed to ensure that all students are ready for success after high school. These standards establish clear, consistent guidelines for what every student should know and be able to do in mathematics and English language arts from kindergarten through 12th grade. Maryland has created and implemented standards also for Pre-K students.

The MDCCR Standards in Mathematics are divided into two types of standards: (1) those that outline critical mathematics processes, conceptual understandings, and proficiencies at each grade level/course; and (2) the Standards for Mathematical Practice (MP), which describe the habits of mind and behaviors that mathematics educators should seek to develop in their students. During mathematics instruction, these two types of standards should be interconnected continuously.

For additional information about how and why the standards were designed to assure student success, watch this 3-minute video presentation: [www.youtube.com/watch?v=FSsIWliDJiA](http://www.youtube.com/watch?v=FSsIWliDJiA).

### 3) What is the mathematics content my student is expected to know and be able to do?

The MDCCR Standards were developed to provide all students with the focused, coherent, and challenging mathematics content they are expected to know and be able to do by the end of every grade level or high school course. In previous years, the content expectations for each grade/course were more extensive and did not allow all students enough time to learn the mathematics. In contrast, the MDCCR Standards identify the most critical content at each grade/course level; build upon the learning and understanding from previous years to help prepare students for new learning; and thus, give students additional time to learn the content provided for each grade.

A few resources that you might find helpful are outlined below:

- Your student's teacher is your most valuable resource. The first step in helping your student is to speak with your student's teacher to discuss the content and when the content will be taught during the school year.
- Local school systems often provide resources to assist parents. Access your local Board of Education website for parent guides and information on mathematics content and resources.
- "Parent Roadmaps to the Common Core Standards in Mathematic," developed by the Council of the Great City Schools, provide parents with the major mathematics topics that should be taught in each grade/course level, as well as with strategies to help parents support their student's

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learning. These Parent Roadmaps also present three-year snapshots which show how selected standards progress from year to year so that students will be college- and career-ready upon their graduation from high school <http://www.cgcs.org/Page/244>.

- The public website for the Maryland State Department of Education (MSDE) includes a variety of parent resources. The icon for the MSDE Blackboard website can be located at <https://msde.blackboard.com/webapps/portal/frameset.jsp>. Once this page is open, go to the top right corner and click on the heading “PARENT RESOURCES.”
- The National Parent Teacher Association (PTA) has published “PTA Parents’ Guides to Student Success” at <http://www.pta.org/parents/content.cfm?ItemNumber=2583>. These guides provide information on the mathematics content that students need to learn at each grade/course level, from kindergarten through high school. The guides also suggest ways that parents can help their students in mathematics.
- Check the websites for your local Board of Education, school system, and PTA Council. These websites are likely to contain information that applies to your student’s school.

### 4) Why aren’t students currently learning mathematics the same way their parents were taught?

If you do not recognize the mathematics in your student's homework, think about how the world has changed since you were in school. The mathematics looks different because the world is different. Advances in science, technology, and information processing and communication, combined with the changing work place, underscore the need for all students to learn mathematics at deeper conceptual levels, beyond rote formulas, procedures, and rules. Business and industry demand workers who can:

- solve real-world problems;
- explain their thinking to others;
- identify and analyze trends in data; and
- use modern technology.

If the mathematics strategies and content your student is learning are unfamiliar to you, seek assistance from your student’s teacher. Teachers are an excellent resource regarding the ways in which you can best help your student learn and use the mathematics currently being taught. You also may want to ask whether your student has any misconceptions, and how you can work with the teacher to strengthen your student’s understanding of mathematics.

If your student needs additional ongoing support beyond merely correcting a misconception, discuss this need with the teacher so that, together, you can develop a plan. Your student’s teacher can give you the necessary log-in and password information for intervention and enrichment modules on MSDE’s Blackboard website <https://msde.blackboard.com/webapps/portal/frameset.jsp>.

The following websites offer further assistance for parents:

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- The National Council of Teachers of Mathematics (NCTM) provides multiple resources and tips for helping students: <http://www.nctm.org/resources/content.aspx?id=2876>
- LearnZillion makes videos available for many different mathematics lessons. They are organized by the topic of the content. <https://learnzillion.com>. For lessons on specific high school content, use: [https://learnzillion.com/common\\_core/math/hs](https://learnzillion.com/common_core/math/hs)

### **5) How can I help my student transition to the MDCCR Standards, even if I personally do not have a recent background in mathematics content?**

- If the mathematics strategies and content your student is learning are unfamiliar to you, seek assistance from your student's teacher. Ask the teacher for suggested resources that support current classroom instruction and how you, as a parent, can use them to support and extend your student's achievement.
- Show your enthusiasm for your student's study of mathematics. As an influential role model, encourage your student to have a positive attitude, to be curious and to keep trying. Make sure that he/she knows that mathematics often requires patience, practice, and time to think and reflect. If you tell your student that mathematics is difficult for you or that you do not like mathematics, you may undermine your student's self-confidence by signaling that mathematics will be a negative experience for him/her also.
- Value mistakes. All of us learn from our mistakes and missteps! View your student's mistakes as part of the learning process and a unique opportunity for self-discovery and growth, rather than as a penalty. Help your student identify his/her own errors. This way, your student can correct mistakes and learn where his/her thinking was confused. Finally, urge your student to ask the teacher questions either during or after class.
- Meet with your student's teacher and ask to see a sample of your student's work. Discuss with the teacher whether or not the piece of work satisfactory; how it could be better; does it indicate that your student is on track; ways in which you can help your student improve or excel in this area; what resources are available help your student's learning outside the classroom if he/she needs extra support or wants to learn more about a subject.

### **6) How is high school mathematics different from mathematics in middle school and elementary school?**

In high school mathematics, the emphasis in instruction is on a few interrelated big ideas that connect the study of mathematics to science, technology, and engineering. Teachers will concentrate on teaching these big ideas using complex and challenging mathematics content, enabling students to illustrate their thinking and apply their knowledge in many different ways. Students will learn how to use mathematics to analyze and respond to real-world issues and challenges, as they will be expected to do in college and the workplace. Unlike previous grades where learning objectives are organized by grade level, high school learning objectives are organized by concepts—such as algebra, functions, or geometry—that students will learn and master in various mathematics courses.

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Moreover, the courses that your student takes in high school are credit-bearing and count toward your student's cumulative grade-point average, and eventually, toward graduation from high school.

### 7) **Mathematics homework is due tomorrow—how can I help?**

The following discussion and list of general suggestions come from the NCTM website:

<http://www.nctm.org/resources/content.aspx?id=2876>.

Homework causes trouble in many households. Relax...remember whose homework it is! Think of yourself as more of a guide than a teacher. Don't take over for your student. Doing that only encourages him/her to give up easily or to ask for help when a problem becomes difficult. The best thing you can do is ask questions. Then listen to what your student says. Often, simply explaining something out loud can help your student discover a solution to the problem. Encourage your student to show all work, complete with written descriptions of all thinking processes. This record will give your student something to look back on, either to review or to fix a mistake, and can also help the teacher understand how the problem was solved.

Asking the following kinds of questions can help you and your student tackle the challenges of mathematics homework:

- What is the problem that you're working on?
- Are there instructions or directions? What do they say?
- Are there words in the directions or the problem that you do not understand?
- Where do you think you should begin?
- Is there anything that you already know that can help you work through the problem?
- What have you done so far?
- Can you find help in your textbook or notes?
- Do you have other problems like this one? Can we look at one of those together?
- Can you draw a picture or make a diagram to show how you solved a problem like this one?
- What is your teacher asking you to do? Can you explain it to me?
- Can you tell me where you are stuck?
- Is there someone you can call to get help? Can you discuss the problem with a classmate?
- Would using a calculator help you solve the problem?
- Would it help to go on to another problem and come back to this one later?
- Is there a homework hotline at your school? What is the phone number for it?
- Why don't we look for some help on the Internet?
- If you do only part of a problem, will the teacher give you some credit?

Some additional helpful tips for helping your student with homework include:

- Set a regular time for homework.
- Pick a place that is quiet and without distractions.
- Provide supplies and identify resources.
- Look for daily homework assignments online through the local school system's website.

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- Encourage your student to find another student (or “study buddy”) who your student can call on for help.
- To succeed in mathematics your student needs to take responsibility for his/her homework.
- Talk to the teacher about any concerns. Your student’s teacher can be a valuable resource!

### **8) How can I help my student write in mathematics?**

Teachers use writing assignments in mathematics class to help students reflect on their learning. The process of putting one’s thoughts onto paper using words, symbols, numbers, and drawings helps students make sense of the mathematics they are learning and to make connections within mathematics and to other content areas. Teachers also use writing to gauge students’ levels of understanding and to help identify student misconceptions. Writing in mathematics class starts with students verbally talking with their peers and working out problems with partners. The mathematics class today is filled with discussions and conversations about the mathematics work they are doing and problems they are solving.

When you are working with your student at home, you could ask your student to draw a picture of the problem they are solving. Then ask them to label the drawing or write words or phrases to tell what they did first, second, third, so on. If students need more structure, fold a sheet of paper into four sections. Label each section and have students show the steps they used/thought about as they solved the problem. It is also important to encourage your student to learn and use mathematics vocabulary. Request a list of mathematics vocabulary the teacher is using during classroom instruction so you can reinforce these words at home through conversations with your student.

### **9) How can I help my student academically prepare for high school graduation, and be ready to pursue college or a career?**

At the beginning of high school, sit down with your student’s teachers, counselor, or other advisor to discuss your student’s goals, his/her plans after high school, and the mathematics courses needed to graduate and pursue college or a career. Create a strategy together to help your student reach these goals, and review it every year to make sure he/she is on track.

Sample questions to ask may include:

- Does my student have a strong grounding in arithmetic, including operations on fractions, decimals, and negative numbers?
- Does my student have the knowledge to learn advanced mathematics after high school if he/she so chooses?
- Does my student take a thinking approach to algebra and work with algebraic symbols fluently?
- Is my student comfortable using coordinates in algebra and geometry?
- Can my student break a complex problem down into parts and apply the mathematics he or she knows to problems outside of mathematics?

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- Does my student use terms precisely and make logical arguments?