

Office of the Superintendent of Schools
MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

January 8, 2013

MEMORANDUM

To: Members of the Board of Education

From: Joshua P. Starr, Superintendent of Schools

Subject: Update on the Implementation of the Mathematics Common Core State Standards

Executive Summary

The purpose of this memorandum is to inform you of upgrades to the mathematics program in Montgomery County Public Schools (MCPS). As you know, changes to our approach have been made pursuant to the findings and recommendations in the K–12 Mathematics Work Group Report (2010) and the alignment of our curriculum with the Common Core State Standards (CCSS). Additionally, the evolving definition of college and career readiness has influenced changes to the MCPS mathematics program, including the different demands of the 21st century workplace and the University System of Maryland decision to require students to complete Algebra 2 and a significant mathematics course in their senior year of high school.

The CCSS demand a higher level of mathematics thinking for all students. Hence, MCPS' mathematics instruction in Curriculum 2.0 expands access to higher-level courses so that the vast majority of students will reach Algebra 1 in Grade 8, with a few completing Algebra 1 by Grade 9 and a few completing the course prior to Grade 8. Students completing Algebra 1 by Grade 8 will have the opportunity to take a college-level math course in high school, and all students will be college and career ready upon graduation.

The Need for Change

It is no longer sufficient for MCPS to educate only two thirds of our students to the high levels required for college and career readiness. We must equip all of our students with the skills and knowledge to pursue their dreams and thrive in the 21st century. Furthermore, we must eliminate the need for remediation at postsecondary institutions and provide all students with options and opportunities upon high school graduation.

For the past three years, we have been revising all of our curriculum, including mathematics, in order to align with CCSS. For example, upgrades in the MCPS mathematics program will result in the following differences from the previous 2001 program.

2001 Mathematics Program	2012 Mathematics Program
Backmapped from advanced placement	Aligned to internationally driven standards
Broad focus —multiple topics per grade/course	Targeted focus —fewer topics per grade/course
Emphasis on covering content —pacing	Emphasis on deep understanding —proficiency
Topics repeated yearly —spiraling	Topics taught to mastery —increased depth and application
Acceleration by grade-level skipping —driven by targets	Acceleration/Enrichment —based on individual student needs
	Emphasis on student engagement and project-based learning

The design of the MCPS mathematics program is founded on the following precepts:

- *Content mastery is not sufficient:* Recalling facts or answers does not adequately prepare students to solve problems and apply what they know. Students will need opportunities to use content knowledge to solve unfamiliar problems and grapple with meaningful questions and issues.
- *Instruction needs to engage students in challenging applications of key content knowledge:* Students must actively participate in their own learning. The curriculum must include interesting, relevant, and authentic problems; and investigations, debates, simulations, games, presentations, projects, and other forms of learning that require engagement to help maximize retention of essential processes and concepts.
- *Proficiency in a range of academic learning skills and behaviors:* Students must learn how to reflect on and evaluate their own work, work for precision, persist with difficult tasks, apply the belief that effort trumps aptitude, and manage their time.

Background

Convened in January 2009, the K–12 Mathematics Work Group was established to address factors such as the scope of the curriculum, pacing of instruction, professional development, and the emphasis on acceleration. In their report, presented to the Board of Education at the November 9, 2010, Board meeting and posted on the Board meeting calendar page on the MCPS website, work group members made recommendations in five areas—written curriculum, implemented curriculum (instructional practices), assessed curriculum, targets and acceleration, and teacher preparation and development.

During the work group's tenure, Maryland, along with 44 other states and the District of Columbia, adopted CCSS as a means to improve the educational standing of the United States among the highest-performing countries worldwide. CCSS aligned precisely with the work group recommendation for a more focused curriculum that builds strong foundational skills in the early grades.

Maryland is one of 24 states working as a consortium—Partnership for Assessment of Readiness for College and Careers (PARCC)—to develop CCSS assessments for grades 3 through high school. These assessments will provide students, educators, policymakers, and the public with the tools needed to identify: whether students are on track for postsecondary success; where gaps may exist; and, how they may be addressed well before students enter college or the workforce. The Maryland State Department of Education (MSDE) expects to begin “item tryout” in spring 2013, with field testing in spring 2014, and operational testing in 2014–2015. As we balance the implementation of CCSS with upcoming PARCC assessments and what best matches students' development in mathematics, we will continue with an approach that is aligned with PARCC and MSDE timelines. This information may be accessed at the following websites: <http://www.parcconline.org/> and <http://www.marylandpublicschools.org/MSDE/programs/ccss>.

Implications of CCSS adoption include the need to increase teachers' content knowledge, change instructional practices, design and implement new formative assessments, provide acceleration and intervention, set appropriate targets, and provide comprehensive professional development for employees throughout the system including teachers, administrators, and professional support staff.

Student Performance

A review of MCPS student achievement data in Algebra 1 and Algebra 2 in recent years suggests that the 2001 MCPS mathematics curriculum—coupled with a procedure-based instructional approach and the practice of skipping grade-level mathematics content—does not prepare all students for the 21st century expectations for mathematics learning. While the previous mathematics program in MCPS resulted in improved performance district-wide and across all sub-groups, less than two thirds of the 2012 graduating class successfully completed Algebra 2. Similarly, 62 percent of students in 2012 successfully completed Algebra 1 by Grade 8 and only 68 percent by Grade 9. Improved curriculum and instruction, and a comprehensive strategy for challenging and supporting all students, are needed to significantly increase the number of successful mathematics learners from kindergarten through high school across all student subgroups.

Curriculum Development and Implementation

K–12 Mathematics Work Group Recommendations

The K–12 Mathematics Work Group Report contained several key recommendations that directly influenced curriculum development and its implementation: adopting CCSS; reviewing

the impact of CCSS on the MCPS mathematics program and system targets; expanding professional development in mathematics; and eliminating grade-level skipping of mathematics content, while continuing practices that challenge students who consistently demonstrate proficiency.

As the comparison between CCSS and the 2001 MCPS mathematics curriculum was conducted, it became clear that many of the standards in CCSS are more complex and challenging. In addition, content in CCSS is introduced in earlier grades than was introduced in the 2001 MCPS mathematics curriculum. CCSS, like standards in many successful nations around the world, place a greater emphasis on depth of understanding. Both CCSS and the 2001 MCPS mathematics curriculum contain a high level of rigor and coherence, but CCSS have a greater emphasis on deep mathematical understanding, defined as an appropriate balance among conceptual understanding, procedural skill, and problem solving with an emphasis on application and modeling.

Changes to Instruction and Assessment

CCSS Standards for Mathematical Practice (SMP) describe a variety of competencies that mathematics educators at all levels should seek to develop in their students: make sense of problems and persevere in solving them; reason abstractly and quantitatively; construct viable arguments and critique the reasoning of others; communicate precisely to others; look closely to discern a pattern or structure; notice if calculations are repeated; and use general methods and short cuts appropriately. The SMP are distilled into five intertwined strands referred to as UCARE:

- **Understanding**—comprehending concepts, operation, and relations
- **Computing**—carrying out procedures
- **Applying**—formulating and solving problems
- **Reasoning**—using logic to explain a solution
- **Engaging**—seeing math as useful, sensible, and doable

Previous state mathematics tests may have required that students memorize a problem or procedure and demonstrate their understanding simply by completing the procedure. CCSS assessments will continue to measure procedural understanding, but also will measure problem solving and conceptual understanding. Teachers will assess mathematics understanding using a broad array of interactions with students—conversations, tests, projects, and observations. Students will need to demonstrate their understanding in multiple ways so teachers may determine if they have reached *mathematical proficiency* across all UCARE strands.

Meeting the Needs of All Students

Based on international research and the CCSS, we believe the deeper mathematical understanding and higher expectations of the grade-level CCSS in elementary and middle school will prepare **most** students for Algebra 1 in Grade 8 and college level courses in high school.

There will be **many** students who will need complementary instruction; for these students, MCPS has developed additional enrichment and acceleration options to ensure that students who demonstrate understanding of a topic will be able to deepen and extend their learning within the grade-level curriculum. For the **few** students who consistently demonstrate deep understanding of all of the mathematical concepts at their grade level, they may need to be advanced to the next grade level. Beginning in Grade 4, access to a compacted curriculum will be available to students who consistently demonstrate this deep understanding of grade-level content across all mathematics strands.

Some students may require more time to complete the trajectory to Algebra 1. Supports will be included throughout the curriculum—and embedded into our comprehensive approach—to provide options for accessing rigorous mathematics content. These supports may include alternate activities that address different learning needs, additional instructional time when needed, or courses designed to provide remediation and a slower pace to master the curriculum. The goal will be for all students to reach deep understanding across all mathematical topics. More specific information on the K–12 course options may be found in the MCPS *Mathematics Program* brochure (Attachment A).

Professional Development

The K–12 Mathematics Work Group found that high quality mathematics professional development is job-embedded, data-driven, research-based, differentiated, sustained over time, and balanced between content and pedagogy. This finding is supported by extensive research and review of best practices nationally and internationally. The professional development vision for Curriculum 2.0 includes the development of key messages for all staff members and a focus on job-embedded collaborative professional development that includes building the capacity of instructional leaders and individual staff members. Core Team training and job-alike face-to-face professional development have focused on building the capacity of instructional leaders—including school administrators, math content coaches, resource teachers, and staff development teachers—so that they, in turn, may provide job-embedded professional development to classroom teachers. Substitute time will continue to be allocated for teachers to engage in collaborative instructional planning and curriculum study. In professional learning communities, teachers will have access to online resources such as short videos, interactive presentations, graphics, and written information to support the understanding of the curriculum goals, content, and expectations of Curriculum 2.0.

Parent Engagement

We must continue to support schools in their efforts to communicate the shift in mathematics teaching and learning, and its benefit for students. Parents, teachers, and students, as well as the greater community, must understand why we are upgrading our mathematics program. It is important that they understand that we are expecting not only curriculum changes, but also changes in mathematics instruction, classroom expectations, and student work. Parent Academy

sessions, videos, and other multimedia materials will continue to be developed, disseminated to schools, and posted on the MCPS website at www.montgomeryschoolsmd.org/curriculum/2.0/ to explain the benefits and to provide resources to parents to help them support their children's learning.

Stakeholder Involvement

During the past 18 months, we have sought input and feedback from a broad range of stakeholders. Policy IFA-RA, *Curriculum*, requires that changes to curriculum be reviewed by the appropriate Curriculum Advisory Committee (CAC) and the Curriculum Advisory Assembly, made up of representatives of the CAC and other staff and community members designated by the associate superintendent for Curriculum and Instructional Programs. Our Montgomery County Education Association Councils on Teaching and Learning had multiple opportunities to provide input and feedback on the impact of CCSS, course sequences, and other aspects of the mathematics program. Information was shared and input and feedback were collected from principal groups at all three levels, as well as from assistant principals who are an integral part of the school leadership team. The Montgomery County Council of Parent Teacher Associations' Curriculum Committee engaged in dialogue about the impact of CCSS on instruction, course sequences, and enrichment and acceleration progressions. All feedback was reviewed and considered as changes were made to the mathematics program.

Challenges

Implementation of Curriculum 2.0 content and *mathematical practices* requires that teachers instruct students in ways that move beyond the techniques they experienced in their own education and beyond their current classroom practice. Our implementation of CCSS during the past three years has revealed the following challenges that will need to be addressed as we continue to implement mathematics aligned with CCSS:

- Building the capacity of teachers to develop conceptual understanding in their students across all five areas of mathematical proficiency.
- Building the capacity of instructional leaders, including principals, to promote and monitor strong mathematical teaching practices that encourage deep understanding for all students.
- Communicating with stakeholders, including parents, the reason for this significant shift in mathematics teaching and learning and its benefits for students.
- Communicating with stakeholders, including parents, how the vision for mathematics teaching and learning supports and challenges all students and leads to equity in instruction and student achievement.
- Providing ongoing support and information to schools, offices, and the community to facilitate effective change management during the implementation.
- Monitoring the implementation of CCSS and evaluating the impact on student achievement.

To address these challenges, a variety of communication materials will be available to schools and parents. These multimedia tools will be distributed to schools and posted on the MCPS website at www.montgomeryschoolsmd.org/curriculum/2.0/. Additionally, enhanced professional development opportunities will be provided for teachers, instructional leaders, and administrators to support the successful implementation of mathematics in Curriculum 2.0 (Attachment B).

Fiscal Year 2014 Operating Budget Supports for Mathematics

To address some of the challenges mentioned above and in response to concerns expressed by principals, teachers, and parents, the following additions to the Fiscal Year 2014 Operating Budget have been recommended to support improvements to the MCPS mathematics instructional program:

- **Mathematics Implementation Team:** A team of highly skilled mathematics specialists will work in schools to improve the capacity of teachers to provide mathematics instruction to students of all abilities.
- **Teaching Support for Acceleration:** Ten elementary school teachers will be hired to support, where needed, the provision of accelerated mathematics instruction to students who are ready for advanced work.
- **Professional Development:** Professional development around the implementation of Curriculum 2.0 and CCSS in elementary and secondary schools including increased substitutes.
- **Focus Teachers for Middle Schools:** Thirty middle school focus teachers will work with students struggling in mathematics and reading.

We will continue to keep you apprised of developments in the areas of mathematics teaching and learning.

At the table for today's discussion are Dr. Erick J. Lang, associate superintendent, Office of Curriculum and Instructional Programs; Mr. Martin M. Creel, director, Department of Enriched and Innovative Programs; Ms. Theresa A. Cepaitis, director, Elementary Integrated Curriculum Team; Mr. Edward C. Nolan, supervisor, Mathematics; Dr. Leigh R. Abts, Professor of Education, University of Maryland; Dr. Francis "Skip" Fennell, Professor of Education, McDaniel College; and Dr. Linda Jensen Sheffield, Regents Professor Emerita of Mathematics Education, Northern Kentucky University.

JPS:EJL:sjl

Attachments



MONTGOMERY COUNTY PUBLIC SCHOOLS

MATHEMATICS

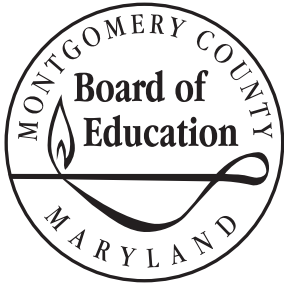
PROGRAM
for Grades K-12



UNDERSTANDING
COMPUTING
APPLYING
REASONING
ENGAGING



ROCKVILLE, MARYLAND



VISION

A high-quality education is the fundamental right of every child. All children will receive the respect, encouragement, and opportunities they need to build the knowledge, skills, and attitudes to be successful, contributing members of a global society.

Board of Education

Mr. Christopher S. Barclay
President

Mr. Philip Kauffman
Vice President

Ms. Shirley Brandman

Dr. Judith R. Docca

Mr. Michael A. Durso

Mrs. Patricia B. O'Neill

Mrs. Rebecca Smondrowski

Mr. John Mannes
Student Member

School Administration

Dr. Joshua P. Starr
Superintendent of Schools

Mr. Larry A. Bowers
Chief Operating Officer

Dr. Beth Schiavino-Narvaez
*Deputy Superintendent of
School Support and Improvement*

Dr. Kimberly A. Statham
*Deputy Superintendent of
Teaching, Learning, and Programs*

850 Hungerford Drive
Rockville, Maryland 20850
www.montgomeryschoolsmd.org



Dear Parents,

In the 21st century, a deep understanding of mathematics, and the ability to apply that understanding, is more important than it has ever been. In Montgomery County Public Schools (MCPS), and across the country, mathematics instruction is changing to make sure we provide our students with the skills and knowledge they need for success in college and the workplace.

This booklet will provide you with some important information about why these changes are needed; how we are improving math instruction; what deep understanding means; and how we are working to meet the needs of all students to ensure their success.

Please take the time to go through this booklet and visit the MCPS website to find more helpful math resources and information. If you have further questions, please do not hesitate to ask your child's teacher or school principal.

Sincerely,

Joshua P. Starr, Ed. D.
Superintendent of Schools



WHY IS THE MATH CURRICULUM CHANGING?

THE TEACHERS AND ADMINISTRATORS of Montgomery County Public Schools (MCPS) are committed to providing each student with a challenging mathematics program. To help reach that goal, we review our curriculum, instruction, and assessments on an ongoing basis to ensure that a high level of rigor is available for every student. Periodically, there are wider reviews that result in systemwide improvements in the mathematics program. Over the last few years, there have been three major developments that have significantly impacted the mathematics program.

Math Work Group

In 2008–2009, a representative group of teachers, parents, principals, community members, and central office staff gathered for 18 months to review the MCPS mathematics program. Their work resulted in a number of recommendations regarding curriculum, acceleration, system achievement targets, and professional development. Several of the key recommendations included adopting the then-in-development *Common Core State Standards (CCSS)*, reviewing the impact of the CCSS on the MCPS math program and system targets, expanding professional development in mathematics, and eliminating grade-level skipping of mathematics content, while continuing practices that challenge students who consistently demonstrate *proficiency*.

Internationally Driven Common Core State Standards

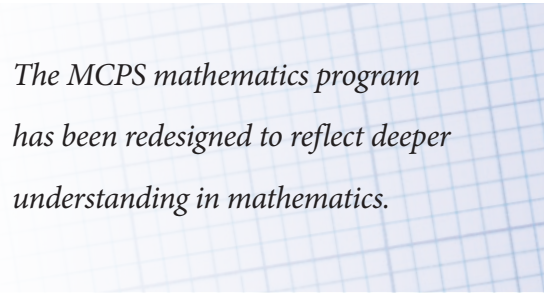
Over the last decade, the United States has consistently ranked below 20 other nations in K–12 mathematics. The CCSS in Mathematics were developed to improve students' understanding of mathematics compared with their international peers.

A consortium of 48 states was formed in 2008 to guide development of new standards, which outline what students should know and be able to do. The authors of the CCSS reviewed best practices internationally and consulted content experts to create a focused, coherent, and rigorous set of standards. Maryland adopted the CCSS in June of 2010.

Words in *blue italic* are defined on the back of this booklet.

As MCPS staff compared the CCSS with the 2001 MCPS curriculum standards, several trends became apparent. First, it was clear that many of the CCSS are more complex and challenging. In addition, many standards in the CCSS are located in earlier grades than in the previous MCPS curriculum. Both the CCSS and the 2001 MCPS curriculum standards contain a high level of rigor and coherence. But the CCSS, like standards in many successful nations, focus on students developing deep understanding in mathematics, defined as the appropriate balance among conceptual understanding, procedural skill, and problem solving with an emphasis on application.

Focusing mainly on procedural skill can reduce the development of students' long-term conceptual understanding and blunt the growth of problem-solving skills. The Math Work Group teachers made similar observations. They noted that students often came well prepared to take formulaic tests but had



The MCPS mathematics program has been redesigned to reflect deeper understanding in mathematics.

difficulty when presented with rich mathematical tasks that required use of number sense and strategic thinking. The MCPS mathematics program has been redesigned to help students gain a deeper understanding of math and apply that understanding in a variety of ways.

The Changing Definition of College and Career Readiness

Beginning with students who entered Grade 9 in 2011, the colleges and universities within the University System of Maryland are expecting students to complete Algebra 2 or a significant mathematics course with advanced content during their senior year. In addition, many schools and employers are looking for the 21st century skills such as persistence, collaboration, and critical and creative thinking that are the focus of Curriculum 2.0.



■ Curriculum 2.0 Mathematics Program Goals

THE HIGHER EXPECTATIONS of the CCSS, the recommendations of the Math Work Group, and new definitions of college and career readiness helped form the four goals of the K–12 Curriculum 2.0 Mathematics program:

- Develop students who value mathematics and see it as useful to solving problems and making sense of the world.
- Engage all students in experiences with mathematics content and processes that help them reach proficiency, defined as Understanding, Computing, Applying, Reasoning, and Engaging (*UCARE*) in mathematics.
- Ensure that all students master the knowledge, skills, and understanding necessary to be college and career ready by graduation.
- Prepare students with the desire and skills necessary to have the opportunity to take Advanced Placement or other college-level math courses in high school.



■ What is Deep Understanding in Math?

STUDENTS WHO DEMONSTRATE a deep understanding of mathematics see it as more than just procedures to memorize and replicate on a test. To reach a deep understanding, students learn to work collaboratively and to express their understanding in multiple ways. The CCSS *Standards for Mathematical Practice (SMP)*, represented below, are the definition of deep understanding in Curriculum 2.0 mathematics. Students who have a deep understanding of mathematics content—

- make sense of problems and persevere in solving them;
- reason abstractly and quantitatively;
- construct viable arguments and critique the reasoning of others;
- represent real-world situations with mathematical modeling;
- use appropriate tools strategically (manipulatives, calculators, etc.);
- use definitions, calculations, and estimations with the appropriate level of precision;
- look for and make use of patterns and structure; and
- look for and express generalities within mathematics.



■ How Do We Measure Deep Understanding of Math?

MANY OF US RECALL MATH TESTS in school when we memorized procedures and appeared to understand what we learned by completing the procedure on a test. Tests that measure the CCSS will continue to measure student understanding of procedures and computation, but also will measure problem solving and conceptual understanding. More important, teachers will be measuring student understanding from a broad spectrum of interactions with students, conversations, tests, projects, and observations. Students who deeply understand a mathematical concept are referred to as proficient in that concept. Proficiency is defined in the five intertwined strands of UCARE.

- **Understanding**—comprehending concepts, operations, and relations
- **Computing**—carrying out procedures
- **Applying**—formulating and solving mathematical problems
- **Reasoning**—using logic to explain a solution or justify why the mathematics works
- **Engaging**—seeing math as useful, sensible, and doable



In addition, integration of the SMP with the mathematics content will aid in representing depth of mathematical understanding. Students will need to demonstrate their understanding in multiple ways so the teacher can determine if they have reached proficiency.

■ How Will We Ensure that All Children are Challenged?

THE DEEPER UNDERSTANDING and higher expectations of the grade-level CCSS, and the ways of measuring that deep understanding, will challenge students and help prepare them for college and careers. Many students will need more than this. For these students, MCPS developed additional *enrichment* and *acceleration*. When a student demonstrates consistent understanding of a mathematical concept, there are enrichment and acceleration opportunities designed within the curriculum that extend students' understanding. There also will be a few students who consistently demonstrate a deep understanding of all the mathematical concepts of their grade level, and may need to be advanced. Beginning in Grade 4, there will be access to a *compacted curriculum* for students who demonstrate this need.

COURSES THAT LEAD TO COLLEGE AND CAREER READINESS

THE CURRICULUM 2.0 (C2.0) MATHEMATICS program develops a deep understanding of mathematics by building a strong foundation of number sense at the elementary level before moving into more advanced content. The chart below shows the course options available to students that will prepare them for success in college and careers. Students who are successful in the grade-level content, as represented in the main series in the chart, will be able to reach Algebra 1 by Grade 8 and an Advanced Placement course, such as AP Calculus, in high school. The kindergarten through Grade 6 mathematics program contains acceleration and enrichment options that challenge students beyond the CCSS. The few students who demonstrate exceptional proficiency, as defined by UCARE (understanding, computing, applying, reasoning, and engaging),

may be ready to work in a compacted course, starting in Grade 4 (second line in graphic below). Students who need support in the grade-level course may need to work in other courses in middle school, such as C2.0 Math 7 and C2.0 Math 8 (third line in graphic below). Students taking these classes will still be on a trajectory for Algebra 2 and higher-level math that prepares them for college. It is anticipated that these courses will phase out over time as more students reach proficiency in grade-level standards.

New minimum qualifications for admission to University System of Maryland colleges and universities include completion of Algebra 2 or a significant mathematics course with advanced content during senior year.

Elementary						Middle			High			
K	1	2	3	4	5	6	7	8	9	10	11	12
C2.0 Math K*	C2.0 Math 1*	C2.0 Math 2*	C2.0 Math 3*	C2.0 Math 4*	C2.0 Math 5*	C2.0 Math 6*	C2.0 I.M.**	C2.0 Algebra 1	C2.0 Geometry	C2.0 Algebra 2	C2.0 Pre-Calculus	AP***
				C2.0 4/5	C2.0 5/6	C2.0 I.M.**	C2.0 Alg. 1	C2.0 Geom.	C2.0 Alg. 2	C2.0 Pre-Cal.	AP***	AP***
							C2.0 Math 7	C2.0 Math 8	C2.0 Alg. 1	C2.0 Geom.	C2.0 Alg. 2	C2.0 Pre-Cal.

* Including MCPS enrichment and acceleration opportunities
 ** Investigations in Math

*** Advanced Placement Calculus, Advanced Placement Statistics, or other college-level courses

ROLL-OUT PLAN

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
C2.0 Kindergarten–Math 3					
C2.0 Math 4					
C2.0 Math 5					
C2.0 Math 6					
C2.0 Math 7 & C2.0 I.M.					
C2.0 Math 8					
C2.0 Algebra 1					
C2.0 Geometry					
C2.0 Algebra 2					
C2.0 Pre-Calculus					

Shading identifies years of implementation.

MCPS DESIGNED THE CURRICULUM 2.0 mathematics roll-out to provide a smooth transition for students and to ensure that they are ready for the CCSS. The shading in the chart to the left shows the year that new courses will be introduced. It is important to note that students who are currently in an accelerated pathway of previous courses will stay in that pathway until they reach Algebra 1. Once in Algebra 1, they will begin the C2.0 Algebra 1 course and continue forward from that point in Curriculum 2.0 courses. Students entering C2.0 Algebra 1 will be well prepared if they are successful in the previous course.

GLOSSARY OF TERMS

■ How Do I Support My Child in Math?

You can help your child do well in mathematics by establishing a positive attitude toward mathematics in your home. Be sure to communicate to your child that mathematics is simply another way to communicate about the world, just like another language. Looking for opportunities to talk about math in ways that make sense is important in the early years. As your child progresses through the grade levels, be sure to communicate with his or her teacher to see how you can help at home. Expect your child to solve problems in multiple ways, not just using the algorithm or procedure you may have learned. Clear communication between teachers and parents is an important part of ensuring your child's success in math.

MCPS provides parent resources for each grade level or course. To access these resources, contact your child's teacher or visit these sites:

www.montgomeryschoolsmd.org/curriculum/2.0/

www.montgomeryschoolsmd.org/curriculum/math/



ROCKVILLE, MARYLAND

Published by the Department of Materials Management
for the Office of Teaching, Learning and Programs
0761.13 • Editorial, Graphics & Publishing Services • 1/13 • 130,000
Copyright © 2013 Montgomery County Public Schools
Rockville, Maryland



ACCELERATION

Moving a student more rapidly to the next appropriate concept when that student has already demonstrated consistently strong proficiency in all five strands of UCARE for previous concepts.

COMMON CORE STATE STANDARDS

Standards are the list of what students should know and be able to do. The Common Core State Standards (CCSS) are a set of standards developed by a consortium of 48 states to put the United States on a competitive footing with other nations. Maryland adopted the CCSS in 2010.

COMPACTED CURRICULUM

An entire curriculum taught in the same sequence, but in a shorter time span. For example, compacting Math 4, Math 5, and Math 6 into two years, as Math 4/5 in Grade 4 and Math 5/6 in Grade 5.

ENRICHMENT

Learning opportunities that provide greater depth, application, and complexity to better prepare students for the study of advanced mathematics.

PROFICIENCY

The MCPS standard for reaching a deep understanding of mathematics concepts, as defined by UCARE. For example, a student who is proficient in mathematics can complete a procedure, and explain how the procedure works and why the procedure is the most efficient way to solve a problem.

STANDARDS FOR MATHEMATICAL PRACTICE

The Standards for Mathematical Practice (SMP) are a set of eight processes that describe what a student who has a deep understanding of mathematics can do. The SMP are part of the CCSS and are included in MCPS Curriculum 2.0.

UCARE

The five intertwined strands that define mathematical proficiency are understanding, computing, applying, reasoning, and engaging in mathematics.

MCPS CURRICULUM 2.0 MATHEMATICS IMPLEMENTATION

Communication	
Date	Action
December 11, 2012	<ul style="list-style-type: none"> • Superintendent of Schools released Fiscal Year 2014 Recommended Operating Budget which includes stakeholder driven enhancements to support the implementation of the new mathematics program.
January 4, 2013	<ul style="list-style-type: none"> • Memorandum to principals on mathematics update • Mathematics Summary Program Changes • Key Messages. • Frequently Asked Questions • Mathematics parent brochure • Article for Parent Teacher Student Association newsletter (PTSA) • PowerPoint to be used at Curriculum Night or PTSA meeting • Expanded information, including content above on the MCPS website, at www.montgomeryschoolsmd.org/curriculum/2.0/ and www.montgomeryschoolsmd.org/curriculum/math/.
January 8, 2013	<ul style="list-style-type: none"> • Montgomery County Board of Education update on the mathematics program.
Professional Development	
Date	Action
September 2012– June 2013	<ul style="list-style-type: none"> • One day substitute/stipend provided for Grades 4 and 5 teachers for curriculum study.
February 2013	<ul style="list-style-type: none"> • Elementary Principals' Curriculum Update Meeting on mathematics course rollout and articulation. • Half-day training for principals, math content coach/representative or staff development teacher, and Grade 4 teacher on articulation. Substitute/stipend provided.
February– March 2013	<ul style="list-style-type: none"> • One half-day substitute/stipend for Grade 4 teachers to engage in curriculum study investigations to prepare students to transition to Grade 5 Common Core State Standards (CCSS).
March 2013	<ul style="list-style-type: none"> • Memorandum with information regarding summer professional development opportunities in mathematics.
April 2013	<ul style="list-style-type: none"> • Grades 4 and 5 as well as Algebra 1 curriculum available on <i>myMCPS</i>.
April–June 2013	<ul style="list-style-type: none"> • Elementary Core Team training on Curriculum 2.0. Information on specific dates and content is forthcoming. Substitute time provided.
July 2013	<ul style="list-style-type: none"> • Secondary Core Team training on mathematics and literacy CCSS. • Two-day training for Algebra 1 teacher training on CCSS.