



December 7, 2017

Cynthia Simonson
vpeducation@mccpta.org

Lynne Harris
president@mccpta.org

Dear Ms. Simonson and Ms. Harris:

I have received your Maryland Public Information Act request seeking copies of documents related to Montgomery County Public Schools (MCPS) students not meeting the University System of Maryland (USM) entrance requirements. Specifically, you requested the following:

- Data showing the number of students in 2015–2016, which were reported in the 2017 Student-At-A-Glance report, that did not meet the USM requirements, by subject area (#1); however, during the conference call on November 1, 2017 with Joanne Causey, Public Information Office, and Juan Cardenas, from the Office of Shared Accountability, you modified this request and agreed that the percentage of students, both across the district and by high school, would provide you with sufficient data.
- MCPS 2015–2016 graduates that did not meet the USM requirements, by number, by subject, by cluster (#1A). Similarly you agreed to modify the request to include the percentage of students district-wide and by high school.
- A breakdown of the math courses of current freshman for the 2017–2018 school year by course, by number, by cluster (#2). During the November 1 conference call, you clarified that by “cluster,” you meant “by high school.”
- The rubric/criteria, by cluster, used in the 2017–2018 school year to determine whether a student that took Algebra 1 in Grade 8 (2016–2017 school year) was being recommended in this current year (2017–2018) to: repeat Algebra 1, advance to Geometry, or advance to Honors Geometry (#2A);
- For the class of 2018, the number of current seniors and the breakdown of their final year course, sorted by the year they first took Algebra 1B and further sorted by grade achieved in the course (#3).
- By cluster, currently enrolled seniors with a breakdown of their final year course, sorted by the year they first took Algebra 1B, and further sorted by grade achieved in the course (#3A).

You agreed on November 1, 2017, that, given the time required and the complexity of writing the code to retrieve this information, you would withdraw #3 and #3A, for the time being. Further, you have agreed to waive the MPIOA timeline for questions #1 and #1A, so we may provide you with a thorough and accurate response. Be assured that work to fulfill your request is well underway. At this juncture, we have been able to provide responsive documents to question #2, as well as an explanation and documents that address question #2A.

I am responding on behalf of the superintendent of schools who, as official custodian of records for the school system, is responsible for replies under the Maryland Public Information Act, Title 4 of the General Provisions (GP) Article.

Please find the enclosed responsive documents to questions #2 and #2A, as described below.

Question #2

Breakdown of Mathematics courses of current freshman for the 2017-2018 School Year, which has been redacted in accordance with Maryland law, Article §10-616(k), as well as the Family Education Rights and Privacy Act (FERPA), which exempt the disclosure of any documents that could reasonably identify a student.

Question #2A

- A written response to question #2A
- Mathematics Acceleration Guidance Document for Math 4/5 and Math 5/6 (February 2017)
- Grade 4 Mathematics Recommendation Frequently Asked Questions
- Vertical Articulation process document
- Improving Career Readiness, Vertical Articulation of Skills and Alignment
- March 9, 2017, memorandum and attachment regarding cluster or consortia-based mini-grants to support successful transition and articulation
- April 2016 sample parent letter regarding Grade 4 Mathematics curriculum, Grade 4/5 accelerated curriculum
- March 15, 2016, Power Point presentation for middle school principals regarding achievement/access gaps in Mathematics; Mathematics core principles and pathways; and curriculum and articulation
- July 23, 2015, memorandum to elementary school principals regarding the process for identifying students for the Grade 4/5 compacted Mathematics curriculum, including attachments
- February 10, 2014, memorandum to middle school principals regarding Mathematics articulation
- December 9, 2014, memorandum to middle school principals regarding Mathematics articulation from Grade 6 to Grade 7, including attachments
- Information regarding MCPS Math Curriculum 2.0, including Courses that Lead to College and Career Readiness; the introduction and summary of Curriculum 2.0 and the roll out plan; and the 2015-2016 Elementary Mathematics Staff Program Guidelines
- December 11, 2013, memorandum to elementary school principals regarding professional development for articulation from elementary schools

Please be advised that I will be sending you the responsive documents to questions #1 and #1A as soon as they are available and prepared.

Ms. Cynthia Simonson
Ms. Lynne Harris

3

December 7, 2017

If you believe you have been wrongly denied a public record, you are entitled to seek judicial review of this decision pursuant to GP § 4-362. In addition, pursuant to GP § 4-1B-01 et seq., you also have the option to express any concerns about this decision to the Public Access Ombudsman.

With regards,

A handwritten signature in black ink, appearing to read 'DGT', followed by a horizontal line.

Derek G. Turner
Director

DGT:vem

Enclosures

Copy to:
Dr. Navarro
Dr. Wilson
Mr. Civil

FY18-46, Question #2: Breakdown of Math Courses of Current Freshman for the 2017-2018 School Year

	All	BCC	Blair	Blake	Churchill	Clarksburg	Damascus	Einstein	Gaithersburg	Walter Johnson	Kennedy	Magruder	R. Montgomery	Northwest	Northwood	Paint Branch	Poolesville	Quince Orchard	Rockville	Seneca Valley	Sherwood	Springbrook	Watkins Mill	Wheaton	Whitman	Wootton
Algebra 1 1st time	2886	167	255	118	88	34	11	120	250	129	199	153	129	117	158	145	17	81	66	82	144	98	71	160	65	29
Algebra 1 Repeating*	277	■	14	10	■	■	■	38	17	■	12	12	■	14	26	20	■	16	■	■	■	12	16	16	■	11
Geometry	2288	76	108	122	101	225	125	27	151	87	24	78	119	123	90	191	■	115	78	69	71	145	■	■	64	88
Honors Geometry	5001	176	214	169	192	266	173	173	140	321	199	183	162	341	125	156	114	272	146	100	237	138	330	249	257	168
Magnet Geometry	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Algebra 2	186	■	■	■	■	■	■	■	■	17	■	■	11	■	■	13	■	■	■	■	■	■	■	22	■	21
Algebra 2 (2-year)	72	■	■	13	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	13	■	■	■	■
Honors Algebra 2	1740	116	131	46	120	44	23	76	45	127	26	39	60	119	43	61	68	38	45	30	37	64	29	38	140	175
Other	1682	31	318	■	35	■	■	77	223	33	110	13	179	10	73	■	86	60	25	36	51	47	62	163	23	19

Snapshot November 1, 2017

All includes Alternative Programs, Rock Terrace, Longview, and Stephen Knolls

*Does not include students who enrolled in MCPS as Grade 9 students from other districts

NOTE: Information has been redacted in accordance with Maryland law, Article §10-616(k), as well as the Family Education Rights and Privacy Act (FERPA), which exempt the disclosure of any documents that could reasonably identify a student.

Request #2A:

Further, we are requesting the rubric/criteria, *by cluster*, used in the 2017-18 school year in determining whether a student *that took Algebra 1 in 8th grade* (2016-17 school year) was being recommended in this current school year (2017-18) to:

- ☐ Repeat Algebra 1,
- ☐ Advance to Geometry, or
- ☐ Advance to Honors Geometry?

Response:

There is no MCPS rubric/criteria that is published by the central office that determines which mathematics course students should take when transitioning from middle school to high school. The following course pathways listed below are provided and are also posted on the Montgomery County Public Schools (MCPS) website:

<http://www.montgomeryschoolsmd.org/curriculum/math/>

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

Given the options available to students and the unique characteristics of high school communities, each high school is expected to develop practices, procedures, and timelines related to articulation between the feeder middle schools and receiving high school, including courses available and student placement in courses. Ultimately, schools are expected to make personalized decisions for each individual student based on multiple data measures and other variables.

The central office has provided general guidance to schools about acceleration in mathematics, predominantly at the elementary and middle school levels. Responsive documents related to this central guidance are enclosed.

**Department of Elementary Curriculum and Instructional Programs
Elementary Principals' Curriculum Update Meeting
February 2017**

**Mathematics Acceleration Guidance Document
Math 4/5 and Math 5/6**

Acceleration Core Principles:

1. When students are challenged with a rigorous mathematics program and supported, they meet or exceed the expectations.
2. The MCPS curriculum is designed for all students to reach the goal of success in Algebra 1 or higher by Grade 8, and there will be options in every school for students to reach courses beyond Algebra 1 by Grade 8.
3. MCPS will broaden access to math acceleration for all students in Grades 4 and 5.
4. There will be no barriers to participation in accelerated curriculum in Grades 4 and 5.

Considerations for Course Placement

Data

- MAP-M performance (consistent growth in performance between assessment windows, performance above the 70th PR). Students who score below the 70th PR should still be considered.
- Curriculum 2.0 Mathematics Formative Assessments Tasks
- Elementary Mathematics Assessment Tasks (EMAT)
- Report card performance
- Report card indicates participation in enrichment and acceleration consistently (3 of 4 marking periods)
- PARCC score report (Performance Level of 4 or 5)¹

Characteristics

- Sees relationships and makes connections
- Curious and driven to learn
- Motivated and persists during challenging situations
- Strong problem-solving/critical thinking capabilities
- Able to consider and apply strategies to tackle a problem
- Demonstrates the ability to make connections to prior learning
- Can solve problems in situations that are not English dependent (tangrams, numbers, classification)
- Grasps concepts quickly

Non Traditional Characteristics

- Asks challenging questions that could be perceived as critical or judgmental
- Risk taker, enjoys challenges
- Sees things that others do not, sees many alternatives
- Highly engaged during active learning and experiential learning
- Physical energy
- Questions, intense curiosity about many things

Other Considerations

- Teacher Advocacy
- Staff Advocacy
- Parent Advocacy
- Classroom observation
 - Focus on generating mathematical reasoning and critically evaluating reasoning as it relates to self and others
- Outside assessments (tutoring, CTY...)

New to MCPS/ School Data

- Student report card/ report card comments from sending school
- Other available information from above

¹ Review PARCC performance over the summer to ensure no students were missed in Spring selection for Math 4/5.

Grade 4 Mathematics Recommendation Frequently Asked Questions

1. My child has been recommended to take the Grade 4 Mathematics Curriculum next year. How is that different from the Grade 4/5 Mathematics Curriculum?

The Montgomery County Public Schools (MCPS) Mathematics Program is designed to challenge students of all levels. Our goal is for students to complete Algebra 1 by Grade 8 and be prepared for higher level mathematics in high school, including Advanced Placement (AP) classes. Next year, most students will be expected to continue into Grade 4 Mathematics Curriculum with opportunities for enrichment, which is embedded into the existing curriculum. The Grade 4 Mathematics Curriculum includes all the Grade 4 mathematics standards. Students in the Grade 4 Mathematics Curriculum will be expected to move into Algebra 1 by Grade 8. The chart below outlines the mathematical pathway through high school.

Elementary						Middle			High			
K	1	2	3	4	5	6	7	8	9	10	11	12
Math K*	Math 1*	Math 2*	Math 3*	Math 4*	Math 5*	Math 6*	I.M.**	Algebra 1	Geometry	Algebra 2	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***

* Including MCPS enrichment and acceleration opportunities
 ** Investigations in Math
 *** Advanced Placement Calculus, Advanced Placement Statistics, or other college-level courses

2. My child has been recommended to take the Grade 4/5 Mathematics Curriculum next year. How is that different from the Grade 4 Mathematics Curriculum?

The Grade 4/5 Mathematics Curriculum combines all of the Grade 4 mathematics standards and most of the Grade 5 mathematics standards. Students in the Grade 4/5 Mathematics Curriculum will be expected to move into the Grade 5/6 Mathematics Curriculum the following school year and Algebra 1 by Grade 7. The chart below outlines the Mathematical pathway through high school.

3. How are recommendations made for the math course my child will take next year?

Elementary						Middle			High			
K	1	2	3	4	5	6	7	8	9	10	11	12
Math K*	Math 1*	Math 2*	Math 3*	Math 4*	Math 5*	Math 6*	I.M.**	Algebra 1	Geometry	Algebra 2	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***

* Including MCPS enrichment and acceleration opportunities
 ** Investigations in Math
 *** Advanced Placement Calculus, Advanced Placement Statistics, or other college-level courses

To help determine which students are the best fit for the Grade 4 or Grade 4/5 Mathematics Curriculum we reviewed many student data points. This review helped us identify which students might be candidates for the Grade 4 or Grade 4/5 Mathematics Curriculum. Some of the data points include but are not limited to:

- o Measurement of Academic Progress Mathematics (MAP-M) performance
- o Classroom Observations
- o Indication of consistent enrichment and acceleration instructed on the report card
- o Characteristics such as:
 - ✓ Sees relationships and makes connections
 - ✓ Motivated and persists during challenging situations
 - ✓ Strong problem-solving and critical thinking capabilities
 - ✓ Grasps concepts quickly

4. What if my child is not doing well in the Grade 4/5 Mathematics Curriculum?

School staff will work to monitor student progress in mathematics. Support will be given to ensure student achievement. If it is determined that the Grade 4/5 Mathematics Curriculum is not an appropriate placement for the student, in collaboration with the parents, a decision will be made to identify possible next steps.

5. What if my child is doing really well in the Grade 4 Mathematics Curriculum, can he/she move to the Grade 4/5 Mathematics Curriculum?

School staff will work to monitor student progress in mathematics. Enrichment will be given to challenge students as they develop a deep understanding of mathematical concepts. If it is determined that the Grade 4 Mathematics Curriculum is not an appropriate placement for the student, in collaboration with the parents, a decision will be made to identify possible next steps.

6. If my child takes Algebra 1 in middle school does that mean he/she will take fewer years of math in high school?

No. Maryland State Department of Education states that each student shall enroll in a mathematics course in each year of high school that the student attends.

Vertical Articulation

Ongoing process that is a critical part of ensuring that each and every MCPS student experiences access, opportunities, and excellence that establishes a foundation for success which endures long after the students graduate from MCPS. The vertical articulation work ensures that schools and central office staff have the information and knowledge to respond to the Essential

Questions:

- Are our children learning?
- Are our children learning enough?
- If not, why not?
- What are we going to do about it?

Work between elementary schools and middle schools to support student transition from elementary school to middle school

- Teachers meet with each other
- Counselors meet with teachers
- Principals and administrators meet with each other to discuss articulation
- Careful examination of student performance data to ensure that course recommendations are reflective of student performance and potential, not impeded by race, ethnicity, or socioeconomic status
- Student performance data examined to identify additional supports for students

Work between middle schools and high schools to support student transition from middle school to high school

- Counselors from high schools meet with students, staff, and families
- Opportunities to tour high school
- Orientation for students
- Spring showcase of courses and extra-curricular opportunities
- Survey of former 8th grade students transition to high school (student voice)

Middle School articulation (6th to 7th and 7th to 8th) to support student progress and readiness

- Counselors meet with students
- Parent articulation night
- Math and world language nights for parents and students
- Incoming 6th grade parent night
- Arts and department showcase nights

Ongoing monitoring of student performance throughout middle school

- Collaborative planning within content area courses guided by the Planning for Powerful Instruction framework
- Department review of student performance
- Department review of curriculum

- Planning for Powerful Instruction/Teacher collaborative planning - observations and feedback

Work of DSSI to support articulation

- Ongoing review of student performance data
- Review of climate survey results and support/coaching to ensure staff are engaged and working collaboratively
- Observations of instruction and collaborative planning
- Examine Cluster practices, goals and examination of course offerings and the equitable opportunities for students to be in advanced courses
- Observe, review and guide the development of School Improvement Plan (SIP) and Student Learning Outcomes (SLOs)
- Ensuring that MCPS strategic priorities are evident in schools and clusters
- Identifying student and adult needs within schools and across Clusters
- Building the capacity of the administrative team and leadership team in schools

A critical component of the vertical articulation process is the Evidence of Learning framework.

Analysis and review of:

Student readiness for the next level

Transition to the next level

Completion/graduation and career readiness

is essential to ensuring that students experience access, opportunities, and excellence.

At this time, Mr. Scriven, will share more about graduation rate and college and career readiness efforts.

Improving Career Readiness

Vertical Articulation of Skills and Alignment

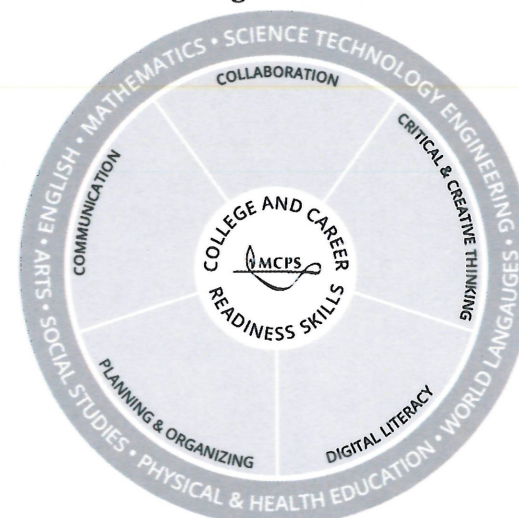
Elementary



10 Characteristics for 21st Century Middle School Students

- 1 **Has Positive Academic Identity**
Has a positive sense of self as a learner and a commitment to learning. Persists through challenges. Sees self as an integral part of the learning community.
- 2 **Communicates**
States thinking/emotions effectively in multiple ways, seeking to understand others. Responds effectively in written, spoken, or signed, visual, and artistic forms.
- 3 **Shows Empathy**
Identifies with the feelings, thoughts, and perspectives of others and treats others with care and respect.
- 4 **Values Diversity**
Understands the unique and positive aspects of self, while seeking and seeing other perspectives (culture, age, gender, learning/thinking, race, etc.) as an asset to learning and problem solving.
- 5 **Collaborates**
Works effectively with others to achieve individual and common goals and objectives.
- 6 **Problem Solves**
Works through concrete or abstract challenges to reach understanding and solutions.
- 7 **Creates/Innovates**
Develops multiple ways of thinking and understanding diverse perspectives to produce new ideas and generate several solutions.
- 8 **Shows Persistence**
Works diligently and applies effective strategies to achieve a goal or solve a problem. Continues in the face of obstacles and competing pressures.
- 9 **Is Reflective Thinker/Learner**
Understands own strengths and challenges and makes connections and adjusts thinking, based on new learning and existing knowledge.
- 10 **Has Critical Disposition**
Questions existing knowledge, seeking evidence to support opinions and decisions, and considers multiple perspectives.

High School



Improving Career Readiness

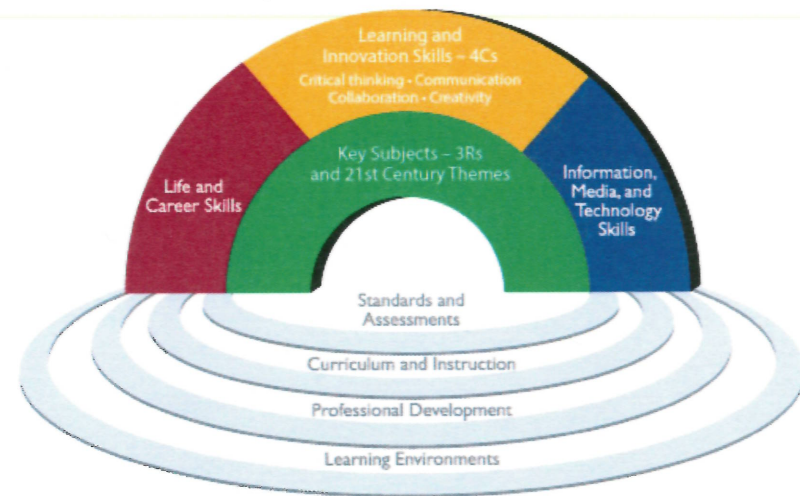
Vertical Articulation of Skills and Alignment

Career Readiness Skills & Values



P21 Framework for 21st Century Learning

21st Century Student Outcomes and Support Systems



© 2009 Partnership for 21st Century Learning (P21)
www.P21.org/Framework

This e-mail message has been approved for distribution by Dr. Maria V. Navarro, chief academic officer; and Dr. Kimberly A. Statham, deputy superintendent. No hard copy will be provided.

ACTION REQUIRED

Office of School Support and Improvement
Office of Curriculum and Instructional Programs
MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

March 9, 2017

MEMORANDUM

To: All Principals

From: LaVerne G. Kimball, Associate Superintendent of Elementary Schools
Darryl L. Williams, Associate Superintendent of Secondary Schools
Erick J. Lang, Associate Superintendent of Curriculum and Instructional Programs

Subject: ACTION: Cluster or Consortia-Based Mini-Grants to Support Successful Transition and Articulation

Background

As you know, the strategic priorities this school year focus on improving teaching and learning by providing a strong academic program for all students, with milestones at each level that track critical transitions of a student's learning journey. At each transition milestone, we must ask the following questions: Are our students ready for the next level, and did our students make a successful transition? In order to further the articulation work that is already happening in our schools and in our clusters, funds have been made available to support these efforts.

Summary

The purpose of this memorandum is to provide you with information about these available funds, which can be used to support cluster or consortia-based professional learning, collaboration, student support, or articulation activities during the second semester of this school year.

- In order to support articulation activities and successful transitions from Grade 5 to Grade 6, and from Grade 8 to Grade 9, funds are available for clusters and consortia to support these efforts.
- Activities can include, but are not limited to—
 - professional learning opportunities and collaboration among teachers across levels;
 - activities focused on particular content areas (i.e., literacy, writing, mathematics) across levels;
 - collaboration to support student scheduling, intervention, and successful transition;
 - collaboration among leaders across levels;

- direct student support; and
 - other cluster or consortium-initiated efforts.
- Funding can be used for substitutes or after-school stipends for collaboration, or a combination.
- Activities should be collaboratively planned among the cluster or consortium principals. Activities should be planned between March 9, 2017 and June 30, 2017.
- For consortia, schools can plan consortium-wide activities, or develop plans that focus on traditional feeder patterns in a smaller subset of schools.
- Each high school cluster is eligible for up to \$4,000 to support this initiative, through the use of the attached mini-grant application (Attachment). For consortia, funds can be combined by multiplying the number of high schools participating.

Action

- Collaborate with fellow principals in your cluster or consortium to discuss plans for articulation activities or professional learning, and options for use of mini-grant funding.
- Return the attached form to your Director of School Support and Improvement (DSSI) for approval and to secure funding.

Questions

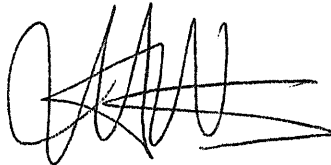
- Questions should be referred to your DSSI.

LGK:DLW:EJL:imp

Attachment

Copy to:

Executive Staff
Directors of School Support and Improvement
Dr. Collins
Mrs. Hazel
Mr. Murphy
Dr. Steinberg
Mr. Koutsos
Mr. Lloyd
School Administrative Secretaries



Approved: _____

Maria V. Navarro, Chief Academic Officer



Kimberly A. Statham, Deputy Superintendent

**Office of School Support and Improvement
Office of Curriculum and Instructional Programs
MONTGOMERY COUNTY PUBLIC SCHOOLS**

*Cluster or Consortia Mini-Grant to Support Successful Transition and Articulation
2016-2017*

School Interest Application

Cluster or Consortium Name: _____

Principal Submitting Application: _____

Schools Involved: _____

Amount Requested (\$4,000 maximum) \$ _____
(Substitutes should be budgeted at \$135.04 per day. Stipends at \$20 per hour)

1) **INTEREST:** Briefly summarize the professional learning or articulation activities planned in the cluster or consortium.

2) **FUNDING:** Briefly summarize how the funding will be used.

3) **ADDITIONAL COMMENTS OR SUPPORT NEEDED:**

APPROVAL: _____ Date: _____
Director of School Support and Improvement

April 2016

Dear Parent or Guardian of _____:

The goal of the Montgomery County Public Schools (MCPS) mathematics program is to prepare all students to successfully complete Algebra 1 by Grade 8 and to be prepared for higher level math in high school. To accomplish this goal, the MCPS mathematics program is designed to support and challenge students as they develop a deep understanding of important mathematical concepts and ideas. Next year, as students move into Grade 4 mathematics, they will receive additional opportunities for enrichment, which is embedded into the existing curriculum. Some students also may be ready for the Grade 4/5 accelerated curriculum. This curriculum combines all of the Grade 4 mathematics standards and most of Grade 5. Students in this class would be expected to move into the Grade 5/6 mathematics curriculum the following year.

Courses That Lead to College and Career Readiness

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

To help determine which mathematical program will best meet your child's needs, multiple student data points were reviewed. Some of the data points include:

- o Measurement of Academic Progress Mathematics (MAP-M) performance
- o Classroom observations
- o Classroom-based assessments
- o Report card identification of consistent access to enrichment and accelerated instruction
- o Characteristics such as:
 - ✓ Sees relationships and makes connections
 - ✓ Motivated and persists during challenging situations
 - ✓ Strong problem solving and critical thinking capabilities
 - ✓ Grasps concepts quickly

Your child has been recommended to receive the **Grade 4 Mathematics Curriculum** **Grade 4/5 Accelerated Curriculum**. This curriculum will provide opportunities for enrichment and ensure your child is well prepared to successfully complete Algebra 1 by Grade 8. If have questions about your child's placement, please feel contact your child's teacher or me.

Please be assured that our teachers and I at xxxxxxxx elementary school are committed to ensuring that your child will gain a deep understanding of mathematics and be prepared for a lifetime of learning.

MS Principals PLC

March 15, 2016



Today's Outcomes:

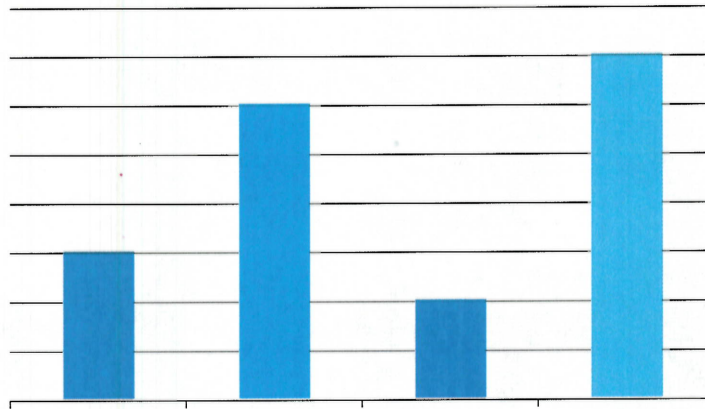
- Review student performance and achievement/access gaps in mathematics
- Discuss MCPS Mathematics Core Principles and vision for mathematics pathways
- Reflect on learnings, actions, challenges
- Discuss with colleagues
- Study the curriculum: IM
- Examine/reflect on practices in articulation
- Provide feedback on next steps
- Updates: Final exams, summer PD



MONTGOMERY COUNTY PUBLIC SCHOOLS Rockville, Maryland



EQUITY



MONTGOMERY COUNTY PUBLIC SCHOOLS Rockville, Maryland



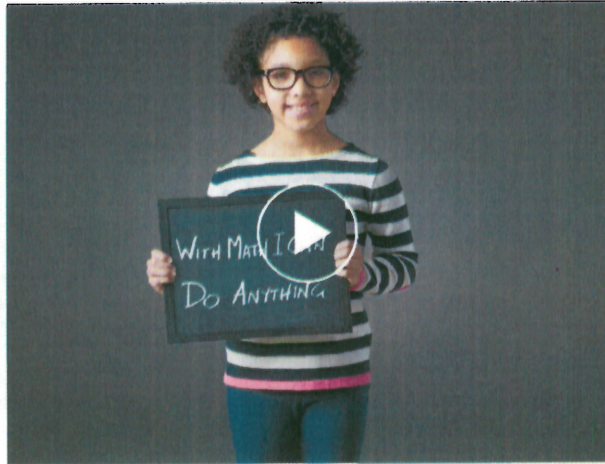
Four Agreements



MONTGOMERY COUNTY PUBLIC SCHOOLS Rockville, Maryland



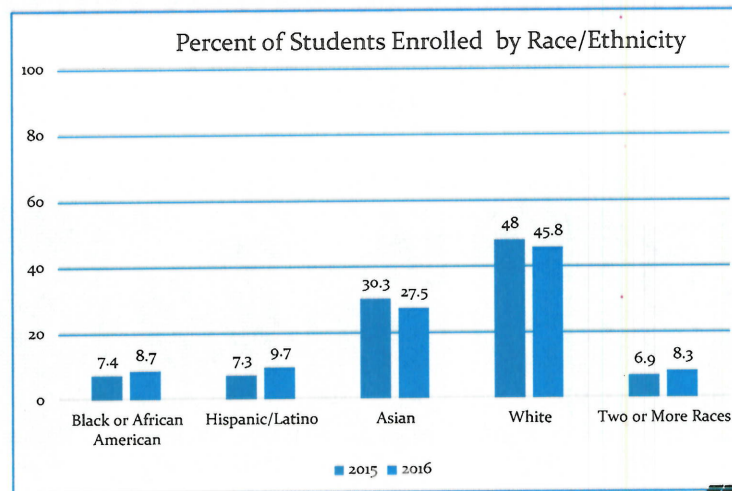
With Math I Can



MONTGOMERY COUNTY PUBLIC SCHOOLS Rockville, Maryland



Compacted 4/5 Math Enrollment

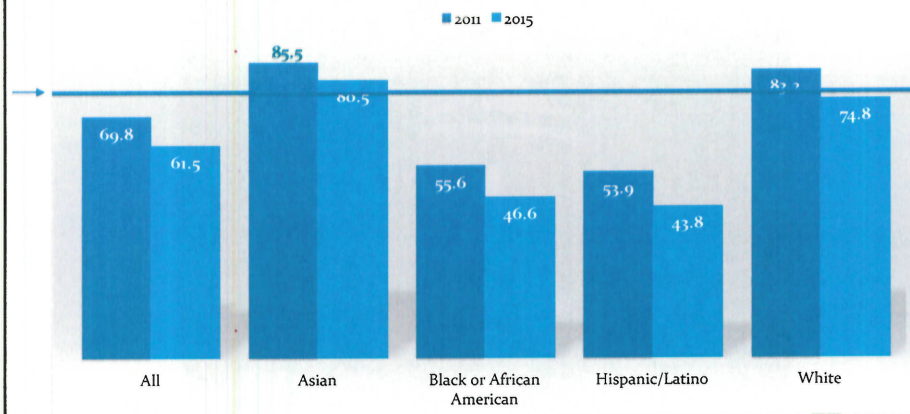


MONTGOMERY COUNTY PUBLIC SCHOOLS Rockville, Maryland



Algebra: Enrollment (All)

Percent Enrollment in Algebra 1 by Grade 8

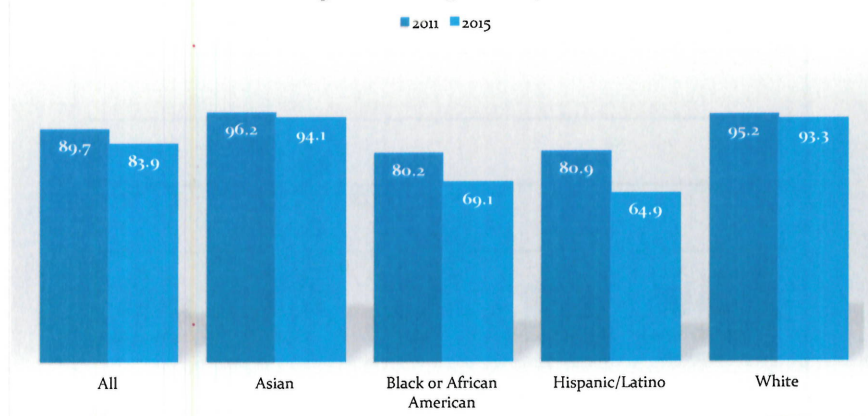


MONTGOMERY COUNTY PUBLIC SCHOOLS Rockville, Maryland



Algebra: Success Rate (Course)

Passing Rate for Algebra 1 by Grade 8



MONTGOMERY COUNTY PUBLIC SCHOOLS Rockville, Maryland



College and Career Readiness

Recent Context and Urgency

Implementation of the College and Career Readiness and College Completion Act (CCRCCA), 2015-2016

- All students must be assessed for College and Career Readiness by the end of Grade 11
- If students are not College Ready, they will be required to take a transition course in Grade 12, and reassess.
- Each year, over $\frac{1}{2}$ of students entering Montgomery College from MCPS require remediation in Mathematics.
- Some progress: CCRCCA, pilot, changing SAT/ACT benchmarks

Sense of urgency towards MCPS Milestones

- Algebra 1 by Grade 8
- Algebra 2 by Grade 11
- Some students accessing Geometry or higher by Grade 8



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Mathematics Core Principles

Department of Elementary Curriculum and Instructional Programs
Elementary Principals Curriculum Update Meeting
March 8, 2015

Mathematics Core Principles

1. When students are challenged with a rigorous mathematics program and supported, they meet or exceed the expectations.
2. The MCPS curriculum is designed for all students to reach the goal of success in Algebra 1 or higher by Grade 8, and there will be options in every school for students to reach courses beyond Algebra 1 by Grade 8.
3. MCPS will broaden access to math acceleration for all students in Grades 4 and 5 and the current criteria and selection process will be discontinued.
4. There will be no barriers to participation in accelerated curriculum in Grades 4 and 5.

Department of Elementary Curriculum and Instructional Programs
Elementary Principals Curriculum Update Meeting
March 8, 2015

1. When students are challenged with a rigorous mathematics program and supported, they meet or exceed the expectations.



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Mathematics Pathways

Middle					High			
4	5	6	7	8	9	10	11	12
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*** AP Calc AP Stat
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 Calc	MVC
			C2.0 Math 7	C2.0 Math 8	C2.0 Alg. 1	C2.0 Geom.	C2.0 Alg. 2	C2.0 Pre-Cal.

Mathematics Core Principle:

2. The MCPS curriculum is designed for all students to reach the goal of success in Algebra 1 or higher by grade 8, and there will be options in every elementary and middle school for students to reach courses beyond Algebra 1 by grade 8.



Mathematics Core Principles

Department of Elementary Curriculum and Instructional Programs
Elementary Principals' Curriculum Review Meeting
March 4, 2014

Mathematics Core Principles

1. When students are challenged with a rigorous mathematics program and supported, they meet or exceed the expectations.
2. The MCPS curriculum is designed for all students to reach the goal of success in Algebra 1 or higher by Grade 8, and there will be options in every school for students to reach courses beyond Algebra 1 by Grade 8.
3. MCPS will broaden access to math acceleration for all students in Grades 4 and 5 and the current criteria and selection process will be discontinued.
4. There will be no barriers to participation in accelerated curriculum in Grades 4 and 5.

MCPS Curriculum Review Meeting, February 2014

3. MCPS will broaden access to math acceleration for all students in Grades 4 and 5 and the current criteria and selection process will be discontinued.

4. There will be no barriers to participation in accelerated curriculum in Grades 4 and 5.



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Reflection & Table Talk

Mathematics Core Principle:

2. The MCPS curriculum is designed for all students to reach the goal of success in Algebra 1 or higher by grade 8, and there will be options in every elementary and middle school for students to reach courses beyond Algebra 1 by grade 8.

DISCUSS AT YOUR TABLE:

- 1) **LEARNINGS** you've had this year
- 2) **ACTIONS** you've taken
- 3) School **PRACTICES** you are working on
- 4) **CHALLENGES** you are facing



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Elementary Updates

- Changes to Compacted Math in grades 4-5
- Compacted Math 5/6 will still be offered in middle schools (phase out after 2016-2017), staffing allocated
- Compacted Math 4/5 will no longer be offered in middle schools (effective 2016-2017)
- The Compacted Math 4/5 curriculum will still be offered, but in home elementary schools, leading to Algebra in Grade 7 and Geometry in Grade 8.
- The current criteria and selection in process in grade 3 will be discontinued.
- Acceleration guidance provided to schools



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Middle School Key Messages

1. MCPS does not recommend skipping a course. However, there may be instances when additional consideration for acceleration may be warranted even if the student was not in compacted math at the elementary school.
2. We do not want a culture of "no", but rather a culture of, "we believe in you".
3. Multiple data sources need to be considered, including parent voice and elementary school input.
4. Err on side of moving students into a higher level course and focus on how you will provide supports.



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Additional Talking Points

1. MCPS does not recommend skipping a course – students should demonstrate proficiency on foundational concepts (MWG).
2. College and career readiness, as measured by SAT/ACT/ACCUPLACER in grade 11 (success in Algebra 2 or Pre-Cal prior to CCR assessment).
3. 4 years of math in high school required, not just 4 credits
4. Highly rigorous AP classes begin junior and senior years – AP Calculus, Multivariable Calculus, AP Statistics.

		Middle			High			
4	5	6	7	8	9	10	11	12
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*** AP Stat AP Calc
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 Calc	MVC
			C2.0 Math 7	C2.0 Math 8	C2.0 Alg. 1	C2.0 Geom.	C2.0 Alg. 2	C2.0 Pre-Cal.



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Check In Circle

Round 1

One thing that aligns with my beliefs.....

Round 2

One thing that challenges my beliefs.....



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Curriculum Study: IM

The “Old IM” – ok, C 1.0 IM in our current terminology ☺

The Investigations into Mathematics Instructional Guide Version 2006 was organized into seven units of instruction.

Unit 1: Statistical Applications and Set Theory

Unit 2: Real Number Systems

Unit 3: Investigation of Geometry

Unit 4: Patterns, Relations, and Functions

Unit 5: The Language of Algebra

Unit 6: Other Operational Systems

Unit 7: Probability

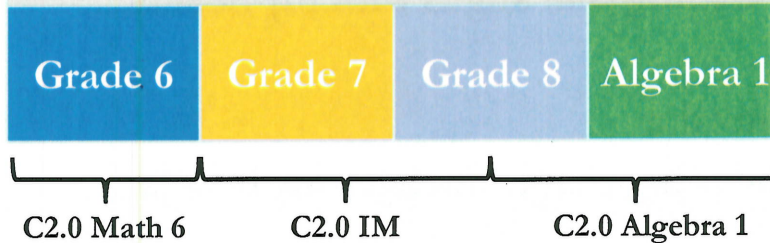


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Curriculum Study: IM

Maryland College and Career Readiness Standards (Common Core)



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Curriculum Study: IM

C 2.0 IM

- Unit 1: Ratios and Proportional Relationships
- Unit 2: Real Number Operations
- Unit 3: Expressing Geometric Relationships
- Unit 4: Statistics and Probability
- Unit 5: The Real Number System
- Unit 6: Functional Relationships and Linear Equations
- Unit 7: Transformations and Geometric Measurement

What's the focus (updated Curriculum At-a-Glance document)

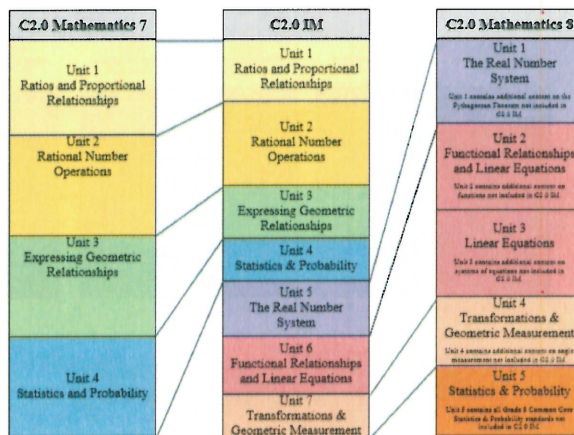


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Curriculum Study: IM

Framework of the C2.0 Mathematics 7, C2.0 Investigations into Mathematics, and C2.0 Mathematics 8



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Curriculum Study: IM

Expressions and Equations Learning Progression

Grade 6

- Apply and extend previous understandings of arithmetic to algebraic expressions.
- Reason about and solve one-variable equations and inequalities.
- Represent and analyze quantitative relationships between dependent and independent variables.

Grade 7

- Use properties of operations to generate equivalent expressions.
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Grade 8

- Work with radicals and integer exponents.
- Understand the connections between proportional relationships, lines, and linear equations.
- Analyze and solve linear equations and pairs of simultaneous linear equations.

Algebra 1 (subset of domains that connect)

- Write expressions in equivalent forms to solve problems.
- Perform arithmetic operations on polynomials.
- Create equations that describe numbers or relationships.
- Understand solving equations as a process of reasoning and explain the reasoning.

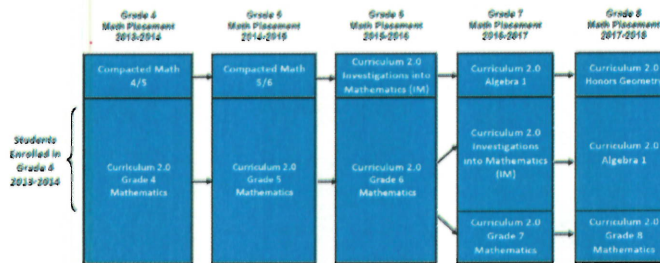


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Curriculum Study: IM

Staff Articulation Planning Document
2013-2017



Staff Use Only



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Reflection & Table Talk

7th Grade Course Offerings: Math 7, IM

What have you changed or adjusted this school year?

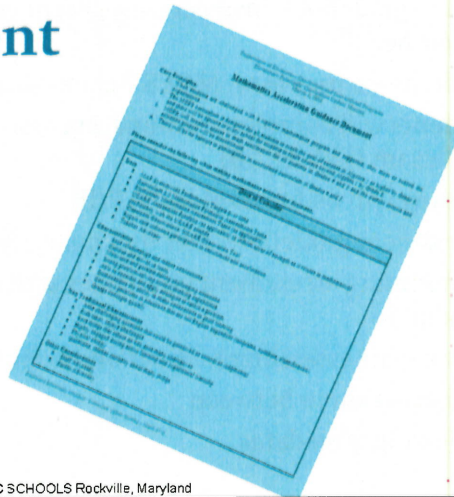
What are your key messages?



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Mathematics Acceleration Guidance Document



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Timeline and Next Steps

- April PLC with RT's, SDT's, Administrators
- Math 8 PD
- Review the K-8 alignment of standards and possibly realign based on stakeholder feedback and external expert review
- Questions



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Update on Final Exams, Grading

- Semester 2 PARCC/HSA Courses

(Algebra 1B)

- Memo, gradebook instructions, parent communication in December
- Students exempt from MCPS final exams (like AP/IB)
- Students will complete culminating assessment in lieu of final exam (like AP/IB)
- Grading will be handled like AP/IB
- Assessment guidelines sent in January, feedback collected
- Culminating assessment guidelines sent to RT's and principals
 - Two-part assessment, about one hour total
 - Instruction in between
 - Flexibility on dates



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Marking Period Assessments

- Centrally-developed common assessments each marking period in courses where there is currently a districtwide, centrally-developed final exam
- Thirty courses
- Through application process, 100+ teachers identified December 2015 and January 2016 (200+ applicants)
- Course-alike teams, including special education and ESOL teachers
- All high schools represented; middle school representation



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Marking Period Assessments

- Assessment teams began February 2016 via after-school meetings/full day, continuing through summer 2016
- Teams studying curriculum, establishing time “windows” during each marking period, currently drafting assessments
- Multiple and varied formats (PARCC-like, writing, common tasks, project-based, traditional)
- Pilot assessments spring 2016
- Exploration of online assessments
- Grading and Reporting



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Timeline

- **Through June 2016:** Assessment teams continuing to meet as large groups, small groups, individual writing/editing
- **April-May 2016:** Pilot marking period assessments, possible online assessments, data systems testing
- **June 2016:** Update to the Board of Education
- **Summer 2016:** Assessment teams continue, finalize marking period assessments
- **October 2016:** Marking period assessments administered



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This e-mail message has been approved for distribution by Dr. Maria V. Navarro, chief academic officer. No hard copy will be provided.


ACTION REQUIRED BY: September 25, 2015

Office of Curriculum and Instructional Programs
MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

July 23, 2015

MEMORANDUM

To: Elementary School Principals

From: Erick J. Lang, Associate Superintendent 

Subject: ACTION: Fall Process for Identifying Students for the Grade 4/5 Compacted Mathematics Curriculum

Summary

- The *Fall 2015 Addendum: Challenging Mathematics For All* (Attachment A) describes the process and guidelines for rescreening candidate students for Grade 4/5 Compacted Mathematics.
- The *Fall 2015 UCARE* (Understanding, Computing, Applying, Reasoning, and Engaging) *Assessment Portfolio* (Attachment B) includes the tasks, rubric, and scoring guides for candidate students.
- Attachment C includes letters to parents/guardians advising if their child met all four criteria or did not meet the criteria to be considered a candidate for Grade 4/5 Compacted Mathematics.
- The *Fall 2015 UCARE Assessment Portfolio Report* (Attachment D) is the Excel form for recording and sending in student scores and recommendations.
- Schools must follow the process and meet system reporting requirements by **September 25, 2015**.

Action

- Share relevant materials with appropriate team members and complete the process, meeting the **September 25, 2015**, deadline.

Questions

- Questions regarding the process may be directed to Mrs. Niki T. Hazel, director, Department of Elementary Curriculum and Districtwide Programs, at 301-279-3297; Mr. Scott W. Murphy, director, Department of Secondary Curriculum and Districtwide Programs at 301-279-3350; Mrs. Meredith A. Casper, director, Division of Accelerated and Enriched Instruction, at 301-279-3163; or Mr. Edward C. Nolan, director, Mathematics Implementation and Development Team, at 301-279-3410 or via e-mail.

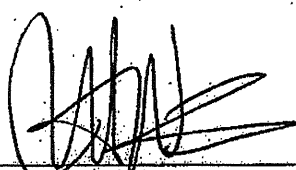
EJL:jel

Attachments

Copy to:

Dr. Statham
Dr. Kimball
Mrs. Alexander
Mrs. Casper
Mrs. Collins
Elementary Directors of School Support and Improvement
Elementary School Administrative Secretaries
Mrs. Hazel
Mrs. Jones
Mr. Murphy
Mr. Nolan
Dr. Steinberg
Dr. Trenkamp
Mr. Koutsos
Mr. Lloyd

Approved: _____


Maria V. Navarro, Chief Academic Officer

Fall 2015 Addendum: Challenging Mathematics for All

This document describes the process for identifying Grade 4 students for the Grade 4/5 Compacted Mathematics course who may be either in need of a re-evaluation based on spring performance or are new to Montgomery County Public Schools (MCPS).

Fall Process for Placing Students in the Grade 4/5 Compacted Mathematics Course for 2015–2016

Identify candidates, complete the two *Fall 2015 UCARE Assessment Portfolio* tasks with the candidates, and make a final determination for mathematics placement for each candidate student using the Best-Fit Criteria. Data and final decisions should be recorded using the *Fall 2015 UCARE Assessment Portfolio Report*.

It is recommended this process be completed in the first few weeks of school because of the swift pacing of the Grade 4/5 Compacted Mathematics course. Students not identified by the end of September may miss essential mathematics concepts.

Identifying Candidate Students

A candidate is a student who you think may have the potential to perform well in the Grade 4/5 Compacted Mathematics course. You may identify candidate students in one of the following ways:

- Recommend a student for re-evaluation from your school.
- Recommend a student who was identified by another MCPS school in the spring as someone to watch.
- Recommend a student whose parent requested reconsideration for a child who fell close to the cut score and/or is missing some of the Best-Fit Criteria.
- Recommend a student who is new to MCPS and your school's review of his or her data and initial observations indicate that the student may be a candidate.

The main criteria for determining whether or not a student is a qualified candidate is that they meet the first Best-Fit Criteria, "Independently and consistently demonstrate proficiency as defined by the five strands of Understanding, Computing, Applying, Reasoning, and Engaging (UCARE), earlier than the end of instruction for concepts and/or topics."

Using the *Fall 2015 UCARE Assessment Portfolio*

The *Fall 2015 UCARE Assessment Portfolio* contains directions, rubrics, and two tasks. These tasks should be completed with candidate students only, in the first few weeks of school. Suggested implementation windows are Task 1: Four Times Five from September 2–9, 2015, and Task 2: Arrange the Digits from September 9–16, 2015.

It is recommended that teachers first review the tasks and discuss the rubrics with Grade 3 teachers or other staff members that received the training for the UCARE Assessment Portfolio in the spring. The two tasks each measure two strands of UCARE, for a total of 20 possible points.

Making Final Determinations

To determine which of the candidate students will be best served in the Grade 4/5 Compacted Mathematics course beginning in Grade 4, a student should—

1. independently and consistently demonstrate proficiency as defined by the five strands of UCARE, *earlier* than the end of instruction for concepts and/or topics;
2. meet the criteria for enriched and accelerated mathematics within the UCARE Assessment Portfolio (the benchmark for the fall portfolio is 16 out of a possible total of 20 points);
3. have needs that would best be met through a much quicker pace of instruction, while maintaining the depth of understanding; and,
4. be among the highest performing students in that grade level or do not have a group of similarly situated peers in his or her grade-level class.

After scoring candidate students on the two tasks included in the *Fall 2015 UCARE Assessment Portfolio*, place candidates who meet all four of the Best-Fit Criteria in the Grade 4/5 Compacted Mathematics course immediately. All other students should be served through the enrichment and acceleration contained in Curriculum 2.0 Grade 4 Mathematics.

Reporting Data and Decisions

Complete the *Fall 2015 UCARE Assessment Portfolio Report* for any candidate students assessed and send to Meredith_Casper@mcpsmd.org by **September 25, 2015**. Include scores and final recommendations for each candidate student. Directions for completing the report are included in the Excel form.

This data is collected as part of the effort to review the effectiveness of the process. The decision for placement in the course is a school-based decision. Parent letters have been provided to communicate rescreening decisions to parents. See Attachment C.

Fall 2015 UCARE Assessment Portfolio

What

The *Fall 2015 UCARE Assessment Portfolio* is composed of two complex tasks, a holistic rubric, and a scoring tool for each task. The tasks were either selected from the Sample Learning Tasks in the curriculum or from the NRIC instructional resources referenced in the curriculum. The tasks were chosen for the instructional opportunities they provide for students to demonstrate UCARE (Understanding, Computing, Applying, Reasoning, and Engaging) mathematics proficiency.

The holistic rubric can be used with any mathematics instruction from Curriculum 2.0 (C2.0). As indicated in the chart below, the scoring tools are designed specifically for each task.

When

The tasks are intended to be completed as part of regular instruction, not an add-on assessment. The chart below indicates approximate windows for using the tasks as part of instruction.

	UCARE Strand	Task Name	Suggested Implementation Window
Task 1	A, R	Four Times Five*	September 2–9, 2015
Task 2	U, C	Arrange the Digits	September 9–16, 2015

*Four Times Five has been adapted from NRIC: Six Times Five.

Who

The tasks, scoring tools, and collection of data must be used for students who you are considering as candidates for the Grade 4/5 Compacted Mathematics course. Teachers may use the tasks and the holistic rubrics with other students as appropriate, but do not submit data for those students.

How

Each of the tasks in this assessment portfolio provides opportunities to collect evidence of student proficiency across the UCARE strands. As students engage in these tasks, complete the rubrics to have evidence of the strategies and reasoning students use to persevere in problem solving. The evidence should reflect whether students demonstrate proficiency of the content, with a balance of conceptual understanding and procedural fluency. Suggested questions can be found within the Sample Learning Task or NRIC activity.

Teachers should use the links on each resource page to explore the Sample Learning Task or NRIC activity, as well as associated questions and resources. In gathering evidence, use the questions from the Sample Learning Task/NRIC activity to provide maximum opportunity for the student to demonstrate their depth of understanding within each task. The line of questioning,

student responses, and teacher observation and notes will be the most valuable evidence in this process.

While all tasks afford students opportunities to demonstrate proficiency across multiple strands, three UCARE strands from Understanding, Computing, Applying, Reasoning, and Engagement have been identified as the particular focus for each of the tasks. Evidence related to a task, however, is not limited to any individual strand.

Scoring Guide: Understanding, Computing, Applying, and Reasoning

- 4 Exemplary independent demonstration of the strand without prompting.
- 3 Thorough demonstration of the strand with minimal prompting.
- 2 Partial demonstration of the strand with minimal prompting.
- 1 Minimal demonstration of the strand with prompting.
- 0 No demonstration with prompting/no response.

Scoring Guide: Engagement

- 2 Highly engaged in using strategies appropriate for the problem.
- 1 Moderately engaged or requires teacher encouragement/feedback to keep working.
- 0 Minimally engaged or stops working.

A child who does not demonstrate proficiency of the task should be recorded with a 0 and the teacher should consider whether this child should continue as a candidate for the Grade 4/5 Compacted Mathematics course.

UCARE Assessment Portfolio Table of Contents

Holistic Rubric.....	Page 4
Task 1: Four Times Five	
Overview.....	Page 5
Task.....	Page 6
Sample Solution.....	Page 7
Scoring Tool.....	Page 9
Task 2: Arrange the Digits	
Overview.....	Page 10
Task.....	Page 11
Sample Solution.....	Page 12
Scoring Tool.....	Page 14

Holistic Rubric:
UCARE Characteristics to Consider Evaluating Student Proficiency

Understanding
<ul style="list-style-type: none"> • Knows and demonstrates understanding of the problem or task • Uses appropriate mathematical language in both oral and written explanations • Uses multiple forms of representation • Makes connections to similar problems
Computing
<ul style="list-style-type: none"> • Selects and applies general rules correctly to make deductions and solve problems • Computes accurately
Applying
<ul style="list-style-type: none"> • Uses appropriate mathematical concepts and skills to solve problems in both familiar and unfamiliar situations • Solves real-life contextual mathematics problems with unique and original strategies when appropriate • Applies ideas and strategies of one mathematical problem to solve another
Reasoning
<ul style="list-style-type: none"> • Recognizes patterns and describes patterns as relationships or general rules • Draws conclusions consistent with findings and solutions • Justifies or proves mathematical relationships and general rules • Communicates a complete and coherent mathematical line of reasoning using different forms of representation • Explains whether or not his/her results make sense in the context of the problem • Justifies the degree of accuracy of his/her results where appropriate
Engaging
<ul style="list-style-type: none"> • Persists in finding solutions • Explains the importance of his/her findings in connection to real life • Suggests improvements to the method/strategy when necessary

Task 1: Four Times Five

NRICH–Six Times Five (Adapted)

This task has been adapted from the NRICH activity Six Times Five. The task provides the student an opportunity to reason about place value understandings as they problem solve. The student will apply a unique and original strategy to determine relationships between digits in a four-digit number. It is important to question students about their thinking as they complete this activity, and observe and record appropriate evidence. Sample solutions and teacher notes can be accessed through the link to the NRICH webpage containing the task <http://nrich.maths.org/1855>.

Key questions

- Is 0001 a four-digit number?
- How many four-digit numbers are there?
- How many choices do we have for the first digit? How many choices do we have for the second digit?

Task 1: Four Times Five
(adapted from Six Times Five)
Stage: 3***

How many four-digit numbers are there which
DO NOT contain a 5?



Task 1: Four Times Five

Sample Solutions

Correct Answer: 5,832 four-digit numbers do not contain a 5

First, consider the number of four-digit numbers—this is 9,000.

1,000 four-digit numbers start with a 5 and are of the form 5***.

There are 800 four-digit numbers with a 5 in the hundreds place. 100 for each thousand, but we have already counted the 100 in the 5,000s and we cannot count the 100 in the 0 thousands because they are not four-digit.

And so on...

How many 4 digit numbers do not contain a 5?

Thousands	hundreds	tens	ones
8 possibilities ↓ no 5 or 0	9 possibilities ↓ each of the 9 has 81 possibilities for tens + ones	1101 1111 1121 ⋮ 9 possibilities in tens place	1110 1111 1112 ⋮ 9 possibilities → each has 9 ones place possibilities
729 8 <u>5832</u>	$81 \times 9 = 729$		$9 \times 9 = 81$

There are 9,000 4-digit #s.

1/10 of them have a 5 in the ones place $\rightarrow 900$

1/10 have a 5 in the tens place, but 10% are already accounted for by the numbers w/ 5 in the ones place $\rightarrow 810$

1/10 have a 5 in the hundreds place, but $90 + 81 = 171$ are already counted $\rightarrow 729$

1/10 have a 5 in the thousands but $90 + 81 + 100 = 271$
 $100 - 271 = 729 \rightarrow 729$

$900 + 810 + 729 + 729 = 3168$ have a 5

$\begin{array}{r} 9000 \\ - 3168 \\ \hline 5832 \end{array}$ 20 next

10,000 total (1 more adds a digit)

↳ no zero - 1000 numbers lead with a zero
 no 5 - 1000 "

8000

- no 5 in hundreds place $- 100 \times 8 = 7200$
 leading for each
 w/ 5 thousands 1-9, %

- no 5 in tens place $- (10 \times 9) \times 8 = 7200 - 720 = 6480$
 50s

- no 5 in ones place $- (1 \times 9) \times 9 \times 8$
 tens and thousands

$\begin{array}{r} - 648 \\ \hline 5832 \end{array}$

- 1248

Student Name: _____

Task1: Four Times Five Scoring Tool

	1	2	3	4
Reasoning				
<ul style="list-style-type: none"> Recognizes patterns and describes patterns as relationships or general rules Draws conclusions consistent with findings and solutions Justifies or proves mathematical relationships and general rules Communicates a complete and coherent mathematical line of reasoning using different forms of representation Explains whether or not his/her results make sense in the context of the problem Justifies the degree of accuracy of his/her results where appropriate 				
Applying				
<ul style="list-style-type: none"> Uses appropriate mathematical concepts and skills to solve problems in both familiar and unfamiliar situations Solves real-life contextual mathematical problems with unique and original strategies when appropriate Applies ideas and strategies of one mathematical problem to solve another 				

Scoring Guide: Understanding, Computing, Applying, and Reasoning

- 4 Exemplary independent demonstration of the strand without prompting
- 3 Thorough demonstration of the strand with minimal prompting
- 2 Partial demonstration of the strand with minimal prompting
- 1 Minimal demonstration of the strand with prompting
- 0 No demonstration with prompting/no response

	1	2
Engaging		
<ul style="list-style-type: none"> Persists in finding solutions and strategies appropriate for the problem Adapts and makes adjustments to meet challenges when solving a problem Self-monitors to assess progress and adapts strategies when grappling with the problem 		

Scoring Guide: Engagement

- 2 Highly engaged in using strategies appropriate for the problem
- 1 Moderately engaged or requires teacher encouragement/feedback to keep working
- 0 Minimal engaged or stops working

Task 2: Arrange the Digits

NRICH–Arrange the Digits

This NRICH task provides the student an opportunity to demonstrate their understandings of place value, properties of operations, and multi-digit addition as they problem solve and attempt to compute a sum close to 1,500. The student will utilize strategies to determine relationships between digits in three-digit addends and the sum. It is important to question students about their thinking as they complete this activity, and observe and record appropriate evidence. Sample solutions and teacher notes can be accessed through the link to the NRICH webpage containing the task found at <http://nrich.maths.org/1976>.

Key questions:

- How did you determine where to place each digit?
- What did you consider about the addends and the sum?
- Does the order of the addends matter?
- How did you apply what you know and adapt your strategy when you found a sum that was not close to 1,500?

You may provide the student with access to digit cards. The student may choose to place digit cards in each box and move the cards around as they complete this task, or the student may choose to record their thinking directly on their paper. You also may provide the student with multiple copies of the student page so they can keep track of and compare their prior attempts to find a sum close to 1500.

Optional digit cards:



Stage: 3***

Can you arrange the digits 1, 2, 3, 4, 5, 6, 7, 8, 9 into 3-digit numbers such that their total is close to 1,500?

A 3x3 grid of squares with a plus sign to its left. Below the grid is a horizontal line, and below the line is a row of four squares.

You might like to think about how many different ways there are of getting as close as you can to 1,500.

Task 2: Arrange the Digits

Sample Solutions

Correct Answer: The closest total is 1,503

Many students will arrive at the answer by trial and improvement techniques.

One sample response provided on the NRICH website highlights a student's reasoning and systematic search to get the hundreds column to total 15 and the tens column to total 9. When unsuccessful at finding the desired totals, he moved on to consider making the units column total at least 20 and the tens column total 8, which after a little searching gave him a result that he was satisfied with.

Sample

In whatever way the digits 1 to 9 are arranged together the total will always have a digit root that is 9.

Example: $123 + 45 + 678 + 9 = 855$
Where $8 + 5 + 5 = 18$, i.e. the sum of the digits
And $1 + 8 = 9$

Example: $123 + 456 + 789 = 1,368$
and the sum of the digits is $1 + 3 + 6 + 8 = 18$
and $1 + 8 = 9$

When restricted to three 3-digit numbers, they too must have a total whose digital root is 9.

Hence, 1,500 cannot be a solution because its digital root is 6. While the integers 1,494 and 1,503 both have digital roots of 9, 1,503 is nearer to 1,500 than 1,494.

Search for the digits which would make the units add up to 13 or 23, the tens digits add up to 9 or 8 and the hundreds digits add up to 13 or 14 e.g. $519 + 748 + 236 = 1,503$.

The student solution refers to digital roots of nine. [The document linked here](#) gives some explanation of why, whatever the order of the digits 1–9, the total will always be a digital root of nine.

If you add all of the numbers from 1-9 you get
 $1+2+3+4+5+6+7+8+9=45$. My total
hundreds + my total tens + my total ones will
equal 45.

In order to be close to 1500, if I cannot be
exact, I want to be off in the ones place as that
would be the smallest amount. I know I will
have to compose some hundreds, so I need to have
my hundreds add up to a smaller number than 15,
like 13. $45-13=32$. In order to be close to 1500,
I now need to compose 2 hundreds. If I
chose to have 20 tens, I would have 12 ones
which means I would compose an extra 10. It
would be better to have 19 tens and 13 ones.

So, I need 13 hundreds, 19 tens and 13 ones.
This adds up to 1503. 13 ones is 1 ten and 3 ones.
So I have 20 tens which are 2 hundreds. 15
hundreds is 1 thousand and 5 hundreds.

I can add $9+1+3=13$ (hundreds)
I can add $8+7+4=19$ (tens)
This leaves $6+5+2=13$ (ones)

$$\begin{array}{r} 9 8 6 \\ 8 7 5 \\ + 3 4 2 \\ \hline 1 5 0 3 \end{array}$$

Student Name: _____

Task 2: Arrange the Digits Scoring Tool

	1	2	3	4
Understanding				
<ul style="list-style-type: none"> Knows and demonstrates understanding of the problem or task Uses appropriate mathematical language in both oral and written explanations Uses multiple forms of representation Makes connections to similar problems 				
Computing				
<ul style="list-style-type: none"> Selects and applies general rules correctly to make deductions and solve problems Computes accurately 				

Scoring Guide: Understanding, Computing, Applying, and Reasoning

- 4 Exemplary independent demonstration of the strand without prompting
- 3 Thorough demonstration of the strand with minimal prompting
- 2 Partial demonstration of the strand with minimal prompting
- 1 Minimal demonstration of the strand with prompting
- 0 No demonstration with prompting/no response

	1	2
Engaging		
<ul style="list-style-type: none"> Persists in finding solutions and strategies appropriate for the problem Adapts and makes adjustments to meet challenges when solving a problem Self-monitors to assess progress and adapts strategies when grappling with the problem 		

Scoring Guide: Engagement

- 2 Highly engaged in using strategies appropriate for the problem
- 1 Moderately engaged or requires teacher encouragement/feedback to keep working
- 0 Minimally engaged or stops working

Yes

September 2015

Dear Parent or Guardian of _____:

Curriculum 2.0 (C2.0) mathematics program is designed to challenge all levels of students. Those who meet the challenging new grade level expectations will be well-prepared for Algebra 1 by Grade 8 and an Advanced Placement mathematics course in high school. Next year, most students will be expected to continue into C2.0 Grade 4 mathematics with opportunities for enrichment and acceleration, which is embedded into the existing curriculum. While we expect most students will be well-served with these resources, there may be a few students who would be best served with a steeper climb. Montgomery County Public Schools (MCPS) has designed a Compacted Mathematics course beginning in Grade 4. This course combines all of C2.0 Grade 4 mathematics with part of C2.0 Grade 5 mathematics. To learn more about the progression of courses, visit the C2.0 mathematics site: <http://www.montgomeryschoolsmd.org/curriculum/math/>.

To help determine which students are the best fit for the Compacted Mathematics course we reviewed existing student data. This review helped us identify which students might be candidates for the Compacted Mathematics course. We used two assessment tasks to provide more information on how well the candidate students fit the criteria for the Compacted Mathematics course in addition to current classroom performance. These tasks helped measure students' understanding, computation, application, reasoning, and engagement (UCARE) in mathematics. A student must meet all four criteria, listed below, to be considered a best fit for the Compacted Mathematics course. Our evaluation showed that your child met the following criteria:

- ☐ 1. Independently and consistently demonstrates proficiency as defined by the five strands of UCARE, *earlier* than the end of instruction for concepts and/or topics.
- ☐ 2. Meets or exceeds the benchmark for enriched and accelerated mathematics within the *UCARE Assessment Portfolio* (UCARE AP). _____ scored a total of _____ out of 20 possible points. To be considered as having met this criterion a student should score at least 16 out of 20 possible points.
- ☐ 3. Has needs that would best be met through a much quicker pace of instruction, while maintaining the depth of understanding.
- ☐ 4. Is among the highest performing students in the grade level or does not have a group of similarly situated peers in his or her grade level class.

Your child met all four criteria and is invited to enroll in the C2.0 Grade 4/5 Compacted Mathematics course for the 2015–2016 school year. This course will move at a much quicker pace than the challenging C2.0 Grade 4 mathematics, while still maintaining the depth of understanding. Please consider the additional demands the course may place on your child as you make your decision. If you feel your child would benefit from this quicker pace, please complete the attached enrollment form and return it immediately to the school to confirm your interest.

I am committed to ensuring that your child will gain a deep understanding of mathematics that will prepare him or her for a lifetime of learning. If you have questions regarding mathematics enrollment for next year, please contact me at INSERT.

Principal Signature



Student Name: _____

Directions: Choose your preference for your child, sign, and return to the school by September 30, 2015.

☐ I understand that my child qualifies for the Curriculum 2.0 Grade 4/5 Compacted Mathematics and understand that it may place additional demands on my child. I am interested in my child enrolling in this course.

☐ I understand that my child qualifies for the Curriculum 2.0 Grade 4/5 Compacted Mathematics, but would prefer that my child receive challenge through the Curriculum 2.0 Grade 4 mathematics curriculum.

Note: I acknowledge that if I would like my child to be considered for Compacted Mathematics after the start of the academic year my child will need to be reassessed.

Parent/Guardian Signature: _____

Date _____

No

September 2015

Dear Parent or Guardian of _____:

Curriculum 2.0 (C2.0) mathematics program is designed to challenge all levels of students. Those who meet the challenging new grade level expectations will be well-prepared for Algebra 1 by Grade 8 and an Advanced Placement mathematics course in high school. This year, most students will be expected to continue into C2.0 Grade 4 mathematics with opportunities for enrichment and acceleration, which is embedded into the existing curriculum. While we expect most students will be well-served with these resources, there may be a few students who would be best served with a steeper climb. Montgomery County Public Schools (MCPS) has designed a Compacted Mathematics course beginning in Grade 4. This course combines all of C2.0 Grade 4 mathematics with part of C2.0 Grade 5 mathematics. To learn more about the progression of courses, visit the C2.0 mathematics site: <http://www.montgomeryschoolsmd.org/curriculum/math/>.

To help determine which students are the best fit for the Compacted Mathematics course we reviewed existing student data. This review helped us identify which students might be candidates for the Compacted Mathematics course. We used two assessment tasks to provide more information on how well the candidate students fit the criteria for the Compacted Mathematics course in addition to current classroom performance. These tasks helped measure students' understanding, computation, application, reasoning, and engagement (UCARE) in mathematics. A student must meet all four criteria, listed below, to be considered a best fit for the Compacted Mathematics course. Our evaluation showed that your child met the following criteria:

- ☐ 1. Independently and consistently demonstrates proficiency as defined by the five strands of UCARE, *earlier* than the end of instruction for concepts and/or topics.
- ☐ 2. Meets or exceeds the benchmark for enriched and accelerated mathematics within the *UCARE Assessment Portfolio* (UCARE AP). _____ scored a total of _____ out of 20 possible points. To be considered as having met this criterion a student should score at least 16 out of 20 possible points.
- ☐ 3. Has needs that would best be met through a much quicker pace of instruction, while maintaining the depth of understanding.
- ☐ 4. Is among the highest performing students in the grade level or does not have a group of similarly situated peers in his or her grade level class.

Your child did not meet the best criteria listed above to be considered a candidate for C2.0 Grade 4/5 Compacted Mathematics course. Your child has been recommended for continued placement into C2.0 Grade 4 Mathematics. The grade level curriculum also will provide multiple opportunities for enrichment and acceleration for your child.

I am committed to ensuring that your child will gain a deep understanding of mathematics that will prepare him or her for a lifetime of learning. If you have questions regarding mathematics enrollment for next year, please contact me at INSERT.

Principal Signature

Fall 2015 UCARE Assessment Portfolio Report

School:

Date:

Last Name	First Name	Student ID#	Race	Gender	Spring 2015 Portfolio Score	Tasks						Re-Assess	
						1R	1A	1E	2U	2C	2E	Total	Final Rec
						4	4	2	4	4	2	0	
												0	
												0	
												0	
												0	
												0	
												0	
												0	

Final Recommendations Reviewed by Principal:

Date:

Directions

1. Record the names and ID of students who are candidates for re-assessment for the compacted curriculum.
2. Record each Task score. For example, for Task 1, record the Reasoning score in 1R , the Analysis score in 1A , and the Engagment score in 1E (Code: U = Understanding, C = Computing, A = Applying, R = Reasoning and E = Engagment).
3. Final Recommendation is recorded after the school:
 - reviews the student Portfolio and other criteria, and
 - consults parents of students recommended for Grade 4/5 Compacted Math.
 For the Final Recommendation, record each student as either:
 Y = Yes, this student will be in the Grade 4/5 Compacted Math for the 2015-2016 school year or
 N = this student will be in C2.0 Grade 4 Math for 2015-2016
4. After indicating that principal has reviewed the Final Recommendations, send the file to Meredith_Casper@mcpsmd.org by September 25, 2015.

This e-mail message has been approved for distribution by Dr. Beth Schiavino-Narvaez, deputy superintendent of school support and improvement; and Dr. Kimberly A. Statham, deputy superintendent of teaching, learning, and programs. No hard copy will be provided.

ACTION REQUIRED

Office of Curriculum and Instructional Programs
Office of School Support and Improvement
MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

February 10, 2014

MEMORANDUM

To: Middle School Principals

From: Erick J. Lang, Associate Superintendent for Curriculum and Instructional Programs *EL*
Darryl L. Williams, Associate Superintendent of Middle Schools *DLW*

Subject: ACTION: Mathematics Articulation Follow Up

A December 11, 2013, memorandum from the Office of Curriculum and Instructional Programs (OCIP) was sent to elementary and middle school principals to clarify Grade 5 to Grade 6 mathematics articulation for the 2014–2015 school year. As we approach the height of the articulation season, we have had several requests to resend the information contained in the memorandum which is summarized below.

Summary of December 11, 2013, Memorandum

As current Grade 5 students transition into middle school for the 2014–2015 school year, mathematics course placement should be carefully considered, especially for Grade 5 students currently enrolled in Math 6, the 2001 Montgomery County Public Schools (MCPS) curriculum that is being replaced by Curriculum 2.0 (C2.0) Math 6.

- Students enrolled in C2.0 Math 5 in Grade 5 should be enrolled in C2.0 Math 6 when they enter Grade 6.
- For students enrolled in MCPS Math 6 (2001 curriculum) in Grade 5 for the 2013–2014 school year, schools need to decide, with their elementary school feeders, whether the best fit for each child is MCPS Math 7 (2001 curriculum) or C2.0 Math 6

(CCSS). While some parents may consider this as “holding back” their children, examining the course progressions shows that Grade 6 students taking Math 7 (2001 curriculum) or C2.0 Math 6 will take the C2.0 Investigations into Mathematics (IM) course in Grade 7, and be on track for Algebra 1 in Grade 8.

- While the course titles of MCPS Math 6 (2001 curriculum) and C2.0 Math 6 sound the same, there are significant differences between them. Many elementary teachers of MCPS Math 6 found that they were using many resources of the C2.0 Math 5 curriculum because of the overlap between MCPS Math 6 and C2.0 Math 5. This is one way to understand that C2.0 Math 6 is a more challenging course and will provide challenge to students completing MCPS Math 6 (2001 curriculum).
- To help decide the best course fit for students matriculating from MCPS Math 6 in Grade 5, consider using the following data points:
 - Grade 4 and Grade 3 Maryland School Assessment (MSA) scores
 - Math proficiency scores on the Grade 5 Report Card
 - Strands of mathematical proficiency—these determinations would need to be provided by the Grade 5 teacher
 - Enrichment and acceleration opportunities on the Grade 5 Report Card

Additional Information

- Some parents of current Grade 5 students are concerned that their children will not have a pathway to Geometry in Grade 8. These students do have a pathway to Geometry in Grade 8—Math 7 in Grade 6, C2.0 Algebra 1 in Grade 7, and C2.0 Geometry in Grade 8. Showing these few parents who share this concern that there is an available pathway to Geometry in Grade 8 will allay their fears.
- Based on information provided by feeder schools, and your review of assessment and report card data, you may recommend that students in MCPS 2001 Math 6 enroll in C2.0 Math 6 when they enter Grade 6. However, you need to provide other options than just C2.0 Math 6. MCPS has advertised that Math 7 would be available for one more year for students who went through Math 6. Students should have that option for one more year.
- Students entering middle school the following year will have a clear pathway to Geometry in Grade 8 via the C2.0 Compacted Math.

Questions may be referred to Mr. Edward C. Nolan, director, Mathematics Implementation and Development Team, at 301-279-3410, or via e-mail at Edward_C_Nolan@mcpsmd.org.

EJL:DLW:jls

Copy to:

Executive Staff

Mrs. Collins

Mr. Creel

Ms. Dawson

Elementary School Administrative Secretaries

Elementary School Principals

Middle School Administrative Secretaries

Middle School Assistant Principals

Mr. Nolan

Dr. Steinberg

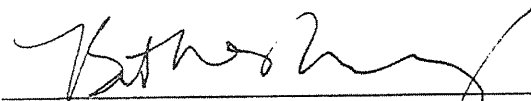
Mr. Whiting

Ms. Cuttitta

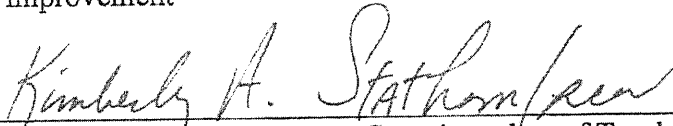
Dr. Mugge

Mr. Prouty

Approved:



Beth Schiavino-Narvaez, Deputy Superintendent of School Support and
Improvement



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

This e-mail message has been approved for distribution by Dr. Kimberly A. Statham, deputy superintendent, school support and improvement; and Dr. Maria V. Navarro, chief academic officer. No hard copy will be provided.



ACTION DUE: December 15, 2014

Office of Curriculum and Instructional Programs
Office of School Support and Improvement
MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

December 9, 2014

MEMORANDUM

To: Middle School Principals

From: Erick J. Lang, Associate Superintendent of Curriculum and Instructional Programs 
Darryl L. Williams, Associate Superintendent of Middle Schools 

Subject: ACTION: Mathematics Articulation from Grade 6 to Grade 7

Key Points

- All middle school principals have discussed the articulation procedures for mathematics from Grade 6 to Grade 7 during the Central Services Meeting with Principals on November 17, 2014, and the Middle School Principals' Curriculum Update meeting on November 24, 2014. The mathematics resource teacher/content specialist from each middle school also was invited to the November 17, 2014, meeting. During those meetings, information was collected and ideas were shared about how to address student articulation from Grade 6 to Grade 7.
- At the November 24, 2014, meeting, a set of principles was shared for supporting student success in the articulation process (Attachment A). Principals were provided a draft proposal for articulation guidelines for mathematics for students moving from Grade 6 to Grade 7. Information was collected on the proposal and adjustments were made to address the feedback from principals.
- Based on the discussion and feedback, final articulation guidelines were created (Attachment B).
- Additional resources will be provided to support principals and schools in sharing this information with staff members, parents, and the community over the next few weeks.

Action

- Ensure that your articulation practices and communications align to the agreed upon plan no later than **December 15, 2014**.

Questions

- Contact Mrs. Diane D. Morris, Mrs. Elizabeth Thomas, or Dr. Michael J. Zarchin, directors, Middle School Level-Alike Team, at 301-315-7370 or via e-mail; or Mr. Edward C. Nolan, director, Mathematics Implementation and Development Team, at 301-279-3161 or via e-mail.

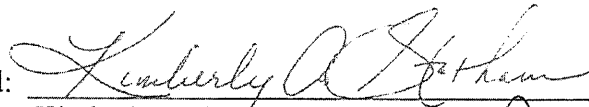
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Attachments

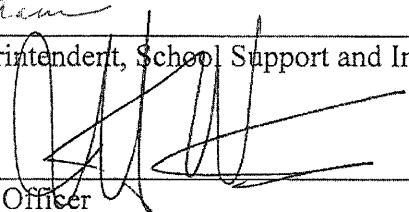
Copy to:

Executive Staff
Mrs. Collins
Mr. Creel
Ms. Dawson
Mrs. Jones
Middle School Administrative Secretaries
Mr. Nolan
Dr. Steinberg
Mr. Koutsos
Mr. Prouty

Approved:



Kimberly A. Statham, Deputy Superintendent, School Support and Improvement



Maria V. Navarro, Chief Academic Officer

Middle School Mathematics Articulation Guidelines Principles

(Draft: November 24, 2014—based on Math content specialist and principal feedback)

Mathematics in MCPS Curriculum 2.0 is designed to provide students a strong foundation in number concepts in elementary school so that they may dive deeper, and access more complex abstract mathematics in middle school. Students who are successful throughout the CCSS from Kindergarten to Grade 6 will be well prepared for Algebra 1 in Grade 8.

To support the Curriculum 2.0 mathematics program, middle schools will use articulation practices and effective instruction that support students reaching Algebra 1 by Grade 8. This does not mean that students should be indiscriminately placed in Algebra 1 in Grade 8 after unsuccessful experiences in C2.0 Grade 6 Mathematics or C2.0 Investigations in Mathematics. It does mean that schools should actively identify students in need of support early in Grade 6, and then throughout the middle school experience, to provide support that will help them reach Algebra 1 in Grade 8.

Principles

The Middle School Mathematics Guidelines establish the expectations and best practices for supporting student success. The Guidelines are based on the following principles:

1. Our goal in articulation is to open doors (metaphorically) and support students successfully completing Algebra 1 or Honors Geometry by the end of Grade 8. Success is defined as a C or higher for the year, passing the second semester exam, and success in subsequent courses.
2. To help reach this goal administrators and teachers must have a growth mindset about the abilities of all of their students and believe that a major goal of their work is to develop a growth mindset in students about their understanding of mathematics.
3. We believe that students demonstrate their understanding in many different ways and that they can experience success at different rates. We believe that multiple measures must be used in articulation decisions and that no one criteria should include a student in a course or exclude a student from a course.
4. We recognize that students, regardless of their course, may need academic and social scaffolds along the way. We expect that differentiation is most effectively achieved within the classroom, not by assigning students to different classes.
5. We will work collaboratively with teachers to develop practices, processes, and supports to reach our goal.
6. We will effectively communicate our articulation plans with parents and describe changes to articulation or course offerings, or course sectioning, before making the changes.

Grade 6 to Grade 7 Guidelines for 2015–2016

	Grade 6 2014–2015	Grade 7 2015–2016
A.	Successful completion of Investigations into Mathematics (IM) (2001 Curriculum)	C2.0 Algebra 1
B.	Successful completion of Math 7 (2001 Curriculum)	C2.0 IM
C.	Successful completion of C2.0 Math 6	C2.0 IM
D.	Students earning D's and E's in any of the above courses	Individual Evaluation for Course Placement

- A. All students successfully completing IM (2001 Curriculum) should be enrolled in C2.0 Algebra 1 for Grade 7.
- B. All students successfully completing Math 7 (2001 Curriculum) should be enrolled in C2.0 IM for Grade 7. Math 7 (2001 Curriculum) is more aligned with C2.0 Math 6—completion of Math 7 (2001) curriculum does not adequately prepare students for C2.0 Algebra 1.
- C. All students enrolled in C2.0 Math 6 who are earning a C or higher, and continue to do so through the fourth marking period should be enrolled in C2.0 IM for Grade 7.
- D. All other students should be individually evaluated for the most beneficial course placement using the Montgomery County Public Schools (MCPS)-developed point system. Schools should select from the categories below that align to their priorities and available data. A majority of the points may provide enough support for a student to be successful in C2.0 IM.
- Student reflection—student advocates for inclusion in the course.
 - Demonstration on key understandings on required formatives and optional formatives from C2.0 Math 6. Assign one point for each formative assessment included for consideration.
 - Standardized measures—Measures of Academic Progress—Mathematics (MAP-M) or Grade 4 Maryland School Assessment (MSA) (Grade 5 not aligned to delivered curriculum).
 - Teacher recommendation—based on student exhibiting mathematical habits of mind (Standards for Mathematical Practice, using multiple approaches, thinking critically).

Schools also may consider parent reflection/advocacy for inclusion (with parent/school conversation regarding readiness indicators and C2.0 learning progressions).

Note: For this year of transition only, a few schools have identified they may have some MCPS Math 7 students skip C2.0 IM and move into C2.0 Algebra 1, as described in the February 10, 2014, memorandum “Mathematics Articulation Follow-up.” School staff members are encouraged to share the downside of articulating from Math 7 to Algebra 1 with parents, from the point of view of developing student understanding in mathematics. However, we recognize that during this transition year MCPS is allowing this option.



Montgomery County Public Schools

Math Curriculum 2.0

[What is Curriculum](#)

[2.0 Math?](#)

[Why is the math](#)

[curriculum](#)

[changing?](#)

[Courses that lead](#)

[to college and](#)

[career readiness](#)

[How can I support](#)

[my child?](#)

[Math Curriculum](#)

[Home](#)

[Key Facts](#)

[Math Resources](#)

[Math Curriculum](#)

[FAQs](#)

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MCPS Curriculum 2.0

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Office for School

Support and

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(OSSI)

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Courses That Lead to College and Career Readiness

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.

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.

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 MGPS enrichment and acceleration opportunities
** Investigations in Math

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

Students successful in grade-level content will be able to reach Algebra 1 by Grade 8 and an Advanced Placement (AP) course in high school.

(first line in graphic)

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 may be ready to work in a compacted course, starting in Grade 4.

(second line in graphic)

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)

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.

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.

Math Curriculum Roll-out Plan

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.

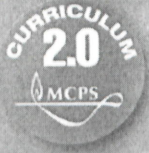
ROLL-OUT PLAN

	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.

Students currently on 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 successful in the previous course.



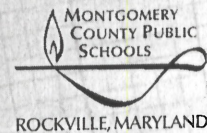
MONTGOMERY COUNTY PUBLIC SCHOOLS

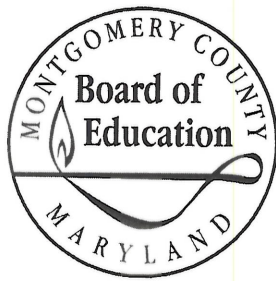
MATHEMATICS

PROGRAM
for Grades K-12



UNDERSTANDING
COMPUTING
APPLYING
REASONING
ENGAGING





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.

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

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



Dear Parents,

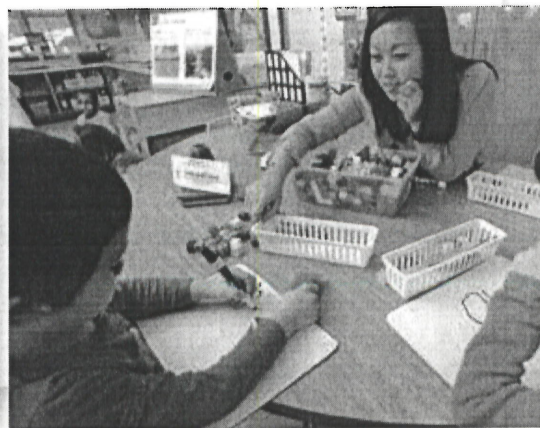
In the 21st century, a deep understanding of mathematics, and the ability to apply that understanding, is more important than it has ever been. In Montgomery County Public Schools (MCPS), and across the country, mathematics instruction is changing to make sure we provide our students with the skills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

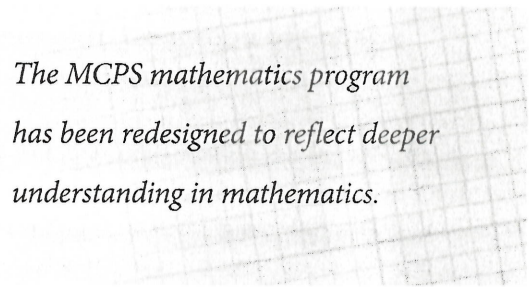
Internationally Driven Common Core State Standards

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.

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:

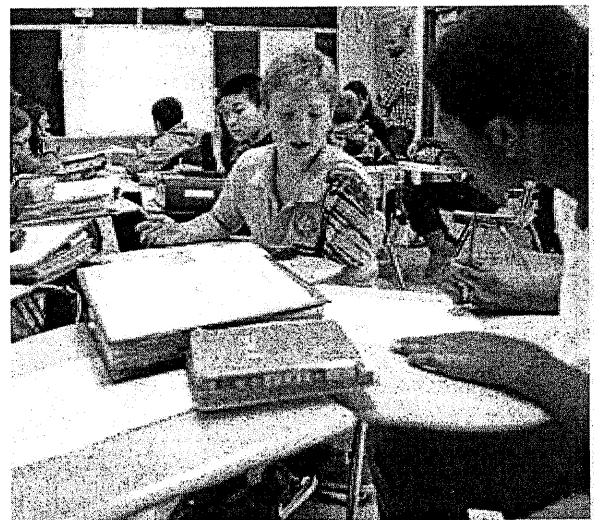
- Develop students who value mathematics and see it as useful to solving problems and making sense of the world.
- Engage all students in experiences with mathematics content and processes that help them reach proficiency, defined as Understanding, Computing, Applying, Reasoning, and Engaging (*UCARE*) 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—

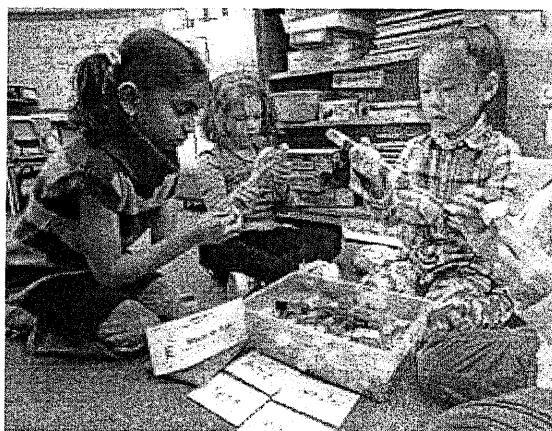
- make sense of problems and persevere in solving them;
- reason abstractly and quantitatively;
- construct viable arguments and critique the reasoning of others;
- represent real-world situations with mathematical modeling;
- use appropriate tools strategically (manipulatives, calculators, etc.);
- 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

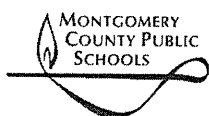
■ How Do I Support My Child in Math?

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/



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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.



2015–2016 Elementary Mathematics Staff Program Guidelines
A Challenging Mathematics Program for Every Student

The following guidelines were drafted to help Montgomery County Public Schools (MCPS) staff members understand how the design of Curriculum 2.0 (C2.0) and the Common Core State Standards (CCSS) is intended to meet the mathematics program needs of a broad range of students. These guidelines also include recommended steps for recognizing and serving the many students who will need enrichment and acceleration in the grade-level curriculum. The final section describes a draft process for identifying and serving the few students who may need grade-level advancement. Feedback and suggestions will be collected during the process to make improvements for the 2016–2017 implementation.

Table of Contents

A Design for All Students.....	2
○ Role of Assessment	2
○ Serving Many Students.....	3
Nurturing the Needs of the Few	3
○ Standards-based Report Card Designation	3
○ Kindergarten–Grade 3 Considerations	4
○ Opportunities for Advancement while in Grade 4 or 5	4
Process for Identifying Students for the Grade 4/5 Compacted Mathematics Curriculum	
2016–2017.....	5
○ Overview	5
○ Candidate Students	5
○ Best-Fit Criteria	5
Timeline for Identifying Students	6
○ Step 1: Guideline Tool/Articulation Flow Chart To Identify Grade 3 Candidates	6
○ Step 2: UCARE Assessment Portfolio Task Administration and Data Reporting	7
○ Step 3: School Committee Initial Student Placement Decisions and Data Reporting	10
○ Step 4: Schools Make Final Recommendations	11
○ Step 5: Parent Notification	12
Addendums.....	
○ Training Announcement.....	A
○ Parent Newsletter Article/Letters	B
○ Articulation Flow Chart.....	C
○ Articulation Guideline Tool.....	D
○ UCARE Portfolio Tasks and Scoring Tools.....	E
○ Data Collection for Grade 4/5 Compacted Mathematics	F

This e-mail message has been approved for distribution by Dr. Kimberly A. Statham, deputy superintendent of teaching, learning, and programs. No hard copy will be provided.


ACTION REQUESTED

Office of Curriculum and Instructional Programs
MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

December 11, 2013

MEMORANDUM

To: Elementary and Middle School Principals

From: Erick J. Lang, Associate Superintendent 

Subject: ACTION: Professional Development for Articulation from Elementary Schools

Key Points

- In light of the new elementary standards-based report card and changes in mathematics course progressions, elementary and secondary school principals requested clarification of the processes and considerations for articulation from elementary schools to secondary schools.
- High school clusters, including middle school and elementary school feeders, should seek consistent processes for articulation. To support the development of consistency within clusters, use the following attachments and web links for the articulation of mathematics courses and interpretation of the elementary Standards-based Teaching and Learning system.
 - *Staff Articulation Planning Document* (Attachment A) shows the possible course progressions for students currently in Grades 4 and 5. This document is only intended for staff member use. The other attachments include course progressions for parent and student use.
 - *Guidelines for Middle School Mathematics Course Placement* (Attachment B) is a document to help staff members in decision making.
 - *Mathematics in the Middle Grades* (Attachment C) is a PowerPoint that schools may adapt to use with parents, staff members, and students. Included in the PowerPoint's notes are talking points to help guide presentations.
 - The Montgomery County Public Schools (MCPS) Elementary Standards-based Teaching and Learning website at <http://www.montgomeryschoolsmd.org/info/grading/report-cards.aspx> includes examples of the report cards and parent guides to help read the report cards.
 - The MCPS Curriculum 2.0 Mathematics website at <http://www.montgomeryschoolsmd.org/curriculum/math/> includes descriptions and graphics that show the year-to-year progression of courses, reasoning for the progressions, videos explaining the changes, examples of mathematics problems that

demonstrate the higher levels of expectation, and PDF copies in multiple languages of the mathematics brochure sent to schools in January.

- A professional development opportunity is available to help middle school staff members use and interpret the elementary reporting system and develop understanding and ask clarifying questions about the mathematics course progressions.
 - What: *Professional Development for Middle School Leadership regarding Articulation from Elementary Schools*, Course number 84941, Section number 95957
 - When: Monday, December 16, 2013, 1:00–3:00 p.m.
 - Where: Festival Center at Muddy Branch, 283 Muddy Branch Road, Gaithersburg, Maryland 20878
 - It is recommended that middle school resource counselors, or the counselor responsible for Grade 5 to Grade 6 articulation, and an assistant principal attend. Each school may send two staff members. Space is limited and registration will be received on a first-come, first-served basis. No substitutes are available. Mathematics resource teachers will receive the math course progressions documents at their next meeting.

Action

- Share this information with your mathematics resource teacher, school resource counselor, assistant principals, and other appropriate staff members.
- Have an assistant principal and resource counselor or school counselor register immediately for the December 16, 2013, Articulation Training on Professional Development Online (PDO).

Questions

- For questions regarding elementary Standards-based Teaching and Learning, please contact Mrs. Siobhan M. Alexander, supervisor, Elementary Integrated Curriculum Team, at 240-453-2548.
- For questions regarding mathematics course progressions, please contact Mr. Edward C. Nolan, director, Math Implementation and Development Team, at 301-279-3161.

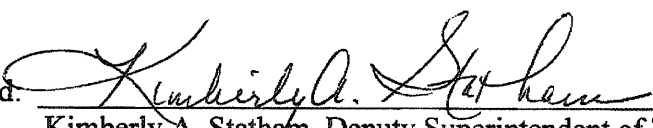
EJL:mec

Attachments

Copy to:

Executive Staff	Mrs. Hazel	School Administrative Secretaries
Mrs. Alexander	Dr. Hermann	Dr. Steinberg
Mrs. Collins	High School Principals	Dr. Trenkamp
Mr. Creel	Dr. Newton	Dr. Mugge
Ms. Dawson	Mr. Nolan	Mr. Prouty
Mrs. Harris		

Approved:


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

- UCARE Assessment Portfolio Sample Data Capture Sheet G
- AEI Math Screening Request H
- Observation Tool for Elementary Mathematics I
- School Based Referral: School Communication Tool..... J
- Parent Notification Letters..... (will be sent with benchmark)
- Fall Process for Students New to MCPS and Reevaluation (will be sent in August 2016)

A Design for All Students

C2.0 was designed so that all students will be engaged in a mathematics program that meets their needs. Grade-level expectations are the rigorous CCSS that have been benchmarked against high-performing nations around the world. There is a clear and intentional structure of learning in the design of the CCSS and C2.0 that identifies learning progressions for students in kindergarten through high school; the learning progressions provide a strong foundation for success in Algebra and in higher-level mathematics courses. There are intricate connections among mathematics content in the learning progressions, and each piece plays an integral part in developing student understanding of the next content expectation. Students who demonstrate mastery of the grade level C2.0 will be on the pathway for successful completion of Algebra 1 in Grade 8, and if they choose, Advanced Placement (AP) Calculus in high school. In other words, the key to college and career readiness in elementary mathematics is proficiency in Grade 5 mathematics while in Grade 5.

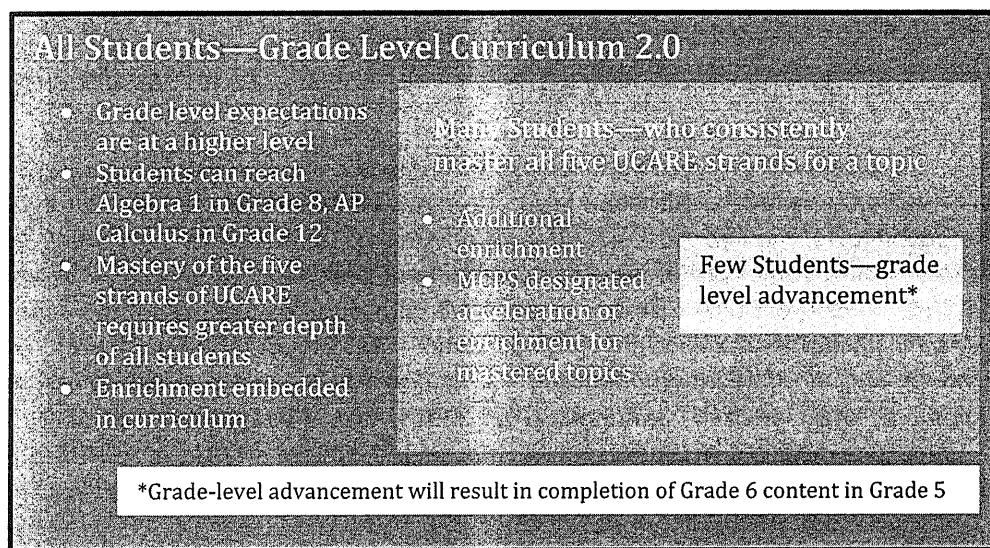
A defining feature of the CCSS is an expectation that students are able to demonstrate their proficiency of a topic beyond computation. Students who demonstrate proficiency must demonstrate Understanding, Computation, Application, Reasoning, and Engagement (UCARE) in each concept before moving on to the next concept. In addition, C2.0 includes enrichment strategies, activities, and resources for all students, embedded in the Sample Learning Tasks (SLT) and resources provided in the Instruction Center. MCPS also developed C2.0 on the principles of Universal Design for Learning (UDL). The many SLT included in the Instruction Center show multiple ways a teacher can bring a student into a topic or concept and model a variety of means for measuring student understanding. Allowing students multiple ways to enter a topic and show their understanding is a foundational principle of UDL.

Role of Assessment

The expectations of CCSS and C2.0, including UCARE and deep understanding, require assessment that measures more than computation. This does not mean that traditional mathematic assessments no longer play a role, but it does mean that they are no longer to be considered a sole determinant of a student's proficiency. To gauge the depth of a student's understanding, assessment in mathematics will need to include multiple and varied measures, similar to the current MCPS expectations for assessment in reading. Teacher observations, interactions with students, formative checks for understanding, formative assessments, Measures of Academic Progress (MAP) assessments, and use of data collection tools help form a more comprehensive and diagnostic picture of a student's understanding of mathematics concepts. This also means that a single preassessment will not be sufficient to determine a student's needs in mathematics instruction. In order to get to this level of assessment, students will need to meet with their teacher in small, flexible groups every day.

Serving Many Students

Many students may be prepared to deepen and enrich their understanding of the grade-level expectation of the CCSS, so MCPS also designed C2.0 to meet these students' needs. If a teacher observes that a student is consistently demonstrating UCARE proficiency of concepts, the child should be provided the additional enrichment or acceleration that is included in the curriculum. MCPS designed learning progressions that map what a child should proceed to if they have demonstrated understanding of a concept. These recommendations are included for each week in the mathematics content pages in the Instruction Center. Planning instruction for students meeting this designation is part of the grade-level team weekly planning. In the classroom, student needs should be met through an appropriate balance of whole group instruction and small, flexible groups. Small groups should be arranged by student need for a particular concept, not a year-long class grouping.



Nurturing the Needs of the Few

MCPS is committed to meeting the needs of each child, including nurturing those who demonstrate exceptional proficiency in mathematics. When a student consistently demonstrates proficiency (UCARE) of all the indicators for a grade level and all the weekly acceleration and enrichment opportunities, the student may be a candidate for further challenge.

Standards-based Report Card Designation

To enhance communication with families, a feature is included on the report card to note when a student “consistently received accelerated and enriched instruction” in mathematics. Use the following procedures to determine when a student should receive this designation.

1. As a part of weekly planning, use formative assessment data including Checks for Understanding to determine which students have demonstrated proficiency with the grade-level standard or are exceptional at the grade-level standard.
2. Teachers should use the student data to plan appropriate enrichment/acceleration opportunities for these students who have demonstrated a need for enrichment/acceleration.
3. The mathematics content planner pages contain a section with guidelines for enriched/accelerated instruction. Teachers should use these guidelines to plan

enriched/accelerated instruction. The enriched/accelerated instruction should occur in small groups.

4. Teachers should keep a record of which students receive planned enriched/accelerated instruction. At the end of the marking period, students who consistently, 70 percent or more of the time, receive instruction based on the enrichment/acceleration guidelines qualify for the enrichment/acceleration designation on the report card. Grades for the enriched/accelerated instruction should be included in the gradebook and be a part of the body of evidence to determine the student's marking period grade.

Kindergarten–Grade 3 Considerations

Students in kindergarten through Grade 3 should be challenged by the opportunities for enrichment and acceleration defined in the grade-level curriculum. To consider how to program for an outlier student that may consistently show readiness for advancement to the next grade level, please contact the Division of Accelerated and Enriched Instruction (AEI) at 301-279-3163 for consultation regarding next steps using the Best-Fit Criteria.

Opportunities for Advancement while in Grade 4 or 5

Fall of Grade 4

Schools with students new to MCPS in the fall of Grade 4 or who were identified in Grade 3 for possible reevaluation in the fall may use the reassessment process to determine whether or not students are ready for the Grade 4/5 Compacted Mathematics course while in Grade 4. This process was sent on July 3, 2015, to all elementary school principals.

During Grades 4 and 5

Grade 4

Students who meet three of the four Best-Fit Criteria during the spring process as described in this document but were not placed in Grade 4/5 Compacted Mathematics may be reevaluated until the first day of marking period 4. The students must demonstrate their skills have developed at a pace which makes them an outlier in their peer group and show readiness for the Grade 5/6 Compacted Mathematics course.

Grade 5

Students who enrolled in MCPS during Grade 4 who did not meet the Best-Fit Criteria by the aforementioned timeline, may be considered for compacted mathematics until the end of September 2015. The students must demonstrate that their skills have developed at a pace which makes them an outlier in their peer group and show readiness for the Grade 5/6 Compacted Mathematics course.

Students new to MCPS in the fall of Grade 5 can be considered after a review of progress in the Mathematics 5 curriculum with consistent access to enrichment and acceleration until the end of the first semester. The students must demonstrate that their skills have developed at a pace which makes them an outlier in their peer group and show readiness for the Grade 5/6 Compacted Mathematics course.

Documents for school-based referrals are included in the addendums and must be supported by the school. Upon receipt of school-based referrals, AEI will be in consultation with schools regarding next steps using the Best-Fit Criteria for Compacted Mathematics.

Process for Identifying Students for the Grade 4/5 Compacted Mathematics Course for 2016–2017

Overview

Students in C2.0 Grade 3 Mathematics in 2015–2016 who meet the criteria identified in this process may enroll in the Grade 4/5 Compacted Mathematics course in Grade 4 for the 2016–2017 school year. These students will likely complete Honors Geometry by Grade 8. Students working at grade-level mathematics will likely complete Algebra 1 by Grade 8 and will be prepared for a college-level course, such as AP Calculus, before the end of high school.

As teachers and administrators plan for articulation to Grade 4, additional data will be collected through the UCARE Assessment Portfolio for candidates for Grade 4/5 Compacted Mathematics. Students who are successful in the grade-level mathematics curriculum, with occasional explorations into enriched instruction, should continue along the learning progression into C2.0 Grade 4 Mathematics.

Candidate Students

A candidate is a student who you think may have the potential to perform well in the compacted curriculum based on the data collected through the process. You will collect additional data on all potential candidates to help make a determination of Best-Fit for each student. To be considered a candidate, a student should be proficient in all grade-level curriculum indicators and consistently proficient in all of the weekly enrichment and acceleration opportunities. The process for determining candidate students is described in detail on the Timeline and Steps 1–5 on the following pages.

Best-Fit Criteria

To determine which of the candidate students will be best served in the Compacted Mathematics curriculum beginning in Grade 4, a student should—

- independently and consistently demonstrate proficiency as defined by the five strands of UCARE, earlier than the end of instruction for concepts and/or topics;
- meet the criteria for enriched and accelerated mathematics within the UCARE Assessment Portfolio (a system benchmark will be set in March after schools send in initial recommendations);
- have needs that would best be met through a much quicker pace of instruction, while maintaining the depth of understanding; and
- be among the highest performing students in that grade level or do not have a group of similarly situated peers in his or her grade-level class.

The process for determining Best-Fit students is described in the Timeline and Steps 1–5 on the next page.

Timeline for Identifying Students for the Grade 4/5 Compacted Mathematics for 2016–2017

Step	School Process	Window
1	Send Parent Newsletter Article/Letter describing process to all Grade 3 families.	October 2015
	Use Articulation Guideline Tool and Articulation Flow Chart to identify Grade 3 candidate students.	
	Record the Articulation Guideline Tool score for all Grade 3 students in the <i>myMCPS</i> portal.	
2	Complete UCARE Assessment Portfolio Task Administration with candidate students and record data in <i>myMCPS</i> .	November 9, 2015– February 19, 2016
3	School committee makes initial school recommendation on each candidate.	Due By February 19, 2016
	Finalize initial school recommendations Portfolio Report Data in <i>myMCPS</i> .	
	Complete Online Program Model Preference Survey.	
4	Receive system benchmark for UCARE Assessment Portfolio Tasks.	March 30, 2016– April 15, 2016
	School committee makes final school decisions for placement considering Best-Fit Criteria, including system benchmark.	
	Finalize final school recommendations Portfolio Report Data in <i>myMCPS</i> .	
	Finalize program model with Office of Curriculum and Instructional Programs (OCIP) based on final compacted mathematics numbers.	
5	School sends Parent Notification Letters.	May 2016
	School files letters in student cumulative folders.	
	Finalize parent program acceptances in the Portfolio Report Data in <i>myMCPS</i> .	

Step 1: Use Articulation Guideline Tool and Articulation Flow Chart to Identify Grade 3 Candidate Students October 2015

- A parent newsletter article/letter has been created for schools to amend to inform all families about compacted mathematics and the process for identifying students throughout Grade 3. Share this information with your community. Translations have been provided in Amharic, Chinese, French, Korean, Spanish, and Vietnamese.
- Use the *Articulation Guideline Tool* on all Grade 3 students to develop a pool of Grade 3 candidates for Grade 4/5 Compacted Mathematics. This tool uses data that reflects student performance between Grade 2 and Grade 3 and uses multiple data points. The guidelines are designed to limit any single criterion from eliminating a student as a potential candidate for compacted mathematics. Student performance on the *Articulation Guideline Tool* should be noted in the *myMCPS* portal for all students.
- School teams should then review the *Articulation Guideline Tool* data for each student and assess their personal performance as it relates to the provided recommendations in the *Articulation Flow Chart*.

- For students who are new to MCPS, schools should consider the data provided by the sending school/school system for comparison to our program and current mathematics performance. If there is a question about eligibility as a potential candidate, schools are encouraged to consider the student a potential candidate for the Grade 4/5 Compacted Mathematics course.

Resources Needed for Step 1

- Student InView Assessment Scores from Grade 2
- Student Report Cards (Grade 2, Marking Period 4; Grade 3, Marking Period 1)
- Student Access to Enrichment/Acceleration (Grade 2, Marking Period 4; Grade 3, Marking Period 1)
- Student TASS Performance (Grade 2, Marking Period 3 and 4)
- Student UCARE Performance (classroom performance)
- Parent Newsletter Article/Letter (Addendum B)
- Articulation Flow Chart (Addendum C)
- Articulation Guideline Tool (Addendum D)

Practices Shared From Schools to Complete Step 1

- When looking for ways to collect data, consider using support from the instructional data analyst (IDA) to gather data to complete sections 1, 2, 4, and 5 of the *Articulation Guideline Tool*; teachers complete section 3 and return to the IDA for calculation.
- The school committee gathers data and completes sections 1, 2, 4, and 5 of the *Articulation Guideline Tool*; teachers complete section 3 and return to designated team member for calculation.
- Consider using support from the IDA to review student data against the *Articulation Flow Chart* to create a list of potential candidates for administration.
- The school committee reviews student data against the *Articulation Flow Chart* to create a list of potential candidates.

Step 2: UCARE Assessment Portfolio Task Administration and Data Reporting
November 9, 2015–February 19, 2016

To help identify candidate students who meet the second of the four Best-Fit Criteria, use the UCARE Assessment Portfolio (UCARE AP) with all candidate students. The 2015–2016 UCARE AP is composed of five complex tasks, a holistic rubric, and a scoring tool for each task. The tasks were either selected from the SLT in the curriculum or from the NRICH instructional resources referenced in the curriculum. The tasks were chosen for the instructional opportunities they provide for students to demonstrate UCARE (Understanding, Computing, Applying, Reasoning and Engaging).

Suggested Timeline for UCARE AP Task Administration

UCARE Tasks	UCARE Strand	Implementation Window
Task One Shape Times Shape	Computing Applying Engaging	November 9, 2015– November 13, 2015
Task Two Plus and Minus Signs	Computing Reasoning Engaging	December 1, 2015– December 4, 2015
Task Three X is 5 Squares	Applying Reasoning Engaging	December 15, 2015– December 23, 2015
Task Four Fraction Train	Understanding Reasoning Engaging	January 25, 2016– January 29, 2016
Task Five Determining the Whole on a Number Line	Understanding Reasoning Engaging	February 1, 2016– February 5, 2016

The evidence gathered should reflect whether students demonstrate proficiency of the content, with a balance of conceptual understanding and procedural fluency.

General Guidelines for UCARE AP Task Administration

- The tasks are intended to be completed as part of regular instruction, not an add-on assessment. The tasks are part of the resources for regular instruction found on the *myMCPS* Instruction Center. Student results may be used for two purposes.
 - Results may be used as part of the body of evidence to form a student grade on an aligned measurement topic during the marking period. The tasks align with measurement topics in the given administration window.
 - Results should be collected for the process of identifying candidate students for compacted mathematics.
- The process is intended to be completed with all students who are deemed a “candidate” from the *Articulation Guideline Tool*. **All tasks must be completed once the process has started with each “candidate” student.**
- Security: Since these items are to be used in the course of instruction, they are not secure documents. However, to establish a baseline benchmark that can be used year-to-year, the items cannot be sent home. Student results and task items themselves can be shared with parents in conferences but should not be released.

Prior to Assessment

- Make a decision on who will be administering and scoring all tasks (e.g., all within the classroom, different person by task, the same outside the classroom person for all tasks, etc.). Since these tasks are administered and scored over several months, it is essential to establish a consistent method for administration.
- Plan a schedule for staff study, administration, and scoring of the tasks, using the Timeline for UCARE AP Tasks as a guide.
- Independently review the resources and the hyperlinks provided to explore the SLT and NRICH activities as well as the associated questions, resources, and sample student answers.

- Convene all people administering and scoring tasks to review tasks and rubrics before administration. Complete group study of the tasks and rubrics to reach agreements on what evidence a student must demonstrate to be considered proficient.
- Secure a comfortable student environment for testing students. Check to see if student has a documented accommodation.
- Ensure both the examiner and students are familiar with one another.

During Task Administration

- Begin the task administration by allowing students to ask clarifying questions for the task being administered. Administration can occur in the student's normal instructional setting.
- Use the questions from the SLT/NRICH activity to provide maximum opportunity for students to demonstrate their depth of understanding on the task.

Reminder: Use caution to avoid guiding or prompting students toward utilizing certain strategies. Record evidence of student behaviors used on the scoring tool.

- Task administration time periods should last no longer than 30 minutes in a single session. Students with documented accommodations can be provided extended time as defined in their personal plans.

After Task Administration

- Score the students using the sample rubrics for proficiency across the identified strands.
- Record the student scores information in *myMCPS* for each assigned task.
- File student performance samples for future reference. The line of questioning, student response, and teacher observation/notes will be valuable evidence in this process and in speaking with parents about their child's performance.
- Final task administration information should be updated in *myMCPS*. Schools are requested to maintain school-based files with student work samples.

Resources Needed for Step 2

- UCARE AP Tasks and Scoring Rubrics (Addendum E)
- Resources for Tasks (linked out of UCARE AP)
- *myMCPS* Data Collection for Compacted Mathematics (*myMCPS* data logging directions; required system recording) (Addendum F)
- UCARE Assessment Portfolio Data Capture Sheet (optional school-based recording) (Addendum G)

Practices Shared From Schools to Complete Step 2

- Planning for administration of the tasks as part of instruction during team collaborative planning for mathematics was helpful.
- Scoring as a team after collecting evidence from administration of the assessment provided more consistency and eased the workload of the scoring process.

Step 3: School Committee Initial Student Placement Decisions and Data Reporting Due by February 19, 2016

- Convene a diverse group of teachers and school leaders to review all scoring, agree on candidate student scores, and select students. Consider including on the team: principal or assistant principal, staff development teacher, math content coach or representative, gifted and talented liaison, Grade 3 team leader, Grade 3 teachers, English for Speakers of Other Languages (ESOL) and special education teachers.

Suggestion: If available, it is recommended to have a teacher of Grade 4/5 Compacted Mathematics provide input on how the students selected from the previous year have performed in the course.

- As a group, review student scores on tasks. Decide whether any tasks or individual students need to be rescored.
- Based on team discussion and review of Best-Fit Criteria (on page 5), divide students into three groups. These groupings will serve as your initial recommendations on each student.

Candidate for Compacted Mathematics (C)—Compacted Mathematics students clearly meet all the Best-Fit Criteria.

Potential Candidate for Compacted Mathematics (P)—Possibly Compacted Mathematics students meet most of the Best-Fit Criteria.

Non-Candidate for Compacted Mathematics (N)—Mathematics 4 students meet only one of the Best-Fit Criteria.

Important Note: These groups should not necessarily be equally sized, rather they should be determined by how well the students meet the Best-Fit Criteria.

- Complete the online program implementation survey based on school-based needs using initial recommendations.
- Input all initial recommendations data and decisions into the Portfolio Report Data in the *myMCPS* entry portal by February 19, 2016.

Resources Needed for Step 3

- Student results on tasks as recorded on individual scoring tools
- *myMCPS* Data Collection for Compacted Mathematics (*myMCPS* data logging directions; required system recording) (Addendum F)
- UCARE Assessment Portfolio Data Capture Sheet (optional school-based recording) (Addendum G)
- Online program implementation Google Survey (sent directly to schools)

Practices Shared From Schools to Complete Step 3

- It was helpful to have a detailed conversation about whether scorers felt their scoring was strong, accurate, or conversely, more ambiguous, before making grouping decisions for students.
- It was helpful to have a new person at the decision-making table who was not involved in the scoring. This person was helpful with probing questions and seeing students and data with a fresh set of eyes.

Step 4: Schools Make Final Recommendations
March 30, 2016–April 15, 2016

- The Office of Curriculum and Instructional Programs (OCIP) will conduct an analysis of all candidate student scores and initial recommendations to establish a system benchmark for student performance on the UCARE AP. Schools will be notified of the results of the analysis and provided the benchmark on March 30, 2016.
- School committees should review the documentation provided by the system against the students in their school to make final recommendations. Considering the data for your school, the interpretation of your school data, and how well each student fits the four Best-Fit Criteria, make a final recommendation for each student.
- Students who meet all four Best-Fit Criteria should be enrolled in Grade 4/5 Compacted Mathematics. Students who meet three or fewer criteria should be enrolled in Grade 4 Mathematics. For students you are still not sure about, you may consider for reevaluation in the first few weeks of Grade 4. Students identified as being ready for compacted mathematics must—
 1. independently and consistently demonstrate proficiency as defined by the five strands of the UCARE, *earlier* than the end of instruction for concepts and/or topics;
 2. meet or exceed the benchmark for enriched and accelerated mathematics within the UCARE Assessment Portfolio;*
 3. have needs that would be best met through a much quicker pace of instruction while maintaining the depth of understanding; *and*
 4. be among the highest performing students in that grade level or do not have a group of similarly situated peers in his or her grade-level class.

*The system data analysis and benchmark established for the second Best-Fit Criteria will be sent on March 30, 2016.

- Enter final recommendations in the *myMCPS* score entry section by April 15, 2016.
 1. **Y = Yes**, this student met all four Best-Fit Criteria and will be in the Grade 4/5 Compacted Mathematics Curriculum for the 2016–2017 school year, or
 2. **N = No**, this student met three or fewer Best-Fit Criteria and will be in C2.0 Grade 4 Mathematics for 2016–2017, or
 3. **R = Rescreen**, this student shows some of the Best-Fit Criteria, consider reevaluating this student at the beginning of Grade 4.
- School committees are encouraged to reflect on past selection processes when identifying students and complete the process survey that will be distributed at this time (i.e., Did your school over-identify and/or under-identify as it related to the benchmark? Are the students you recommended being successful in the program?)

Resources Needed for Step 4

- System Benchmark Documentation (sent directly, March 2016)
- *myMCPS* Data Collection for Compacted Mathematics (*myMCPS* data logging directions; required system recording) (Addendum F)
- UCARE Assessment Portfolio Data Capture Sheet (optional school-based recording) (Addendum G)

Practices Shared From Schools to Complete Step 4

- Continue with the school committee team established for initial recommendation.

Step 5: Parent Notification

May 2016

- The Office of School Support and Improvement, OCIP, and the Office of the Chief Operating Officer will collaborate with school leaders to help determine the model of course implementation for each school. Mrs. Meredith A. Casper, director, AEI, will be your primary contact for this discussion.
- Grade 4/5 Compacted Mathematics
 - Consult parents of students who are determined ready for Grade 4/5 Compacted Mathematics to see if they support the student moving into the quicker paced curriculum. Document the parent discussion. Several letters will be available for your use to inform parents.
 - Letter to invite a student to enroll in Grade 4/5 Compacted Mathematics.
 - Letter to indicate that the child did not meet criteria for enrollment.
 - Letter to indicate the potential need for re-evaluation in the fall.
 - Record parent final decisions (program acceptances) in the *myMCPS* portal.
- Grade 5/6 Compacted Mathematics
 - Confirm continued participation in the Grade 5/6 Compacted Mathematics course (middle school option only).

Resources Needed for Step 5

- Parent Letters Templates (to be sent with benchmark in March)
- *myMCPS* Data Collection for Compacted Mathematics (*myMCPS* data logging directions; required system recording) (Addendum F)
- UCARE Assessment Portfolio Data Capture Sheet (optional school-based recording) (Addendum G)

Practices Shared From Schools to Complete Step 5

- Sharing detailed information with parents helped clarify the readiness of students for the compacted mathematics courses and reduced the numbers of questions received in the fall.