

SECONDARY MATH UPDATE

PIEDMONT UNIFIED SCHOOL DISTRICT

January 26, 2016

BACKGROUND COMMON CORE MATH

August 2, 2010 State Board of Education adopted Common Core State Standards in Mathematics

2013-14 PUSD adoption of K-12 Math Content and Standards for Mathematical Practice

- Middle school began transitioning to Common Core by using instructional materials from SVMII & other resources
- Teachers from several grade levels piloted Springboard second semester
- 8th grade piloted some Triumph Learning units

COMMON CORE MATH

2014-15 First Year Implementation of CC Math K-8

- First year **students experienced Common Core Math** taught full year K-8
- 6-8 students experienced **full year of Springboard**
- **Elementary math adoption** of Bridges and Number Corner
- Adoption of **Secondary Math Pathways**
 - Integrated Math 1, 2, 3 (combined algebra, geometry, statistics)
 - Acceleration beginning in 7th grade
 - Multiple compression pts: CC7/8A, IM1/2A, 2A Summer Bridge-->IM2B/3, Math Analysis Honors

COMMON CORE MATH

2015-16- New secondary (6-12) math courses

- **CC7/8A** (3 sections of students @ PMS)
- **Integrated Math 1** (4 sections total @ MHS & PHS)
- **Integrated Math 1/2A** (3 sections--(1) 8th & (2) 9th)
- **CC6 & CC7/8 Math Lab** (additional period of math support for students)
- **CC6, CC7, & CC8 Math Success, Homebase, IM1 Co-Taught**

CONSIDERATIONS WHEN SELECTING NEW MATH CURRICULUM

1. Level of **alignment to Common Core** Math Content Standards at each grade level/for each course
2. Degree to which the **Standards for Mathematical Practice** are an integral part of the curriculum--not an add-on
3. Rich math tasks/authentic **problem-solving**
4. Extent to which teachers are able to **differentiate instruction** for **GATE students, advanced math learners, English learners, Special Education students**
5. Consideration for the **soft skills students need to succeed in college and careers**
6. How are students responding to the curriculum? Are there data to support **positive student results**?

STANDARDS FOR MATHEMATICAL PRACTICE (SMPS)

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

10 SKILLS EMPLOYERS MOST WANT IN 2015 GRADUATES

1. Ability to work in a team structure
2. Ability to make decisions and solve problems
3. Ability to communicate verbally with people
4. Ability to plan, organize, and prioritize work
5. Ability to obtain and process information
6. Ability to analyze quantitative data
7. Technical knowledge related to the job
8. Proficiency with computer software programs
9. Ability to create and/or edit written reports
10. Ability to sell and influence others

MATH INSTRUCTIONAL MATERIALS ADOPTION PROCESS

1. Form a **Math Adoption Committee** for middle school and high school (two levels--different materials available)
2. Study the **Instructional Materials Evaluation Tool** and calibrate our understanding as a team
3. **Review available Common Core Math curriculum** for middle school and high school (integrated math textbooks)
4. **Eliminate instructional materials** not fully aligned to Common Core Math Standards or didn't emphasize SMPs
5. **Select one or more textbooks to pilot** in August 2015

COLLEGE PREPARATORY MATHEMATICS (CPM)

- Curriculum **selected by both middle and high school** as #1 choice to pilot
- California, non-profit organization staffed by middle and high school teachers; first written in 1989--**already aligned to the Common Core teaching philosophy**
 - **inquiry based rather than direct instruction**
 - **builds conceptual understanding**
 - **heavy emphasis on problem solving**
 - **procedural fluency**
- Fully aligned to the **CC Math Content Standards**
- **Standards for Mathematical Practice** are part of the design of the curriculum

3 BASIC PRINCIPLES OF CPM

- Students should engage in **problem-based lessons** structured around a core idea.
- Guided by a knowledgeable teacher, students should **interact in groups** to foster **mathematical discourse**.
- **Practice with concepts and procedures** should be spaced over time; that is, **mastery comes over time**.

IMPLEMENTATION SUPPORT: A COMPREHENSIVE APPROACH

GOAL: Positive math learning experience for ALL students

Provide support for teacher implementation of CC math through a variety of PD opportunities

- District staff development days
- Department planning time
- Total of 7 full days of PD with CPM staff developer
- Two part-time math coaches (6-8 & 9-12)
- Attendance at math conferences

IMPLEMENTATION SUPPORT: A COMPREHENSIVE APPROACH

GOAL: Positive math learning experience for ALL students

Support from Director of Curriculum and Instruction

- Meet with teachers and math department chairs regularly
- Support math coaches--weekly meetings
- Visit math classrooms
- Work with parent support groups (ALPS, PRAISE)
- Attend Parent Club meetings

MID-YEAR CHECKPOINT: MULTIPLE MEASURES

- Teacher feedback
- Some student assessment data
- Student survey results
- Parent survey (preliminary results)

MIDDLE SCHOOL TEACHER FEEDBACK

Successes and Challenges teaching Common Core and CPM

- Students work well in groups
- Many students enjoy and benefit from group work
- CPM gives us such rich problems that we often don't have time to finish them in class as thoroughly as we would like.

MIDDLE SCHOOL TEACHER FEEDBACK

Need for differentiation to meet the needs of all students

- Choice activities
- Mathletes
- Problem of the Week
- Problem of the Month
- Formative Assessment Lessons

SUPPORT FOR SPECIAL EDUCATION STUDENTS

Successes and Challenges teaching Common Core and CPM

- The ramp and spiral for sped students allows them to get additional practice and have multiple access points to problems that are deeper and more complex.
- Some CPM problems are hard and not meaningful for students who have holes in understanding
- Recommend we develop a "decompressed" model for success classes--four years to complete CC6-CC8--to give them a better chance of success in high school
- CPM is conceptually difficult for SpEd students who don't have basic understanding of what a fraction is, what division is, etc.
- HomeBase in Middle School is not using CPM, I try to incorporate the Common Core SMPs as much as possible and we do a lot of problem solving.

ASSESSMENT DATA

Comparison data-- two similar MAC performance tasks from this year and last

2014-2015 Integer 6th grade performance task: Average 70.4%

2015-2016 Integer 6th grade performance task: Average 83.9%

More student accountability in problem solving, utilizing logic, and a better use of breaking apart a multi-step problem into simpler steps.

Two years of fall exam scores for Algebra 1--both in the high 70's (%), which is about the same as this year's IM1 exam -- 79% average

HIGH SCHOOL TEACHER FEEDBACK

Successes and Challenges teaching Common Core and CPM

- Majority of students are highly engaged in working out problems during class.
- Level of mathematical discussion is higher than ever seen.
- Etools linked to the ebook are helpful.
- Good PD--exposes teachers to new content and helpful instructional strategies
- Some students copy steps from the homework help without understanding
- Students who want to be told what to do in math are feeling frustrated.

COMPRESSION TEACHER FEEDBACK

Successes and Challenges teaching Common Core, CPM, and Compression

- Compression is more doable due to its spiraling of content
- Topics are reinforced by review problems that are woven into the daily homework
- CPM is a good fit for Compression courses

STUDENT SURVEY DATA

I enjoy working in a group.

	CC6	CC7	CC8	CC7/8A	IM 1	IM1/2A
Agree	75%	78%	64%	76%	77%	75%
Neutral	15%	17%	22%	21%	17%	19%
Disagree	10%	5%	14%	3%	6%	6%

STUDENT SURVEY DATA

I appreciate having the textbook online along with other online resources (like Homework Help).

	CC6	CC7	CC8	CC7/8A	IM 1	IM1/2A
Agree	82%	90%	89%	87%	82%	82%
Neutral	10%	5%	9%	10%	15%	15%
Disagree	8%	5%	2%	3%	3%	3%

STUDENT SURVEY DATA

I like learning math by exploring problems with my classmates (instead of my teacher telling me how to do it).

	CC6	CC7	CC8	CC7/8A	IM 1	IM1/2A
Agree	62%	51%	40%	85%	40%	28%
Neutral	25%	32%	38%	10%	38%	39%
Disagree	13%	17%	22%	5%	22%	33%

STUDENT SURVEY DATA

Being able to review previous material on my homework is helpful for my learning.

	CC6	CC7	CC8	CC7/8A	IM 1	IM1/2A
Agree	69%	73%	61%	77%	70%	75%
Neutral	18%	14%	27%	18%	28%	9%
Disagree	13%	13%	12%	5%	2%	16%

STUDENT SURVEY DATA

CPM lessons and homework provide me with the right amount of math challenge--not too easy and not too hard.

	CC6	CC7	CC8	CC7/8A	IM 1	IM1/2A
Agree	61%	78%	45%	N/A	57%	63%
Neutral	20%	8%	33%	N/A	26%	28%
Disagree	19%	14%	22%	N/A	17%	9%

STUDENT SURVEY DATA

My math class in general provides me with the right amount of math challenge--not too easy and not too hard.

	CC6	CC7	CC8	CC7/8A	IM 1	IM1/2A
Agree	66%	80%	48%	N/A	51%	60%
Neutral	20%	10%	26%	N/A	26%	24%
Disagree	14%	10%	26%	N/A	23%	16%

STUDENT SURVEY DATA

Comparing Springboard (last year) and CPM (this year)...

	CC7	CC7/8 A	CC8	IM1	IM1/2 A
I like Springboard more.	8%	5%	25%	11%	27%
I like CPM more.	74%	74%	44%	41%	39%
I like both equally.	9%	13%	14%	24%	10%
I don't really like either one.	9%	8%	17%	24%	24%

STUDENT SURVEY DATA

What I like **MOST** about learning math through CPM is...

- working in groups/it helps to collaborate with others
- having an online textbook/easy access on the internet
- working out math problems/challenging
- learning multiple ways to solve problems
- logical problems that are explained well
- straight forward/easy to learn new concepts
- Homework Help/useful materials and tools
- reviews what you have learned and teaches new ways
- the problems are not always difficult but still require me to think

STUDENT SURVEY DATA

What I like **LEAST** about learning math through CPM is...

- explaining my thinking in depth/too much writing
- learning multiple ways to solve problems
- not being challenged/easy and repetitive
- need more explanation of the concepts
- too challenging at times
- not being taught by the teacher/learning in the group
- too much “discovering” when we could just be told
- not enough “alone” time
- not fun or interesting
- some problems are confusing/not explained well

TEACHER RESPONSES TO STUDENT SURVEY DATA

After reading my students' survey data, I ...

- emphasize the challenge problems more for those who want or need it
- have allowed students to choose own groups for 3 weeks
- incorporate a select amount of direct instruction to complement learning by discovery -- sometimes to certain students, or to particular teams, or sometimes to the whole class

PARENT SURVEY PROCESS

1. Multiple drafts shared with math teachers, administrators, and community members
2. Groups provided feedback (PMS Site Council, PMS Parent Club, MHS Parent Club, PMS Parent Club)
3. Survey window: January 10-22
4. Total responses: 188

PARENT SURVEY RESULTS

Math class is an enjoyable experience for my child this year.

Strongly agree/agree 42%

Neutral 23%

Strongly disagree/disagree 35%

PARENT SURVEY RESULTS

Learning math concepts comes easily for my child.

Strongly agree/agree 61%

Neutral 27%

Strongly disagree/disagree 12%

PARENT SURVEY RESULTS

To master math concepts, how much **additional support** does your child require outside of math class?

Very minimal	61%
Average amount	18%
Lots of support	21%

PARENT SURVEY RESULTS

How often has your **child** utilized the **CPM Homework Help** feature?

Never 53%

Some 20%

Regularly 27%

PARENT SURVEY RESULTS

How often have you (parent) utilized the CPM Homework Help feature?

Never 90%

Some 5%

Regularly 5%

PARENT SURVEY RESULTS

Describe your understanding of CPM and comfort level with CPM's philosophy today compared with earlier in the year?

Very confusing and not at all comfortable 29%

Some confusion and/or unclarity 33%

Not at all confusing and very understandable 38%

PARENT SURVEY RESULTS

Emerging themes from parents' comments

- Some students are benefiting from group work, CPM Homework Help, Common Core instructional strategies
- Some students are not being challenged
- Some students are not learning enough new content
- Some students feel frustrated working in groups

PARENT SURVEY RESULTS

Emerging themes from parents' comments

- Some parents are unhappy, concerned, or frustrated with
 - number of changes related to Common Core
 - response to students' challenges in the compression courses
 - lack of differentiation
 - not enough challenge for advanced students
 - some instructional approaches being used in their child's classroom
 - readiness for SAT/ACT exams
 - structure of CPM eBook

DISTRICT'S NEXT STEPS

SHORT TERM

- Meet with teachers to discuss survey results and needed changes to instruction
- Address concerns about differentiation
 - plan second semester enrichment for advanced students
 - follow up on the differentiation PD provided by CPM
 - math coaches provide support in differentiated instruction
- Make adjustments to pacing of CPM lessons as needed
- Provide parents with information by developing a FAQ memo on topics such as CPM resources, group work, and the difference between CPM and Common Core

NEXT STEPS

LONG TERM

- Prepare for teaching the new summer and fall courses (IM2, IM2A, IM2B/3)
- Administer the MAC assessment to collect additional measure of students' progress on performance tasks
- Discuss the current math coaching model
 - what's working?
 - where do teachers need more support?
- Evaluate CPM further and make a decision whether to request Board adoption of CPM as primary math text
- Address the School Board in April/May