Proposed Accelerated Mathematics Pathways in MPCSD
Agenda

- Process for Recommendations
- MPCSD Assessment Data
- Traditional and Integrated Pathways / SUHSD Decisions
- History of Acceleration/Considerations
- Proposed Acceleration Options
- Long Term Solutions/Challenges
- Next Steps
- Discussed Math interests with the District Leadership Team
- Reviewed SUHSD possible CCSS Mathematics aligned high school course pathways
- Investigated CCSS high school pathways affect on middle school course offerings and acceleration
- Reviewed current MPCSD pathways for acceleration and assessment data
- Reviewed Menlo Atherton High School’s current Mathematics offerings
- Reviewed similar neighboring districts’ proposed CCSS mathematics course pathways
70.7% of 7th grade took the General Math Assessment (n=203)
24.7% of 7th grade took the Algebra assessment (n=71)
33.2% of 8th grade took a General Math Assessment (n=77)
49.1% of 8th grade took 8th grade Algebra (n=114)
17.7% of 8th grade took Geometry (n=41)
66.8% of 8th grade took either Algebra or Geometry (n=155)
## MPCSD MARS Assessment Data 2013

<table>
<thead>
<tr>
<th>Grade</th>
<th>% At or Above Proficient</th>
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<tbody>
<tr>
<td>Grade 2</td>
<td>85%</td>
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<tr>
<td>Grade 4</td>
<td>84%</td>
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<tr>
<td>Grade 6</td>
<td>49%</td>
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## 2012 to 2013 Advanced Levels on MARS Assessment

### Table

<table>
<thead>
<tr>
<th>Grade</th>
<th>2012 MARS Advanced</th>
<th>2013 MARS Advanced</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 2</td>
<td>51%</td>
<td>62%</td>
<td>+ 11%</td>
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<tr>
<td>Grade 4</td>
<td>45%</td>
<td>57%</td>
<td>+ 12%</td>
</tr>
<tr>
<td>Grade 6</td>
<td>40%</td>
<td>14%</td>
<td>- 26%</td>
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## 2012 CST/MARS Comparison

<table>
<thead>
<tr>
<th></th>
<th>CST Advanced</th>
<th>MARS Advanced</th>
<th>Advanced on Both</th>
<th>Difference CST &amp; Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 2</td>
<td>73%</td>
<td>51%</td>
<td>47%</td>
<td>26%</td>
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<tr>
<td>Grade 4</td>
<td>75%</td>
<td>45%</td>
<td>43%</td>
<td>32%</td>
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<tr>
<td>Grade 6</td>
<td>59%</td>
<td>40%</td>
<td>21%</td>
<td>38%</td>
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## 2013 CST/MARS Comparison

<table>
<thead>
<tr>
<th></th>
<th>CST Advanced</th>
<th>MARS Advanced</th>
<th>Advanced on Both</th>
<th>Difference CST &amp; Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 2</td>
<td>66%</td>
<td>62%</td>
<td>53.8%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Grade 4</td>
<td>74%</td>
<td>57%</td>
<td>55%</td>
<td>19%</td>
</tr>
<tr>
<td>Grade 6</td>
<td>65%</td>
<td>14%</td>
<td>13.7%</td>
<td>51.3%</td>
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</table>
Menlo-Atherton Current Pathways

Algebra Readiness (elective credit)

Support → Algebra I

Integrated Math → Geometry

A.S. Algebra II

Summer Program → Pre-Calculus

AP Calculus BC → AP Calculus AB

CAHSEE (High School Exit Exam)

Business Math

Algebra II

Statistics or Alg II/Trig

→ AP Statistics
Two Pathways

- **Traditional Pathway**
  2 Algebra courses, 1 Geometry course, with Probability and Statistics interwoven

- **Integrated Pathway**
  3 courses that attend to Algebra, Geometry, and Probability and Statistics each year
Single Subject Course

**Algebra 1**
Modeling with Functions
Linear Functions
Linear Equations and Inequalities in One Variable
Linear Equations and Inequalities in Two Variables
Quadratic Functions
Quadratic Equations
Statistics

**Geometry**
Constructions
Rigid Motions
Geometric Relationships
Similarity
Coordinate Geometry
Circles and Conics
Measurement and Dimensions
Trigonometric Ratios
Geometric Modeling

**Algebra 2**
Exponential Functions
Trigonometric Functions
Functions
Rational and Polynomial Expressions
Probability
Statistics
Integrated Course

Math 1
- Modeling with Functions
- Linear Functions
- Linear Equations and Inequalities in One Variable
- Linear Equations and Inequalities in Two Variables
- Constructions
- Rigid Motions
- Geometric Relationships
- Statistics

Math 2
- Coordinate Geometry
- Quadratic Functions
- Quadratic Equations
- Similarity
- Circles and Conics
- Geometric Modeling
- Probability

Math 3
- Measurement and Dimensions
- Exponential Functions
- Trigonometric Ratios
- Trigonometric Functions
- Functions
- Rational and Polynomial Expressions
- Statistics
Pathway Decision Matrix

Traditional Course Name

<table>
<thead>
<tr>
<th>Traditional Pathway</th>
<th>Integrated Pathway</th>
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<tbody>
<tr>
<td>A= Alg 1, Geo, Alg 2 +same pathway</td>
<td></td>
</tr>
<tr>
<td>B= N/A</td>
<td></td>
</tr>
<tr>
<td>C= Alg 1/ Geo/Alg 2 with Integrated pathway</td>
<td></td>
</tr>
<tr>
<td>D= Math 1, Math 2, Math 3</td>
<td></td>
</tr>
</tbody>
</table>

Integrated Name
· SUHSD set to decide on Traditional or Integrated Pathway and naming of courses January 2014
· Our high school level courses will mirror the high school level courses
· We will be follow CCSS up to high school courses
· At the time our students take a high school course, we will follow SUHSD.
History of Acceleration at 5th Grade

- Mathematics instruction grouping in MPCSD shifted in 2009 from ability grouping to heterogeneous grouping in all grades K-4 with an accelerated option for advanced 5th grade students
- Acceleration options include skipping courses
Before Moving to Accelerated Pathway

Moving forward with CCSS, acceleration by compaction (3 years into 2 years) **not** skipping courses

Must require solid evidence of:

- Conceptual understanding
- Procedural skills
- Fluency
- Ability to apply mathematics
Compacted Courses

- Compacted courses include the same CCSS standards as non-compacted courses
- Compacted courses do not sacrifice focus on mathematical practice
- Students should spend enough time to learn concepts thoroughly
Where to accelerate?

- Decisions about acceleration and ability grouping are still the decision of local districts.
- As we implement the Common Core we will maintain our past practice of single and double acceleration.
# MPCSD Acceleration Options

<table>
<thead>
<tr>
<th>PATH</th>
<th>PATH NAME / GRADE LEVEL</th>
<th>K-4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
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<tbody>
<tr>
<td></td>
<td><strong>MPCSD Current Pathways (courses considered advanced are in GREEN)</strong></td>
<td></td>
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<tr>
<td>A</td>
<td>MPCSD Grade-Level Sequence</td>
<td>K-4</td>
<td>5</td>
<td>6</td>
<td>PRE ALG</td>
<td>MS ALG</td>
<td>ALG 1</td>
<td>GEO</td>
<td>ALG 2</td>
<td>PC/AP STATS/IB MS</td>
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<tr>
<td>B</td>
<td>MPCSD 1X ADV Sequence</td>
<td>K-4</td>
<td>5</td>
<td>6 (ADV)</td>
<td>PRE ALG (ADV)</td>
<td>ALG 1</td>
<td>GEO</td>
<td>ALG 2</td>
<td>PC</td>
<td>CALC Y1</td>
</tr>
<tr>
<td>C1</td>
<td>MPCSD 2X ADV Sequence #1</td>
<td>K-4</td>
<td>5</td>
<td>PRE ALG (ADV)</td>
<td>ALG 1</td>
<td>GEO</td>
<td>ALG 2</td>
<td>PC</td>
<td>CALC Y1</td>
<td>CALC Y2</td>
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<td>C2</td>
<td>MPCSD 2X ADV Sequence #2</td>
<td>K-4</td>
<td>6 (Skip 5)</td>
<td>PRE ALG (ADV)</td>
<td>ALG 1</td>
<td>GEO</td>
<td>ALG 2</td>
<td>PC</td>
<td>CALC Y1</td>
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<td><strong>Proposed Pathways (courses compressed are in RED)</strong></td>
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<tr>
<td>D</td>
<td>CCSSM Grade-Level Sequence</td>
<td>K-4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>A1/M1</td>
<td>Geo/M2</td>
<td>A2/M3</td>
<td>PC/AP STATS/IB MS</td>
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<td>E1</td>
<td>CCSSM 1X ADV Sequence #1</td>
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<td>6</td>
<td>7, 8, A1/M1</td>
<td>Geo/M2</td>
<td>A2/M3</td>
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<td>8, A1/M1, Geo/M2</td>
<td>A2/M3</td>
<td>PC</td>
<td>CALC Y1</td>
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<td></td>
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<td>A2/M3</td>
<td>PC</td>
<td>CALC Y1</td>
<td>CALC Y2</td>
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<td><strong>Rare 3x Accelerated Pathway</strong></td>
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<tr>
<td>G</td>
<td>ES MS HS Acceleration #3</td>
<td>K-4</td>
<td>5</td>
<td>6</td>
<td>7, 8, A1/M1, Geo/M2</td>
<td>M3, PC</td>
<td>CALC Y1</td>
<td>CALC Y2</td>
<td>MVC/ODE/LA</td>
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</tbody>
</table>
New MPCSD Acceleration Model

- Reconfigure math in grades 5, 6, 7, 8
- Align with Common Core Standards
- Create accelerated pathways for qualified students in Grade 5 or 7
  - CCSSM 1X ADV Sequence #1 in grade 5
  - CCSSM 1X ADV Sequence #2 in grade 7
  - CCSSM 2X ADV Sequence in grades 5 & 7
Challenges/Concerns

- Because of the rigor of CCSS Grade 8, recalibration of course sequencing needed to ensure students can master additional content
- Must ensure sequence of courses guides students to mastery of CCSS in Math by end of 8th grade.
- There will be no skipping of courses, just compacting
- Careful planning necessary to ensure all content and practice standards are fully addressed
- Strong articulation needed middle school & elementary schools
- Lack of transitional instructional materials
- Parent communication
Big Questions

- How will we create an implementation plan that will allow for teacher and student readiness?

- What would the plan look like for 2014-15?
Next Steps

- Gaining deep knowledge of Common Core Standards and Mathematical practices for teachers/students
- Developing Math Pathways Implementation and Professional Development Plan
- Determining new multiple measures for Mathematics
- Identify criteria for acceleration
- Exploring accelerated options to ensure access for all students (Summer School, online courses)
- Acquiring transitional instructional materials
- Building technology readiness for Smarter Balanced Assessment
Next Steps

- Work with Leadership Team as a PLC
- Build upon existing work from the 2012-13 Math Goal Team
- Leverage Math teacher leaders and our work with Spotlight on Success (SVCF) participants to continue to build teacher capacity