

# COLLEGE PREPARATORY MATH (CPM) – INTEGRATED MATH PROGRAM: EXECUTIVE SUMMARY

## Introduction

Regardless of curriculum type, math is challenging for many students and multiple support opportunities need to be available when difficulties arise.

While some parents have expressed difficult personal memories regarding algebra and geometry classes, their fear is that the new approach will disadvantage their children going forward.

The results of two different surveys and the standardized math tests suggest that with some modifications, the new curriculum is viable and even preferable in the long-term.

With the new curriculum, 8<sup>th</sup> grade advanced students scored at higher levels during the 2017-18 school year on national level math tests than the previous year. The scores for the PSAT 9/10, that assessed high school students, will not be known until later in the summer.

It is too early to say the new curriculum caused improved scores. It does, however, appear that the new curriculum did not harm students' mathematics achievement. In fact, the evidence suggests there is reason to believe it will benefit students going forward.

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## Teacher Perceptions

Every Integrated Mathematics teacher surveyed (14/14) at the middle school and high school support the curriculum change at Birmingham Public Schools and believe it is best choice for students.

The teachers observe the College Preparatory Math (CPM) Integrated Math is better aligned with the state and district standards than our previous program.

The teachers support the change because students are more highly engaged with mathematics within the classroom and they are achieving good outcomes.

The teachers observe that the new curriculum increases student problem-solving skills, offers greater application to real-life situations, and develops vital communication and collaboration skills.

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## Student Perceptions

Five to six hundred students were surveyed for their perceptions of the new curriculum at the mid-point and end of the school year.

Student open-ended responses were mixed regarding Integrated Math, but overall they were not supportive of the new curriculum.

Over the course of the school year, student discomfort with the new curriculum did decrease; although

dissatisfaction with the innovative approach remains a concern.

Students believe the new curriculum has too much group interaction and not enough teacher-led instruction.

In addition, students are not comfortable collaborating with each other in a group setting; this is particularly true for math students who understand the concepts and want to push forward with greater speed.

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## Recommendations and Takeaways

Based upon alignment with state standards and district initiatives, student outcomes, and teachers' perceptions, the administration recommends that the College Preparatory Math (CPM) Integrated Math program continue in modified form and that the honors math courses be continued.

Based upon student and parent perceptions, the administration and teachers support changes to the curriculum in the following ways:

- Provide a high school math lab support options for all trimesters
- Offer an enrichment/extension 3<sup>rd</sup> trimester pilot class for CPM 2 and 3
- Incorporate instructional adjustments in lesson structure and pacing with 50-70% direct instruction
- Ensure group grades are not calculated in individual student term grades
- Increase student use of supports (X-Block, lunchtime help, teacher help, CPM online help, co-teaching)

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- Provide unit test relearn and retake options
  - Enhance community/parent/BPS partnerships (CPM parent guides, parent seminars, information sessions)
  - Offer a Geometry A/B option (2019-2020 school year) for current Algebra 1B online students (one year only)
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## Alignment with the State of Michigan Standards is Critical

**There are two parts to the state mathematics standards:**

**Part 1 is Content.** The content categories include Number and Quantity, Algebra, Functions, Modeling, Geometry, and Statistics and Probability.

**Part 2 is Mathematical Practices.** The mathematical practices section has eight practices that are a new addition from previous standards.

**The eight Mathematical Practices are:**

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
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## Independent Program Research

Emerging research shows quality instructional materials impact student achievement as much as quality instruction, and are almost 40 times more cost-effective than class size reduction (Harris, 2009).

Schools, districts, and states often use resources from independent research and professional organizations to help guide selection of instructional programs.

**EdReports.org** is an independent nonprofit that publishes free reviews of instructional materials, using an educator-designed tool that measures standards alignment, usability, and other quality criteria.

The reports help districts make informed purchasing and instructional decisions that support improved student outcomes.

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## The Prior Curriculum Is Not Aligned With State Standards

The instructional materials reviewed by EdReports for the Prentice Hall - Pearson Traditional series do not meet expectations for alignment to the state standards for high school.

The materials address many prerequisite middle school standards and many of the high school content standards, although not with the full intent of the modeling process.

As evaluated by our mathematics teachers, the materials do not meet the expectations for Part 2 of the Mathematical Practices section.

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## The College Preparatory Math (CPM) Integrated Math Program Is Aligned With State Standards

EdReports determined that the materials are aligned with Part 1 or the Content standards.

The materials are also aligned with Part 2 or the Standards for Mathematical Practice.

The materials meet the expectations to balance and link content rigor with the requirements of Part 2, the mathematical practices, regarding real life application, modeling and problem-solving.