



## **K-12 Mathematics Curriculum Review Year 2 Developing**

West St. Paul - Mendota Heights - Eagan Area Schools  
School District 197

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## Executive Summary

School District 197 is in the second year of reviewing its K-12 math curriculum. Their current resources are expiring and Minnesota's math standards are being updated, prompting this review. The review team was a smaller, representative sample, in 2022-2023, and widened to include more staff in the work of 2023-2024.

Over the past two years, our review team has analyzed student data, reviewed best practices, and compared current and proposed standards. They also evaluated their current curriculum and shortlisted four new programs for further exploration next fall. These programs will be assessed in live classrooms with teachers and students in 2024-2025 to confirm alignment with the new standards, cultural relevance, and how well they support instruction. Ideally, their work may lead to a final decision on materials by spring 2025.

In addition to the evaluation process listed above, the high school team is also adjusting course sequences, all focused on reducing barriers and providing wider access to courses in the math pathway. This review aims to find a new curriculum that aligns with the upcoming standards while considering the needs of all students. Additionally, the district is preparing to implement Personal Finance as a graduation requirement and considering how Minnesota's Computer Science Strategic Plan might impact math instruction.

# Background

## **Previous District-wide Mathematics Reviews Processes**

During the 2015-2016 and 2016-2017 school years, School District 197 conducted its first large-scale mathematics review process in nearly eight years. The team at the time determined that, even though the standards would not be reviewed at the state level (described below), they would continue as planned with a local math review. Much work occurred between 2013 and 2017 with the middle and high school, including adding math intervention. These were among the many reasons that indicated a need for a PreK — 12 math review.

The core resources used at the time were over eight years old. Some resources were out of print and their online access had expired and required an annual subscription fee. With the addition of 1:1 devices for students in grades three through twelve, the team identified a need to ensure that their resources are compatible and accessible on those devices. There was also a need to review math acceleration pathways and curriculum.

The process used in the past review cycle is similar in many ways to our current process, including, but not limited to, developing Core Beliefs, identifying strengths and weaknesses, and reviewing instructional materials.

Among the major work that was conducted in its second year, the team spent time;

- Unpacking the 2007 standards
- Evaluating curricular resources, which led to a formal recommendation at each level
- Defining Math Pathways at the secondary level
- Developing scope and sequences and common assessments
- And participating in professional development to support the overall mathematics implementation.

## **Current Resources Used (final recommendations from 2015-2017 math review)**

Grades K-1: Bridges in Mathematics

Grades 2-8: Go Math

High School Courses: Big Ideas Mathematics

The expiration date for the digital portion of the current instructional resources the team implemented after the last review will be the spring of 2025, which aligns with the expected timeline for conducting the current review process described below.

### **Understanding the Current Standards (2007 Version):**

The Minnesota K-12 Academic Standards in Mathematics are grounded in the belief that all students can and should be mathematically proficient. All students need to learn important mathematical concepts, skills, and relationships with understanding. The standards describe a connected body of mathematical knowledge students learn through problem-solving, reasoning and proof, communication, connections, and representation. Strands group the 2007 standards:

- Number and Operation
- Algebra
- Geometry and Measurement
- And Data Analysis and Probability.

### **Assessments (2007 Version)**

The Minnesota Comprehensive Assessment (MCA) III Mathematics exam assesses the mathematics standards in grades 3-8 and 11. Currently, there are also standards for literacy in science and technical subjects contained within the Minnesota K-12 Academic Standards in English Language Arts (2010). The MCAs and the Minnesota Test of Academic Skills (MTAS) are state tests that help districts measure student progress toward Minnesota's academic standards. Most students take the MCA, but students who receive special education services and meet eligibility criteria may take the MTAS.

### **Graduation Requirements (Current, as of spring 2022)**

The graduation requirements for mathematics include credit requirements and standards requirements. All students are required to satisfactorily complete three credits in mathematics encompassing the high school academic standards, which include algebra, geometry, statistics, and probability.

- Students in the graduating class of 2015 and beyond must complete an Algebra II credit or its equivalent as part of the 3-credit requirement.
- In addition to the high school credits, students in the graduating class of 2015 and beyond must also complete an algebra credit by the end of eighth grade.

There are also state-approved credit equivalencies to fulfill math graduation requirements. These are noted below.

- A career and technical education credit may fulfill a mathematics or arts credit requirement under subdivision 1, clause (2), or (6) if the credit meets the state academic standards in arts or mathematics.
- A computer science credit may fulfill a mathematics credit requirement under subdivision 1, clause (2), if the credit meets state academic standards in mathematics.
- A Project Lead the Way credit may fulfill a science or mathematics credit requirement under subdivision 1, clause (2), or (4) if the credit meets the state academic standards in science or mathematics.

### **Status and timeline for the 2021-2022 state standards review**

The mathematics standards were revised in 2007 and fully implemented by the 2010-11 school year. Though the standards were scheduled to be reviewed again during the 2015-16 school year, the review was postponed during the spring 2015 first special legislative session, according to Chapter 3, H.F. 1. The postponed timeline rescheduled the review to begin in 2021-22.

The Minnesota K–12 Academic Standards in Mathematics represent the work of the Mathematics Standards Review Committee, which included K–12 teachers, administrators, college faculty, and representatives of educational and community organizations.

During the 2021–22 school year, the Minnesota Department of Education’s Mathematics Standards Review Committee reviewed the 2007 Minnesota K12 Academic Standards in Mathematics, other states’ recently revised standards, current academic research, K–12 instructional best practices, and public feedback. This review process followed the guidelines in Minnesota Statutes 120B.021, subdivision 4e.

- The standards and anchor standards provide a summary description of student learning.
- The kindergarten through grade 12 benchmarks identify a “specific knowledge or skill that a student must master to complete part of an academic standard by the end of the grade level or grade band.”
- (Minnesota Statutes, 120. B.018) Minnesota Statute 120B.021 requires statements of standards and benchmarks.
- Minnesota Statute 120B.021, subdivision 4a, states that “the commissioner must include the contributions of Minnesota American Indian tribes and communities as related to the academic standards during the review and revision of the required academic standards.”

The four Dakota and seven Anishinaabe Tribal Nations, as well as Minnesota’s significant Urban Indigenous communities, have been relatively invisible in Minnesota’s academic standards, and statute 120B.021

counteracts that invisibility and lack of representation in Minnesota’s education system. This statute requirement, added by the legislature in 2007, demonstrates the commitment of the State of Minnesota to ensure that the contributions of the Tribal Nations in Minnesota are integrated into student academic learning and instruction. Minnesota’s K-12 Academic Standards in Mathematics include the historical and current contributions of the eleven sovereign, federally recognized Tribal Nations in Minnesota and Minnesota’s Urban Indigenous communities in accordance with Minnesota Statutes. Minnesota’s academic standards are reviewed and revised on a 10-year cycle.

The third version of the mathematics standards was released on December 27, 2022, and the statutory rulemaking process for the standards began. The statutory rulemaking process is iterative and begins once the standards review committee's initial review and revision work is complete. This process is set out in Minnesota Statutes, chapter 14, and has many steps. The proposed K-12 academic standards in mathematics represent the work of the mathematics standards review committee.

### **Organization of the 2022 Standards**

The organization and structure of the 2022 Minnesota K-12 Academic Standards in Mathematics communicate how mathematics education is conceptualized for Minnesota students.

- The standards are ordered by grade, beginning in kindergarten (represented by zero) and ending in high school (represented by 9).
- Each grade's standards are subdivided into strand, anchor standard, and benchmark.
- An additional dimension within benchmarks is mathematical practices and benchmark contexts, which encourage the integration of concepts through process and context.

The three strands, Data Analysis, Spatial Reasoning, and Patterns and Relationships, organize the standards. Most strands have seven anchor standards consistent across kindergarten through grade 11. Each standard will have one or more grade-level benchmarks that define a specific knowledge or skill a student must master. The benchmarks are placed at the end of the grade level where mastery is expected, with the recognition that a progression of learning experiences in earlier grades builds the foundation for mastery later on.

The standards are organized into three strands common across all grade levels:

- Data Analysis – “Data are not merely numbers but numbers in context.” (Cobb and Moore, 1997)  
Students will develop questions about situations impacting their everyday lives, plan to produce data and provide answers by organizing, describing, and summarizing the 2022 Minnesota K-12 Academic

Standards in Mathematics 4 data. In addition, students will develop and evaluate inferences and make predictions. They will learn how to organize randomness to understand important relationships and use the concept of variability to make sense of the world.

- Spatial Reasoning—Students will actively make sense of relationships between and within geometric figures, generalize statements about the figures, and develop arguments about what they find.
- Patterns and Relationships—Mathematics is the science of pattern and order. Students will organize and describe their world using representations of numbers and operations. They will learn actions that transform numbers and ways of thinking that bring them back to where they started. They will analyze and describe relationships among variables by focusing on how things change and how they stay the same.

Anchor Standards Minnesota Statutes 2021, section 120B.021, requires statements of standards and benchmarks. Anchor standards are summary descriptions of student learning that reflect a learning progression from kindergarten to graduation. There are seven anchor strands organized into three strands.

#### Anchor Standards by Strand

1. Data Analysis 1. Data Sciences: Identify, formulate, and investigate statistical questions by collecting data, considering cultural perspectives, analyzing and interpreting data, and communicating the results.
2. Chance and Uncertainty: Apply and explain probability concepts to interpret data, generate questions, predict, and make informed decisions to solve problems and communicate ideas. 2022 Minnesota K-12 Academic Standards in Mathematics 5 Strand 2: Spatial Reasoning
3. Measurement: Investigate measurement using various tools, units, systems, processes, and techniques in various cultures. Explain and reason with attributes, estimations, and formulas to effectively communicate measurement(s) and relationships. Justify decisions and consider the reasonableness of the measurement.
4. Geometry: Analyze characteristics of geometric shapes to make mathematical arguments and justifications about geometric relationships. Use visualization and geometric modeling to compare, solve problems, and communicate ideas. Strand 3: Patterns and Relationships.
5. Number Relationships: Describe/Interpret and use quantities, relationships between, and representations of quantities and number systems. Describe and relate operations. Use strategies and procedures accurately, efficiently, and flexibly. Assess the reasonableness of the results.

6. **Equivalence and Relational Thinking:** Use concepts and properties of equivalence and relational thinking to represent and compare numerical expressions, proportional relationships, algebraic expressions, and equations.
7. **Patterns and Relationships:** Represent and connect mathematical patterns and relationships using verbal descriptions, generalizations, tables, and graphs. Use representations to generate questions, make predictions, and solve mathematical problems.

### **Additional Legislative Requirements**

**Minnesota’s Personal Finance Requirement:** The 2023 Minnesota legislative session added Personal Finance as a graduation requirement beginning with students entering 9th grade in the 2024-25 school year. As the details of this requirement unfold, more information on how this may or may not impact mathematics instruction and programming will be provided.

**Minnesota’s Computer Science Strategic Plan:** Minnesota’s Computer Science (CS) Working Group developed a state strategic plan for computer science, finalized in March 2024, which describes ten recommendations for long-term and sustained growth of computer science education across all public K-12 and charter schools in Minnesota, as outlined in the Computer Science Education Advancement Act Minn. Stat. 120B.241 (2023). The recommendations are aligned with the requirements outlined in the legislation, such as licensure, high-quality professional development, continuous improvement, and standards, among others. More information on how this may or may not impact mathematics instruction and programming will be provided as the details of this working group’s recommendations unfold.

### **Next Steps in the Statutory Rulemaking Process**

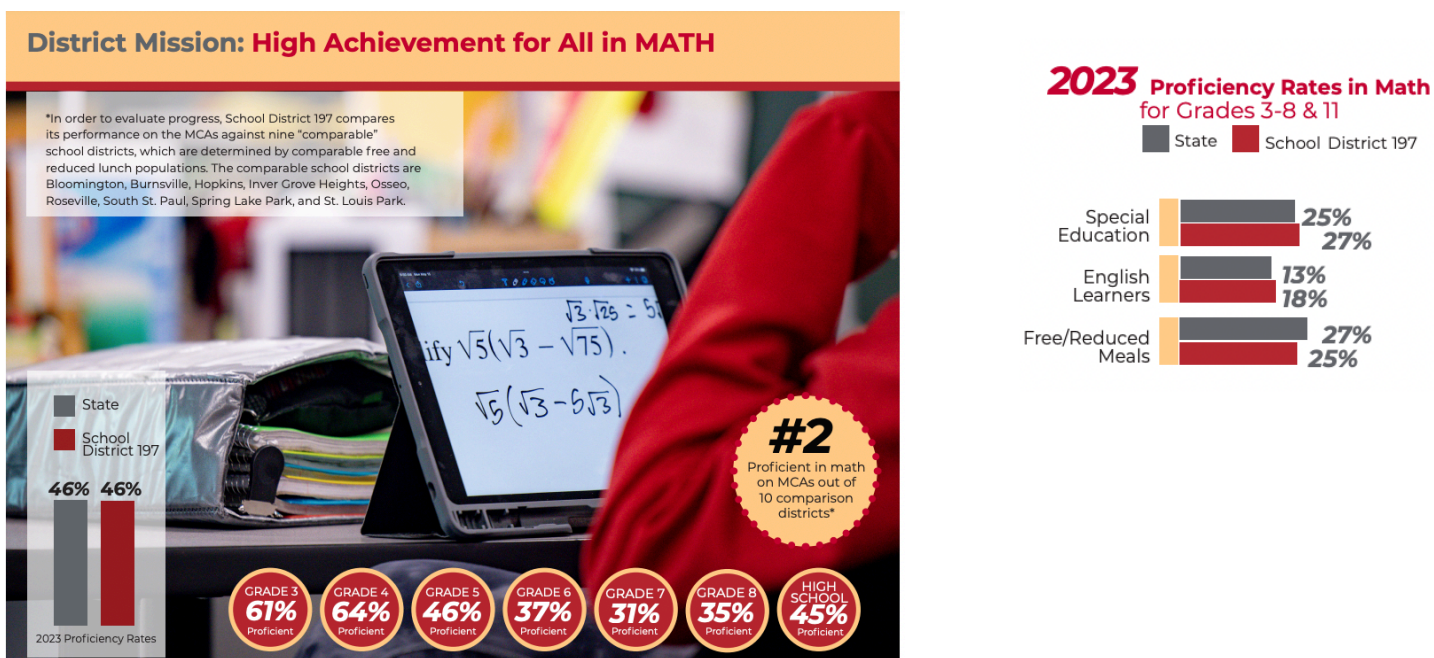
It is still early in the statutory rulemaking phase of the standards review and revision process. MDE will draft the Statement of Need and Reasonableness (SONAR), which has traditionally taken 14–17 months. The full statutory rulemaking process can take up to 24 months.

The statutory rulemaking process for the Minnesota K-12 Academic Standards in Mathematics is incomplete until the Notice of Adoption is published in the State Register. The adopted rule language includes an implementation date for each content area. If adopted, the proposed K-12 academic standards in mathematics will be implemented in the 2027-28 school year.

## Current performance summary

While the K-12 math curriculum team has reviewed data in many ways, a few key data points can summarize our students' performance in mathematics in relation to our comparable districts (noted in the image below) and look at how our various student groups, by race, perform in relation to each other.

Students in School District 197 tend to have proficiency rates higher than each demographic group at the state level. Despite this, the achievement gap persists and widens in some cases. Closing the achievement gap remains a high priority for the district.



Additional Key Findings and Insights from the [K-12 Math Curriculum Review Year 1 Self-Study report](#) are below;

- Math MCA Proficiency—we were #2 when compared to 10 comparable school districts to ISD 197.
- Grade-level proficiency decreases over time across the grades and overall proficiency rate is below the state standard.
- Our comparable districts are struggling too when comparing MCA results.
- Using FAST aMath to measure student growth is encouraging.
- It is difficult to look at trends in data with the disruption due to COVID-19.

## Summary of most current phase of review completed

### Year 1 Summary (2022-2023):

A review team included a representative K-12 group of teachers and building and district administrators to evaluate the mathematics programming in School District 197. As a part of the review process in year one, the entire K-12 committee:

- Read and discussed new research on best practices in teaching mathematics, Catalyzing Change: Initiating Critical Conversations (NCTM).
- Performed both an internal and external environmental scan,
- Developed Core Beliefs and Outcomes that Matter to All,
- Surveyed students, staff, and families,
- Conducted a Strengths and Weaknesses Analysis,
- Reviewed the proposed state changes for mathematics requirements and standards,
- And reviewed a variety of achievement measures in mathematics.

A summary and applicable insights for each element listed above can be found in the report shared with the school board in June 2023 and [linked here as well](#).

The team originally planned to meet in person four times during the school year. However, we decided to adjust our meeting plans due to issues that included but were not limited to substitute shortages. We held three instead of four in-person meetings and worked asynchronously for one session. The first session was our asynchronous session, which allowed our team to do work that lent itself well to this approach, such as reviewing previous math review processes in ISD 197. The last three meetings took place in November, January, and March.

### Year 2 Summary:

2023-2024's review team expanded on the already representative K-12 group of teachers (the total review team roster is included in Appendix A) and building and district administrators to conduct the work associated with year 2 of curriculum review. The K-12 team was divided into two groups based on grade level configurations for 2023-2024, a K-8 review team and a High School review team. This decision was made based on factors including but not limited to variations in some of the work that each level needed to accomplish, reducing the number of staff needing a sub on one particular day, as well as taking advantage of the PreACT, MCA, and ACT testing days at the high school which would require no subs (since they were not proctoring assessments instead on that day).

The K-8 team met four times in total throughout the school year. Each of those dates is listed below.

November 9, 2023

January 10, 2024

February 21, 2024

May 2, 2024

May 14, 2024

The November and January meetings focused on creating a foundation for the research the team would do later in the year on reviewing instructional materials. These topics are listed below.

- Sophisticating the review team’s understanding of the standards change process.
- Analyzing and comparing district and state math performance.
- Evaluating how well our curriculum aligns with current state standards.
- Reviewing MCA preparation tools for staff and students to deepen understanding around how the MCA test functionally works and the standards and depth of knowledge required on items included on the MCA.
- Reviewing our current sets of instructional materials against the 2021 MN Math practice and context standards.
- Further clarifying the details associated with the team’s instructional materials criteria rubric.
- Develop an initial list of programs the team was interested in reviewing.

Beginning in February, the K-8 math curriculum review team underwent a multi-stage process to select finalists for further exploration. The information in this summary section is a concise abstract of the work. **This process is described in more detail in this report's K-8 Instructional Materials Selection section.**

In February, they created a scoring rubric and divided the work to evaluate 15 programs. Then, elementary and middle school teams each identified their top choices. After vendor presentations and additional review in May, the team used the rubric scores and discussions to narrow the selection to the finalists that best met the needs of different grade levels. The following programs have been selected for product exploration in the Fall:

- Into Math (Middle School)
- Big Ideas (Middle School and Elementary)
- iReady (Elementary)
- Reveal (Elementary)

## High School Year 2 Summary:

The High School review team met three times across the school year. Each of those dates are listed below.

- PreACT Day; Oct 17
- ACT Day; March 5
- MCA Day; April 9

The first meeting, which was held only in the morning on October 17th while students were completing the PreACT test, was focused on bringing the larger high school math department together to review what was accomplished in Year 1's work and to set the stage for the remainder of the year's work. As a result of this process, the team identified the following topics as the most critical areas to address, as well as a plan for when to conduct the work;

- Sifting through new 2022 standards to ensure they are being covered in courses
- Make a list of curricular gaps so they can evaluate what resources they have/need
- Reevaluate course progressions (Trig, Analysis, PreCalculus) and what standards are taught, including but limited to;
  - Where statistics should be covered
  - The purpose of the Analysis course
  - Should they consider having an Algebra 3 or functions, statistics, and trigonometry class
  - What is a path to get to PreCalculus/Calculus
  - And what other districts are offering?
- Defining how students are selected for acceleration/remediation when these happen and what supports are provided.
- Discussing intervention structures, what we might add/shift to improve outcomes for students
- Focus on the processes related to learning math
- Review the role of technology in mathematics instruction

The second meeting, held during the ACT testing date in March, focused on the following topics;

- What are the changes between the 2007 and 2021 math standards?
- Where are gaps/overlaps with our current resources and the 2021 math standards and math practices
- Where are the gaps and overlaps with our current resources and the 2021 math standards?
- Where do we expect mastery of 2021 math standards in our math courses?
- How do other high schools structure their course progressions and pathways?

By the end of the meeting, the team was charged with developing at least three course pathway options that we could discuss at length at their third and final meeting in April.

The third meeting, held during the MCA testing date in April, focused on the following topics;

- Revisiting insights and key findings from the March session (standards differences, alignment w/resources)
- Revisiting the three-course pathway options developed in March's meeting and presenting them for whole group discussion and feedback, which centered the discussion on the questions within our four-way equity test, noted below;
  - Who will be advantaged by this approach, and what is the impact on this group?
  - Who is disadvantaged by this approach? What is the impact on this group of people?
  - What past issues does this resolve?
  - What new issues does this present?

The result of this discussion, which extended to the end of the day, resulted in some innovative recommendations for changes to the course sequences at the high school level, which are noted below;

- Keep the Analysis course with some minor adjustments (including new resources)
- Remove the requirement for juniors who intend to take AP Precalculus to take Algebra II with Trigonometry. This would functionally allow students who take Analysis as juniors to take AP Precalculus as seniors.
- Retain the requirement that students who intend to take Calculus AB successfully complete both Algebra II with Trigonometry and AP Precalculus.

These recommendations will be included in the course proposal process at TRHS in the fall of 2024, and they are also intended to be included in the registration materials and process for the 2025-2026 school year.

The department also discussed, at great lengths, and from many perspectives, how to support our students in Intermediate Algebra, which is historically one of the courses our students struggle most in at the high school level. The team developed several approaches to consider, which were then shared with the administrative team to consider.

In May, after reviewing the approaches developed by the math department, the administrative team presented additional options to the math department for supporting students and teachers in the Intermediate Algebra course. After deliberation within the department, three options were identified for

potential implementation, as early as Fall 2024, pending confirmation on both logistics and ensuring alignment with our ADSIS application for math support at TRHS. These options are described below.

- Two licensed math teachers will co-teach Intermediate Algebra courses, which allows more frequent and ongoing on-demand and in-time support for students. These co-taught courses will provide as much flexibility as possible for how the staff organize themselves, the students, and instruction to more closely align with student needs as they develop.
- Providing student tutors (11th and 12th grade) in as many Intermediate Algebra courses as possible to use peer tutoring and AVID-like tutorial sessions. These tutors will serve on a frequent and consistent basis.
- Allowing for ample space in remaining ADSIS-funded Intermediate Algebra support courses to ensure that students who are new to TRHS as 9th graders, as well as any student that demonstrates the need for an additional math support course, can access math support in addition to their regular Intermediate Algebra course.

Over the summer of 2024, the administrative team will work through the logistics of implementing as many of these options as possible, potentially all three, in hopes of a fall 2024 installation. Pending the installation of these options, the math department will work in conjunction with the TRHS administrative team to investigate the impact these changes to supporting students in Intermediate Algebra have over the course of the 2024-2025 school year, which will lead to a more formal recommendation for future years' support.

# Standards

## Previous Standard work

### MN Standards Comparison -

Last year, as part of the internal environmental scan, the team compared the 2007 and 2022 Minnesota State Math Standards. Through this process, the team was able to gauge the similarities and differences between the current (2007) and future (2022) math standards. The highlights from this work included an increase in the number of standards, new strand names, the addition of mathematical practice and process standards, and the inclusion of anchor standards. To the right is an example of what that high school review team found to be the differences between the two standards.

SCHOOL DISTRICT 197			
What are the differences between 2007 and 2021 standards?			
	Takeaways	Surprises	Concerns
Group 1	<ul style="list-style-type: none"> <li>Emphasis on financial literacy</li> <li>Emphasis on developing concepts and/or formulas</li> <li>Continued emphasis on application of concepts (e.g. Pythagorean Theorem, trig ratios, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Examples were not included in the 2022 standards that would provide ideas on how to hit the standard</li> <li>Matrices was added</li> <li>Use of technology (spreadsheets)</li> </ul>	<ul style="list-style-type: none"> <li>Figuring out what stays and what goes, in terms of lessons (e.g. transformations in coordinate geometry)</li> <li>Adding financial literacy and applications that are not in our curriculum.</li> </ul>
Group 2	<ul style="list-style-type: none"> <li>Algebra: standard names changed (away from subject disciplines), but content mostly the same with a few changes (10%).</li> <li>Geometry: "proof" as a term eliminated, overall more application tasks, specific new things added: population density, unit cost</li> <li>Algebra 2: More technology/spreadsheet stuff, a few new topics (financial literacy, matrices, data analysis)</li> </ul>	<ul style="list-style-type: none"> <li>There are some things we're not covering that were in both old and new</li> </ul>	<ul style="list-style-type: none"> <li>There are some things we're not covering that were in both old and new (because of the curriculum we're using / time constraints / meeting kids where they're at)</li> <li>What do we have in place for kids who come into 9th grade "low" so that we can start Int Alg where it should really start without so much review?</li> </ul>
Group 3	<ul style="list-style-type: none"> <li>Standards were combined, expanded and/or reworked.</li> <li>Scientific notation covered (again).</li> <li>Application of course content.</li> <li>Not having to reteach content that students should know already</li> </ul>	<ul style="list-style-type: none"> <li>Financial literacy, spreadsheets, real world analysis, more standards dealing with data analysis</li> </ul>	<ul style="list-style-type: none"> <li>Who is covering new standards.</li> <li>Rearranging current graduation required classes to meet all the standards.</li> <li>New standards not in current textbook, how to supplement?</li> </ul>

SCHOOL DISTRICT 197			
How aligned is our current set of materials with the 2023 standards?			
3rd Grade	4th Grade	5th Grade	
<ul style="list-style-type: none"> <li>4 out of 6 data standards not addressed</li> <li>2 out of 5 spatial standards not addressed, 1 introduced</li> <li>9 out of 18 patterns and relationships not addressed, 2 introduced</li> <li>No financial decisions, input/output, multiplying by 100, or place value/related concepts not addressed in Go Math.</li> <li>Heavy supplementation prior to beginning Ch. 1</li> </ul>	<ul style="list-style-type: none"> <li>18/40 standards not addressed in GoMath (A few very surface level - do not meet the standard.)</li> <li>Almost all new Data Analysis standards are <u>not</u> addressed in GoMath</li> <li>Patterns are <u>not</u> addressed in GoMath</li> <li>No 3D shape, making change to \$20, making financial decisions lessons</li> </ul>	<ul style="list-style-type: none"> <li>13/40 standards not addressed in GoMath                             <ul style="list-style-type: none"> <li>Financial lit standards are not in curriculum for math but covered if we continue to attend Bitown (HMS)</li> </ul> </li> <li>11/40 standards are partially addressed in GoMath</li> <li>16/40 standards are fully covered by GoMath already</li> <li>Summary: We already supplement with a lot of our own materials, and would need to do so again with new standards.</li> </ul>	<ul style="list-style-type: none"> <li>★</li> <li>★</li> </ul>

The team continued standards work in year two by evaluating how well our current and future programs met the 2007 and 2022 standards. The example here shows the alignment between the future standards set and our current instructional resources.

The example to the right shows how the review team members completed this portion of the work.

SCHOOL DISTRICT 197			
How aligned is our current set of materials with the 2023 standards?			
	A	D	E
	Data Analysis	Spatial Reasoning	Spatial
	Visualize, or use pictures, or use tally marks to represent data and communicate observations. (MP3, MP6)	Work with shapes to see which object has "more of," "less of" or the "same as" the attribute and explain the reasoning. (MP3, MP6)	Describe attribute in common, several measurable attributes of objects such as length and weight. (MP4, MP6)
New Standards	1		
Math Unit	2 Bridges Unit 1		
	3 Bridges Unit 2		
	4 Bridges Unit 3		
	5 Bridges Unit 4		
	6 Bridges Unit 5		
	7 Bridges Unit 6		
	8 Bridges Unit 7		
	9 Bridges Unit 8		
Grade	Kinder	1st Gr	2nd Gr
			3rd Gr

[Link to standards spreadsheet](#)

- Not addressed in this unit
- Not addressed in this unit but should be
- Addressed - Overemphasized
- Addressed - Unnecessary addition
- Addressed - Introduced or Surface Level
- Addressed - Partially
- Addressed - Fully

In addition to using the MDE Math standards, we also explored tools like the Minnesota questions tool, depth of knowledge examples, and MCA reports to evaluate curriculum. The team was able to use these tools to help them identify even more precisely the relationship between what we expect students to know and be able to do, with how our resources support the learning of those skills, and ultimately leading to how well students perform on items aligned to those standards.

SCHOOL DISTRICT 197		Benchmark Reports- 5	
Standard (OLD)	Skills needed	Covered in Curriculum?	What's Missing?
5.1.2.1	Read and write decimals from millionths to millions	Partially - only thousandths to million	Decimal place value beyond thousandths
5.1.2.2	+/- 0.1, +/- 0.01, +/- 0.001	Partially - different verbiage (1/10 of and 10x as much and patterns with +0.1 and -0.1)	Clear instruction to match the whole standard
5.1.2.5	Rounding numbers 0.1, 0.01, 0.001	3.4 - 1 Day	Could spend more time.
5.2.3.3	Evaluate expressions/equations with variables.	No - supplemented by teachers	Any lessons evaluating expressions or equations.

### American Indian Education in Mathematics

As noted earlier in this report, the four Dakota and seven Anishinaabe Tribal Nations, as well as Minnesota's significant Urban Indigenous communities, have been relatively invisible in Minnesota's academic standards. Statute 120B.021 counteracts invisibility and lack of representation in Minnesota's education system. This statute requirement, added by the legislature in 2007, demonstrates the commitment of the State of Minnesota to ensure that the contributions of the Tribal Nations in Minnesota are integrated into student academic learning and instruction.

Minnesota's K-12 Academic Standards in Mathematics include the historical and current contributions of the eleven sovereign, federally recognized Tribal Nations in Minnesota and Minnesota's urban Indigenous communities. In accordance with Minnesota Statutes, Minnesota's academic standards are reviewed and revised on a 10-year cycle.

The team ensured that our review process included looking for instances where the American Indian standards in mathematics were included in the resources. Two of the three main categories within the rubric that the team created to review resources highlighted this importance to our review team. Examples are included here from the rubrics.

Category/Role 1: Focus, Coherence and Rigor						
	student expression					
Mathematical contexts outlined in new MN standards are present in the curriculum	American Indian perspectives Computer science	EX	Y	S	N	
Reflects current research in math best practice.	Hands-on - manipulatives Problem-solving Engaging content Math/Number Talks	EX	Y	S	N	

In the first portion of the rubric (focus, coherence, and rigor), the team reviewed potential resources for examples of how American Indian perspectives were included in what was taught.

The team also was looking for what we described as red flags, or aspects of resources that, if we found them within the materials, not only were they not contributing to a positive impact on students, they could have a damaging impact, and therefore could be eliminated because of this finding. Examples of where these red flag elements are found in the third portion of our review rubric, as seen to the right (cultural representations are surface level, and materials reinforce stereotypes).

Category/Role 3: Culturally Responsive						
linguistic backgrounds	newcomers) have the same material as Gen Ed English learners Digital version provides multiple languages, Audio too					
Materials promote inclusion/acceptance of others	Are different learning styles represented? Manipulatives, puzzles, etc.	EX	Y	S	N	
<b>Cumulative Evaluation</b>		/5	/5	/5	/5	Red Flags
<b>Cumulative Calculation</b>		x3	x2	x1	x0	
Total out of 15 →						
<b>Red Flag</b>						
Only English version of student materials						
Cultural representations are surface level (names and pictures)						
Problems rely heavily on background knowledge.						
Materials reinforce stereotypes						
Materials could become outdated						

# K-8 Instructional Materials Selection

While a significant portion of the 2023-2024 curriculum review focused on a deep and thorough understanding of the math standards, the other large portion of the review team's work in 23-24 was conducting their instructional materials review process.

Aspects of the standards investigation noted in the prior section were applied again to this portion of the review, particularly as it relates to;

- How our current set of resources aligns with the new math standards
- Gaps that any potential resources may have based on Minnesota's specific expectations (e.g., American Indian Standards, financial literacy, etc.)
- And how well our students typically have done with our current set of resources in relation to MCA performance.

When the review process is fully completed, the team will have conducted six phases, outlined below in summary and described in more detail following.

- Phase I: Development of instructional materials criteria rubrics
- Phase II: Broad scan for potential candidates
- Phase III: Review Phase I resources submitted from vendors contacted
- Phase IV: Narrow Phase II candidates to as little as two or as many as five
- Phase V: Final recommendation (24-25's work)

## **Phase I: Development of instructional materials criteria rubrics**

During this review phase, which started in our January 2024 meeting, the team created the criteria against which any potential resource would be evaluated. There are many past iterations for review teams to explore and sample from, which helps to give the team a place to start. In the area of math, a specific and thorough example from the 2015-2016 review process, was also included in this phase.

A first version of the instructional materials criteria was developed for Phase II, which is when the team was to look broadly at what instructional materials are available for us to review more closely. A final version of the instructional materials criteria was developed and used for the team's closer inspection of materials during Phase III, when they actually started looking at early samples (mostly digital) from the vendors they had originally selected to consider from Phase II. The final version is available to preview in the materials included in Appendix B.

## Phase II: Broad scan for potential candidates

During the January meeting, the review team was asked to broadly search for potential instructional resources to consider more closely. The review team was provided with some helpful places to start, including those listed below;

- ED Reports (nonprofit organization that provides free reviews of instructional materials for K-12 educators)
- What Works Clearinghouse (resource that collects, analyzes, and shares research on the effectiveness of educational programs, practices, policies, and products)
- Peer-reviewed research
- Aggregated information on what math resources are used in Minnesota districts
- Statewide adoption resources and reviews (e.g., Massachusetts).

The team was given some requirements for the type of programs necessary for review in later phases. These requirements are listed below;

- Set of materials that span K-6 and/or a set of materials that span K-8
- Set of materials that span K-12

While the team was able to identify resources that did not meet those grade-level configurations, they needed to include those that did meet one or both of those requirements.

The review team identified 15 programs in which they would like to preview samples and resources during the next phase. These 15 programs are listed below;

Amplify Math (Desmos)

Eureka Math

iReady

Big Ideas Math

Everyday Math

Math Expressions

Bridges in Mathematics

Fishtank Math

Math in Focus

Dimensions Math

Illustrative Math

Open Up Resources

enVision Math

Into Math

Reveal Math

### Phase III: Review Phase I resources submitted from vendors contacted

Phase III work was conducted during the review team meeting in February. Before the meeting, the 197 Curriculum department met with each vendor and their lead representatives to explain the review process for February and asked to provide the same information and/or resources. This was one step to reduce unnecessary bias in the process.

The first task the team completed at the February meeting was to review the initial draft of the instructional materials criteria rubric, which they would use as a reference and evaluation tool as they made their determinations of each program. Images of the rubric are included here (and are included in Appendix B).

Role 1, Role 2 or Role 3?			
STEP 1: Identify which role you are.	Role 1 - Focus, Coherence and Rigor	Role 2: Instructional Supports / Usability	Role 3: Culturally Responsive
Kindergarten	Redding	Bartol	Schuessler
Grade 1	Huspek	Underdahl	Kanavati Orth
Grade 2	Mossey	Cudo	
Grade 3	Thomas	Sanchez	
Grade 4	Eisenbraun	Schiltz	
Grade 5	Chris	Tara	Raina
Grade 6	Cassidy (& Josiah)	Ryan	Jordan
Grade 7	Hope	Briana	Emily
Grade 8	Jess	David	Angie

Reviewing 15 programs using the rubric the team established was going to be difficult for each person to complete in good faith. To make the work manageable, each person was assigned to review components from only one of the rubric's three portions. The goal was to have at least one person in each grade level working on one of the three portions of the rubric; however, this

was not possible at every grade. The image to the left shows how the review team members were assigned.

Once the team members knew their role, and had a chance to review their portion of the rubric more closely, they were brought into portion-alike groups. As a group they developed a common understanding of their role, look-for, and red flags. The images included to the right show where they created these common look-fors and red flags. This process helped to ensure a more common system for how individuals within the group would evaluate the sets of resources for this portion of the rubric.

At this point, each team member was asked to choose five programs (of 15) to review more closely. Within these five programs they were reviewing, they were asked to make sure at least 1-2 of the programs were either K-6/K-8 and K-12 in terms of the grade levels the resources cover.

Outside those 1–2 programs, each reviewing member could select, as a group and individually, which programs they wanted to review.

The image below shows an example of how one of the teams ensured that all programs were evaluated by multiple people at multiple grades, if possible (the members' names have been hidden).

Category/Role 3: Culturally Responsive					
linguistic backgrounds	newcomers) have the same material as Gen Ed English learners Digital version provides multiple languages, Audio too				
Materials promote inclusion/acceptance of others	Are different learning styles represented? Manipulatives, puzzles, etc.	EX	Y	S	N
<b>Red Flag</b>					
Only English version of student materials					
Cultural representations are surface level (names and pictures)					
Problems rely heavily on background knowledge.					
Materials reinforce stereotypes					
Materials could become outdated					

Category/Role 3: Culturally Responsive	
Descriptor	Example
Student and teacher-facing materials support a wide representation of people, perspectives, and histories within the math images, names, lessons, activities, and assessments	Represent full, complex characters from marginalized groups so that students can have a more holistic understanding of themselves and others
Materials support a strong home-school connection	Does it include homework/at-home practice? Does it include a parent letter? Family support?

Category/Role 1: Focus, Coherence and Rigor															
STEP 3: Choose 5 programs to review.	K-12 Programs					K-6 or K-8							Other Grade Configurations		
	Reveal Math	enVision	Into Math	Illustrative	Big Ideas	Open Up	iReady	Eureka Math	Everyday Math	Math Expressions	Math in Focus	Dimensions	Bridges in Math	Desmos	Fish Tank
			x	x					x			x			
				x	x			x	x	x					
	x	x					x				x				x
			x		x				x		x				
	x		x				x	x							x
		x			x			x							
	x		o	o				x	x	o	o	x		x	o
			x	x	x		x				x				
	x	x						x				x		x	56

As the team members reviewed their programs, they completed their evaluation of those resources for the portion of the rubric they were charged with.

As each person finalized their evaluations, they were then asked, as individuals, to rank order the programs 1-5, with 1 being their top

**Category/Role 1: Focus, Coherence and Rigor**

**STEP 5: Individually rank your programs, 1-5.**

RANKING G 1-5 (1 is top)	K-12 Programs						K-6 or K-8						Other Grade Conf		
	Reveal Math	enVision	Into Math	Illustrative	Big Ideas	Open Up	iReady	Eureka Math	Everyday Math	Math Expressions	Math in Focus	Dimensions	Bridges in Math	Desmos	Fish Tank
				3					2				1		
			1	5		2				4			3		
	1	3					2				4				5
			3		2			1			4	5			
	1		3				2	5							4
	1		3		2							4			
	1		3	7					8	2	6	5	9		10
			3	5	1		2					4		4	10
	1	3						4				5			5
	1		4		3 (3-8 only)		3		2 (K-6 only)						60

recommendation for their individual portion of the rubric. The image included here shows an example of how that ranking process unfolded for one portion of the rubric.

**SCHOOL DISTRICT 197**

**By Role Group Synthesis**

RANKING 1-4 (1 is top)	K-12 Programs (at least one)						K-6 or K-8 (at least one)						Other Grade Configurations		
	Reveal Math	enVision	Into Math	Illustrative	Big Ideas	Desmos	Open Up	iReady	Eureka Math	Everyday Math	Math Expressions	Math in Focus	Dimensions	Bridges in Math	Fish Tank
Role 1: Focus, Coherence, Rigor	1		4		3 (3-8)			3 (K-2)		2 (K-6)					
Role 2: Instructional Supports / Usability	2		3		1	4 (5-12)								4 (K-2)	
Role 3: Culturally Responsive	1/2				1/2		4	3			5				

Group will process this together - What do you observe as patterns, if any? Are there any clear outliers or favorites? 83

The final stage of this portion of the review process organized the team members back into their larger group they started the day with, their portion-alike groups based on the rubric. Each larger group was asked to consolidate all their individual findings and insights of all the programs for their one portion of the rubric into a final

recommendation as a group, ranking their top three programs. The image included here shows how this ranking process unfolded by resource and by portion of the rubric.

The review team was then asked to look for patterns, outliers, and favorites, based on what they could see. After several contributions from the review team, it was concluded that the following sets of resources (image to the right) should be advanced to the next phase of the review process.

**By Grade Synthesis**

RANKING 1-4 (1 is top)	Reveal Math	Into Math	Illustrative	Big Ideas	iReady	Everyday Math	Bridges in Math
K-2		3	1			4	2
3-4	1	3		4		2	
5-8	1			2	3		

**Phase IV: Narrow Phase II candidates to as little as two or as many as five.**

In preparation for the next phase of the work, which was to narrow the list of resources being considered to as few as two, the curriculum department organized two meetings in May. Two meetings would provide time for each vendor with an opportunity to conduct a formal presentation in front of our staff of their resources, as well as additional time for our staff members to review resources individually and in position-alike groups.

The meeting on May 2nd was primarily focused on the vendor presentations, and the May 14th meeting was primarily the follow-up meeting focused on independent and small group review time of the material presented on May 2nd. The image here provides a glimpse of what the schedule for the day was on May 2nd.

Elementary		Secondary		Elementary		Secondary	
8:00 - 8:15	Launch (Big DO)	8:30 - 8:45	Launch (Small DO)	12:30 - 1:15	Into Math (Big DO)	12:30 - 1:15	Illustrative (Small DO)
8:15 - 9:00	EMath (Big DO)	8:45 - 9:30	iReady (Breakout)	1:15 - 1:30	Reflect and Break	1:15 - 1:30	Reflect and Break
9:00 - 9:45	Reveal (Big DO)	9:30 - 9:45	Reflect and Break	1:30 - 2:15	Illustrative (Small DO)	1:30 - 2:15	Into Math (Big DO)
9:45 - 10:30	Big Ideas (Small DO)	9:45 - 10:30	Reveal (Big DO)	2:15 - 2:30 Break and Reflect			
10:30 - 10:45	Reflect and Break	10:30 - 10:45	Reflect and Break	2:30 - 3:00 Whole Group Closure			
10:45 - 11:30	iReady (Big DO)	10:45 - 11:30	Big Ideas (Small DO)				
11:30 - 12:30 - Lunch on your own							

Each vendor was provided with up to 45 minutes of presentation time with the groups. There was a 15-minute reflection and break opportunity for staff between each presentation. While many staff members were able to complete some evaluations for some products, not all staff felt comfortable doing that yet, so the evaluation was delayed until the May 14th meeting.

The morning portion of the May 14th meeting was entirely dedicated to providing staff with time to review programs and complete their evaluations. The afternoon’s discussion was structured to provide individual, small group, and large group opportunities for deliberation and perspective sharing.

SCHOOL DISTRICT 197		AM Schedule for the Day
8:30 - 8:50	Welcome and setting the stage	
8:50 - 9:20	Review program 1	
9:20 - 9:50	Review program 2	
9:50 - 10:20	Review program 3	
10:20 - 10:50	Mixed grade discussions	
10:50 - 11:30	Submit final evaluations	
11:30 - 12:30	Lunch	

Once staff had submitted their evaluations for each program, they were able to review the overall results in several ways, including but not limited to;

- Comparisons between May 2nd and May 14th’s evaluations
- By grade level
- By grade-band
- Overall

The final portion of the work the staff was asked to complete was to break up into three groups, representative of all schools, grades, etc., while reviewing the evaluation data, create three potential options for moving forward. Each team was charged with creating a K-8 recommendation, a K-4 and a 5-8 recommendation, and the last option was open to however the individual groups interpreted the result, and they could configure grades however they felt appropriate.

	K-8 Recommendation	K-4, 5-8 Recommendation	K-?, ?-? Recommendation
K			
1			
2			
3			
4			
5/6			
7/8			

	K-8 Recommendation
K	1. 2. 3. We are struggling with a K-8 curriculum because there isn't a one size fits all with the maturity level, the hands-on approach for teaching/learning, the digital component and even the consumable for the wide range of ages. It seems that a curriculum focuses on one type of learning regardless of the age level.
1	
2	
3	
4	
5/6	
7/8	

Each team worked diligently on their proposals. As the work unfolded, unanimously, each of the three teams had the most difficulty developing a K-8 recommendation for which two programs to review in the final phase. The example to the left shows how difficult the teams felt this to be.

As each team noticed the difficulty in creating a K-8 recommendation, they also struggled with when and how to create a transition point. Currently, the transition point is at 2nd grade (current resources are K-1 Bridges, 2-8 Go Math), which has been identified as an issue that needs to be resolved through this process. Making the transition in 3rd grade could be difficult

because of the addition of MCA testing in 3rd grade. Making a transition at 5th grade could be possible because of the geographic and school change that all students face as they move between grade bands. However, there are costs and benefits associated with a change at that grade as well.

After an extensive and productive period of deliberation, and offered by the review team themselves as a recommendation to meet our requirement of having our final two programs identified, the team reached their final recommendation.

The following programs have been selected for product exploration in the Fall:

- iReady (Elementary)
- Reveal (Elementary)
- Into Math (Middle School)
- Big Ideas (Middle School and Elementary)

It is important to include some additional commentary from the 5th-grade team on this approach noted above, as well as the general 5-8 team. The 5th-grade team, while they will be conducting program explorations in iReady and Big Ideas, as a way to bridge the K-4 and 5–8 recommendations (since iReady is a K-4 program, and Big Ideas is one of the 6–8 programs), they are also completely onboard with taking the recommendation from their the K-4 or 6-8 team as the core resource, even if they didn't conduct a program exploration in it (such as Reveal for K-5, or Into Math for 5-8). Also, the 6-8 team noted that if the recommendation from the K-4 team, such as Reveal, then creates the conditions for a K-5 recommendation for Reveal, they could also be on board with considering Reveal based on the K-4 recommendation, but they are not binding to it as a certainty. This is an example of how the team understands the importance of having a unified recommendation that brings together, rather than splits and divides, the culture and climate of the K-8 team.

#### **Phase V: Final recommendation (24-25's work)**

As the team heads into the summer of 2024, many of them will begin the early work of conducting their program explorations for the following programs.

- iReady (Elementary)
- Reveal (Elementary)
- Into Math (Middle School)
- Big Ideas (Middle School and Elementary)

The timeline below shows how the product exploration team, which seeks representatives from each school and each grade, will conduct their program explorations. Like many teams before them, they will use the Training Academy support structure, which provides teachers with up to 18 hours of training and application time to conduct the work of exploring two programs, starting as early as July 17th. The team will meet five times, once in the summer and four more times throughout the school year, to prepare for, install, and

evaluate the programs. There will be up to 10 hours for the team to work on planning and preparing, 6 hours of training (July 17th), and two more hours will be provided of the 18 towards virtual check-ins in September and November on each of their two product explorations.

The team will receive training for their first product exploration during the meeting on July 17th, and they will receive training for their second product exploration during the meeting in Late October.

The team will complete their first product exploration near the end of Quarter 1 and their second product exploration near the end of Quarter 2.

The team will complete their evaluations of the first product exploration in the morning of the October meeting, and complete their evaluations for the second product exploration in the February meeting. It is possible to have a decision on their final recommendation by grade level at the conclusion of the February meeting; however, it is possible that the decision will not be made until the April/May meeting.

The final recommendation will come as late as that final meeting. At that point, the team will refocus its efforts on creating an installation and implementation plan for using the new resources as soon as fall 2025.

July 17	Sept.	Late Oct	Nov	Late Dec TBD	Jan	Feb Decide?	Mar	April /May TBD
Meeting 1 8:30-3 PM		MTG 2 8:30-3 PM		Meeting 3 8:30-3 PM		Meeting 4 8:30-3 PM		Meeting 5 8:30-3 PM
6 HR plan	3 HR Plan	2 HR Plan	3 HR Plan	2 HR Plan				
	Reflect Meet 1hr		Reflect Meet 1hr					
<b>Quarter 1 Product Exploration</b> K-5 iReady 6-8 In. Math				<b>Quarter 2 Product Exploration</b> K-4 Reveal 5-8 B Idea				

As noted before, the high school review team will begin their instructional materials review process as early as next fall and could be in a similar position as the K-8 team as early as spring 2025. However, the process needs to be created with them, starting in the fall of 2024. The instructional materials review process is identified as one of the major efforts that the high school team will undertake in their next steps, which are included near the end of this report.

# Legislative Updates

## Personal Finance Working Group

In support of the personal finance legislation passed in the 2023 legislative session, which is noted in the image here (approved by the 197 School Board in the fall of 2023), MDE applied for a Personal Finance Working Group. The working group will develop guidance to support districts and schools in implementing the personal finance graduation requirement. Depending on how this legislation is implemented, it could potentially impact who teaches them and where students learn the personal finance skills that will be identified to fulfill the credit requirement. It is also unclear how the financial literacy standards, specifically identified in the revised math standards, may overlap with the personal finance coursework and skills students need to complete. At the time of this report's publication, the working group was just starting to meet to make recommendations on how to meet the legislative requirements. The timeline for decisions on this legislation is below.

- Meetings One and Two: June 11 –12, 2024
- Meetings Three and Four: August 20 –21, 2024
- Public Feedback Opportunity in September 2024
- Meeting Five: October 29, 2024

## Minnesota's Computer Science Strategic Plan

Minnesota's Computer Science (CS) Working Group developed a [state strategic plan for computer science](#), finalized in March 2024. This plan describes ten recommendations for long-term and sustained growth of computer science education across all public K-12 and charter schools in Minnesota, as outlined in the Computer Science Education Advancement Act [Minn. Stat. 120B.241 \[2023\]](#). The recommendations are aligned with the requirements outlined in the legislation, such as licensure, high-quality professional development, continuous improvement, and standards, among others.

### Area of Impact: Personal Finance

#### Legislation

Students who begin grade 9 in the 2024-25 school year and later must successfully complete a course for credit in personal finance in grade 10, 11, or 12. A teacher of a personal finance course that satisfies the graduation requirement must have a field license or out-of-field permission in agricultural education, business, family and consumer science, social studies, or math.

#### TR Impact

- Inform incoming 9th graders of this requirement in 24-25 guide indicating that details will follow in the 25-26 guide.
- Update board policy to reflect this change.
- Once MDE issues guidance, develop requirements and lists of course that will meet these standards in time for the 25-26 guide.

### Area of Impact: Personal Finance

#### Recommended Change to Grad Requirements (Policy 613)

Add 1/2 credit in personal finance in grades 10, 11 or 12

Total Credits to Graduate remains at 23 credits

## **Computer Science Working Group**

In the recently revised math standards, there are several computer science-related standards woven across the grade levels. It remains to be seen how the computer science standards in the mathematics revisions overlap with what the Computer Science Education Working Group (noted below) recommends. It could impact how, when, where, and by whom the computer science-related standards are delivered to students. More information on this work group and the work associated with the Computer Science Education Advancement Act is below. The plan that has been developed was open for public comment in February 2024 and presented to the Minnesota legislature by March 22, 2024. At this time of this report, there are no further updates on official recommendations for implementation.

In accordance with the Computer Science Education Advancement Act, the Minnesota Department of Education (MDE) put out an application for adults and students to join the Computer Science Education Working Group. The working group is charged with developing a state strategic plan for long-term and sustained growth of computer science education in all kindergarten through grade 12 school districts and charter schools. The plan will be open for public comment in February 2024 and presented to the Minnesota legislature by March 22, 2024.

## Educational Equity Analysis / Four Way Equity Test

Throughout the curriculum review process, the team was charged with routinely asking how the questions included in the Four Way Equity Test could be used to address findings from each particular stage. Examples of how this work was integrated throughout the process are noted below.

For reference, the Four Way Equity Test questions are provided below as well:

- Does this help to provide opportunities for students who have historically been underserved, underrepresented, or disadvantaged by the current system?
- Does this help to ensure equitable access for all?
- Does this help eliminate barriers based on gender, race/ethnicity, national origin, color, disability, age, or other protected groups?
- Does this ensure the same rigorous standards for academic performance exist for all students?

**Question 1: Who benefits or experiences an advantage in our current K-12 math program? What is the impact on this group?**

Continue to look for resources that we know benefit students and provide;

- hands-on, digital, and paper/pencil options for learning math.
- Support for students who need extra help as well as students who are ready for enrichment

**Question 2: Who is disadvantaged? What is the impact on this group of people?**

Three specific areas from the Year 1 board report are currently being addressed through the review team's close inspection of math standards and the overall review process for potential candidates for instructional resources.

- Language support for our EL students.
- There is a need for ready-made lessons and not having to create so many activities due to a variety of resources, including, but not limited to, resources that are misaligned with standards or depth of knowledge.
- Gaps in students' foundational skills prevent them from doing grade-level coursework.

The resources recommended for a full product exploration in the 2024-2025 school year address the above-mentioned needs. The resources provide multiple ways to support English language development. The resources and their activities are aligned to state standards more closely than before, and important foundational skills in math are focused on early and often to help cement the learning needed to participate in grade-level coursework.

**Question 3: How are these systemic or institutional issues? Why haven't the issues been addressed? OR how have the issues begun to be addressed?**

Many issues identified in Year 1 were systemic issues in large part due to the limitations of available resources at the time of the last large K-12 curriculum adoption process (e.g., limited or ineffective instructional support for EL students). As well, some of the resources available were not as compatible or accessible as they seemed during the review process (which is why we will be conducting a trial of resources in actual classrooms where students and teachers are using them).

**Question 4: How can we maximize who experiences benefits and minimize who experiences disadvantages?**

The review team is actively investigating ways to reduce issues around;

- How students access math pathways (e.g., the work of the HS math review team identifying ways for students to enroll in AP Precalculus as seniors)
- How can we restructure support for high school students in Intermediate Algebra so that they have a higher passing rate
- Increasing access to intervention services (e.g., HS Intermediate Algebra course support restructuring)
- Providing a substantial increase in collaboration time through both the review process itself, and the modified professional development calendar for secondary staff in 24-25 (adjustments to accommodate Science of Reading PD)
- EL support/training on English Learner teaching strategies as a result of enhanced instructional resources and opportunities for PD support through the modified secondary PD calendar (e.g., EL PD delivered through math department time on those days spread throughout the year). Rubric elements, including one whole portion, is for cultural inclusivity.

# Next Steps

## Elementary (Kindergarten through Grade 4)

- Conduct product explorations for at least two programs (iReady, Big Ideas, Reveal).
- Arrive at consensus on which program to recommend for implementation beginning no later than spring 2025.
- Improve use and understanding of assessment resources to best serve students with diverse needs.
- Develop an implementation plan that takes into account several factors, including but not limited to the following;
  - The final implementation year as proposed by MDE (2027-2028 school year)
  - Other new curriculums being implemented
  - The most beneficial strategy for bringing certain grades/grade bands into implementation before 2027
  - And the most cost-effective solution bridging current resource license expiration dates, the need for new resources, and the need for effective implementation.

## Middle School

- Conduct product explorations for at least two programs (5th grade - iReady and Big Ideas; 6th-8th Into Math and Big Ideas).
- Arrive at consensus on which program to recommend for implementation beginning no later than spring 2025
- Continue to track legislative requirements related to computer science and personal finance
- Develop an implementation plan that takes into account several factors, including but not limited to the following;
  - the final implementation year as proposed by MDE (2027-2028 school year)
  - the most beneficial strategy for bringing certain grades/grade bands into implementation before 2027
  - and the most cost-effective solution bridging current resource license expiration dates, the need for new resources, and the need for effective implementation
- Continued exploration of how to best serve students who are;
  - at risk for future math difficulties
  - are simultaneously developing math and English language skills (EL students)
  - being served mathematics instruction in a special education setting or having IEP goals related to math
  - ready for learning math in an accelerated manner
- Smoothen standards, content, and instructional differences found in the transition between 8th and 9th grade
- Professional development as needed beyond materials training

## High School

- Update the math pathways and registration materials for the 25-26 school year to reflect the recommendations noted below;
  - Keep the Analysis course with some minor adjustments (including new resources)
  - Remove the requirement for juniors who intend to take AP Precalculus to take Algebra II with Trigonometry. This would functionally allow students who take Analysis as juniors to take AP Precalculus as seniors.
  - Retain the requirement that students who intend to take Calculus AB successfully complete both Algebra II with Trigonometry and AP Precalculus.
- Continue exploring post-secondary college and career coursework opportunities, particularly in concurrent enrollment options.
- As noted earlier in this report, develop and implement plans over the summer and fall of 2024 to restructure support for struggling students in Intermediate Algebra.
- Begin an instructional materials review process as early as fall 2024
- Arrive at consensus on which program to recommend for implementation beginning as early as spring 2025.
- Continue to track legislative requirements related to computer science and personal finance
- Develop an implementation plan that takes into account several factors, including but not limited to the following;
  - the final implementation year as proposed by MDE (2027-2028 school year)
  - the most beneficial strategy for bringing certain grades/grade bands into implementation before 2027
  - and the most cost-effective solution bridging current resource license expiration dates, the need for new resources, and the need for effective implementation
- Continued exploration of how to best serve students who are;
  - at risk for future math difficulties
  - are simultaneously developing math and English language skills (EL students)
  - being served mathematics instruction in a special education setting or having IEP goals related to math
  - ready for learning math in an accelerated manner
- Smoothen standards, content, and instructional differences found in the transition between 8th and 9th grade
- Professional development as needed beyond materials training

## Appendix A: K-12 Mathematics Review Team

Team Member	Title	Site
Catherine Bartol	Kindergarten Teacher	Mendota Elementary
Stacey Schuessler	Kindergarten Teacher	Moreland Arts and Health Sciences Magnet
Kari Redding	Kindergarten Teacher	Somerset Elementary
Ruth Underdahl	First Grade Teacher	Pilot Knob Elementary
Darcy Huspek	First Grade Teacher	Garlough Environmental Magnet
Jeffery Oppenheim	Second Grade Teacher	Pilot Knob Elementary
Justin O'Keefe	Second Grade Teacher	Garlough Environmental Magnet
Rodrigo Sanchez	Third Grade Teacher	Garlough Elementary Magnet
Lori Thomas	Third Grade Teacher	Somerset Elementary
Samantha Schiltz	Fourth Grade Teacher	Mendota Elementary
	Fourth Grade Teacher	Pilot Knob Elementary
Ashley Mossey	Instructional Coach	Moreland Arts and Health Sciences Magnet
Joann Cudo	Special Education Teacher	Pilot Knob Elementary
Dominique Kanavati Orth	ESL teacher	Moreland Arts and Health Sciences Magnet
Sam Eisenbraun	Math Intervention Teacher	Moreland Arts and Health Sciences Magnet
Lauren Parlin	Instructional Coach	Garlough Elementary Magnet
Ryan Power- Theisen	Grade 6 Math Teacher	Friendly Hills Middle School
Cassidy Lettow	Grade 6 Math Teacher	Friendly Hills Middle School
Christopher Halverson	Grade 5 Math Teacher	Friendly Hills Middle School
Jordan Wilmeth	Grade 6 Math Teacher	Friendly Hills Middle School
David Wichman	Grade 7/8 Math Teacher	Friendly Hills Middle School
Jodi Darwitz	Grade 6 Math Teacher	Friendly Hills Middle School
Hope Alger	Grade 7/8 Math Teacher	Friendly Hills Middle School

Team Member	Title	Site
Julie Rasmussen	Grade 7/8 Math Teacher	Friendly Hills Middle School
Tara Huestis	Grade 5 Math Teacher	Heritage E-STEM Middle School
Raina Ferguson	Grade 5 Math Teacher	Heritage E-STEM Middle School
Danielle Locke	Grade 5 Math Teacher	Heritage E-STEM Middle School
Emily Berghuis	Grade 7/8 Math Teacher	Heritage E-STEM Middle School
Josiah Breiter	Grade 6 Math Teacher	Heritage E-STEM Middle School
Jessica Deegan	Grade 7/8 Math Teacher	Heritage E-STEM Middle School
Briana Fank	Grade 7/8 Math Teacher	Heritage E-STEM Middle School
Angie Penttila	Grade 7/8 Math Teacher	Heritage E-STEM Middle School
Erik Kluznik	High School Math Teacher	Two Rivers High School
Justin Pfaffinger	High School Math Teacher	Two Rivers High School
Liam Skulley	High School Math Teacher	Two Rivers High School
Heather Hagen	High School Math Teacher	Two Rivers High School
Kate Erhardt	High School Math Teacher	Two Rivers High School
Eddie Chhoun	High School Math Teacher	Two Rivers High School
Sue Brennan	High School Math Teacher	Two Rivers High School
Kari Spaeth	High School Math Teacher	Two Rivers High School
Grant Moris	High School Math Teacher	Two Rivers High School
Jim Bruder	High School Math Teacher	Two Rivers High School
Matt Anderson	High School Math Teacher	Two Rivers High School
Tara Riba	High School Math Teacher	Two Rivers High School
Rob Sahli	Principal	Moreland Elementary
Chris Hiti	Principal	Friendly Hills Middle School
Karen Allen	Principal	Heritage E-STEM Middle School
Jessica Cabak	Associate Principal	Two Rivers High School
Miles Lawson	Secondary Curriculum Coordinator	School District 197

Team Member	Title	Site
Katie Shetka	Elementary Curriculum Coordinator	School District 197
Andrea Saenz	ESL Coordinator	School District 197
Cari Jo Drewitz	Director- Curriculum, Instruction, Assessment	School District 197

# Appendix B: Mathematics Instructional Materials Criteria

Category/Role 1: Focus, Coherence and Rigor						
Descriptor	Example	Observed				Notes
		Y-Yes	S-Somewhat	N-No	Ex- Extensive	
Materials assess grade-level content	Student assessments reflect MQT examples (when applicable)  Various types of assessment	EX	Y	S	N	
Instructional materials include assessments that provide ways to modify instruction	Formative and Summative assessments.  Student reports are available to track assessment data	EX	Y	S	N	
Instructional materials include strategies that help student's metacognition.	Many opportunities to practice grade-level problems.  Students assess their own learning.  Reflect, over time, on what and how they have learned	EX	Y	S	N	
Grade-level content meets MN Standards	Student practice problems reflect MQT examples.	EX	Y	S	N	
Materials meet Mathematical Practices as described in new MN standards.	Students are asked to explain mathematical reasoning in multiple ways Curriculum is designed to allow for various means of	EX	Y	S	N	

Category/Role 1: Focus, Coherence and Rigor						
	student expression					
Mathematical contexts outlined in new MN standards are present in the curriculum	American Indian perspectives  Computer science	EX	Y	S	N	
Reflects current research in math best practice.	Hands-on - manipulatives Problem-solving Engaging content Math/Number Talks	EX	Y	S	N	
Spiral review	Review section of the previous lessons taught	EX	Y	S	N	
Cumulative Synthesis		/8	/8	/8	/8	Red Flags
Cumulative Calculation		x3	x2	x1	x0	
Total out of 24 →						
<b>Red Flag:</b>						
Grade-level assessments do not align with DOK observed on MCA						
Grade-level problems focus on algorithm memorization and do not encourage mathematical reasoning						
Spiral REVIEW, not spiral lessons						

Category/Role 2: Instructional Supports and Usability						
Descriptor	Example	Observed				Notes
		Y-Yes	S-Somewhat	N-No	Ex- Extensive	
Materials support teachers to utilize the curriculum fully.	Professional development is available Resource is easily navigated	EX	Y	S	N	
Material supports a range of learners, including EL, SPED, and students identified as GT.	Provide accommodations for differences in learning styles and language proficiency	EX	Y	S	N	
Materials support teachers in effectively using digital tools	Integrates with Canvas and compatibility with iPads	EX	Y	S	N	
Materials support or provide high-quality personalized learning approaches	Suggestions for small group instruction	EX	Y	S	N	
Instructional materials support teacher's use of effective teaching	Summarize in a variety of ways from texts, video, simulations, and lecture Learn in cooperative groups  Provide feedback to their peers and reflect on their own progress toward meeting learning goals	EX	Y	S	N	

Category/Role 2: Instructional Supports and Usability						
Cumulative Evaluation		/5	/5	/5	/5	Red Flags
Cumulative Calculation		x3	x2	x1	x0	
Total out of 15 →						
<b>Red Flag:</b>						
<ul style="list-style-type: none"> <li>Little to no EL/ SPED/intervention/enhanced support.</li> <li>Rough transition from elementary to middle school.</li> <li>Doesn't have supportive technology integration.</li> <li>Doesn't have digital components.</li> <li>Limited hands-on experiences for elementary students.</li> </ul>						
Instructional content does not align with instructional days. (The number of lessons is too many or too few.)						
Guidance around supporting students with diverse learning needs is provided for only some lesson areas or is missing in whole group instruction.						

Category/Role 3: Culturally Responsive						
Descriptor	Example	Observed Y-Yes S-Somewhat N-No Ex- Extensive				Notes
Student and teacher-facing materials support a wide representation of people, perspectives, and histories within the math images, names, lessons, activities, and assessments	Represent full, complex characters from marginalized groups so that students can have a more holistic understanding of themselves and others	EX	Y	S	N	
Materials support a strong home-school connection	Does it include homework/at-home practice? Does it include a parent letter? Family support?	EX	Y	S	N	
Guidance is provided within the core materials on making real-life connections between academic content and the local neighborhood, culture, environment, and resources.	Is it authentic and engaging? Multiple entry points/Can students rely on their own background knowledge?	EX	Y	S	N	
Teacher guidance is provided on practices that support the learning, development, and engagement of students from diverse	EL supports - Is there a Spanish version/ other languages available? All students (especially	EX	Y	S	N	

Category/Role 3: Culturally Responsive						
linguistic backgrounds	newcomers) have the same material as Gen Ed English learners Digital version provides multiple languages, Audio too					
Materials promote inclusion/acceptance of others	Are different learning styles represented? Manipulatives, puzzles, etc.	EX	Y	S	N	
<b>Cumulative Evaluation</b>		/5	/5	/5	/5	Red Flags
<b>Cumulative Calculation</b>		x3	x2	x1	x0	Ext Y S N
Total out of 15 →						
<b>Red Flag</b>						
Only English version of student materials						
Cultural representations are surface level (names and pictures)						
Problems rely heavily on background knowledge.						
Materials reinforce stereotypes						
Materials could become outdated						