



Teaching and Learning Report: Math

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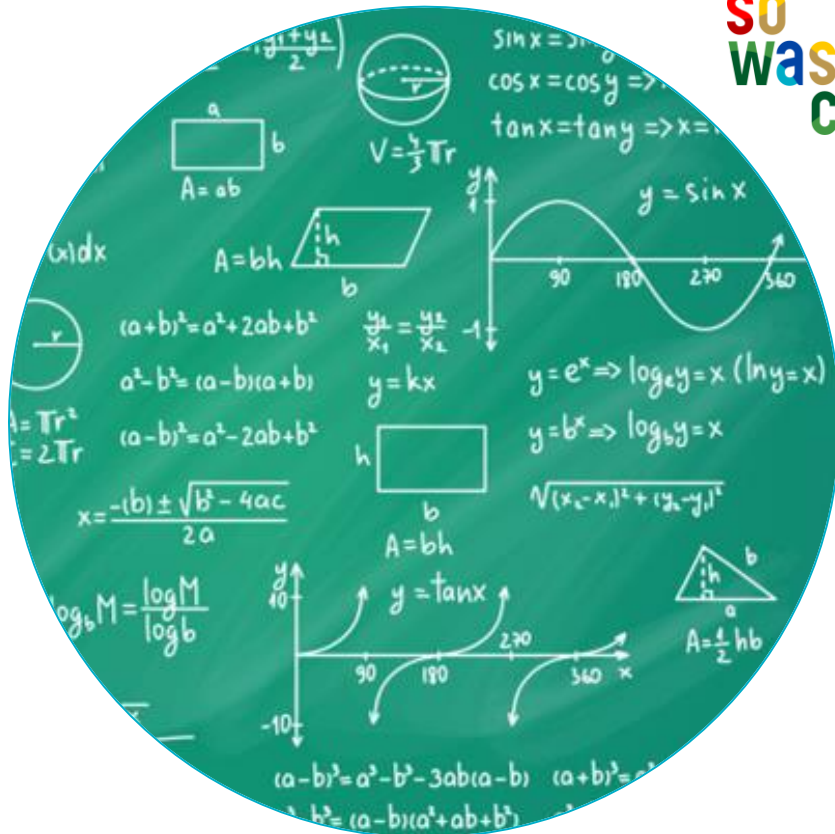
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Agenda:

- Student Performance Data
- Elementary and Secondary Teaching and Learning
- K-12 Standards
 - Elementary Standards and Instruction Review Cycle (SIRC) update
 - Secondary SIRC update
- Questions



What Does the Math Data Tell Us?



Student Performance Measures in Mathematics



Minnesota Comprehensive Assessment (MCA)	Northwest Evaluation Association – Measures of Academic Progress (NWEA – MAP)	Pre– American College Testing (Pre–ACT)	American College Testing (ACT)
Grades: 3–11 <i>CBM</i> • Programmatic (tells us how we are doing) • Depth of understanding	Grades: 2–8 <i>Adaptive</i> • Predictive of MCAs • Measures growth	Grade: 10 <i>CBM</i> • Predictive of ACT • Pre–ACT is not adaptive	Grade: 11 <i>CBM</i> • Predictive of how likely students are to pass college entry math classes – e.g. Intro to Alg, Alg

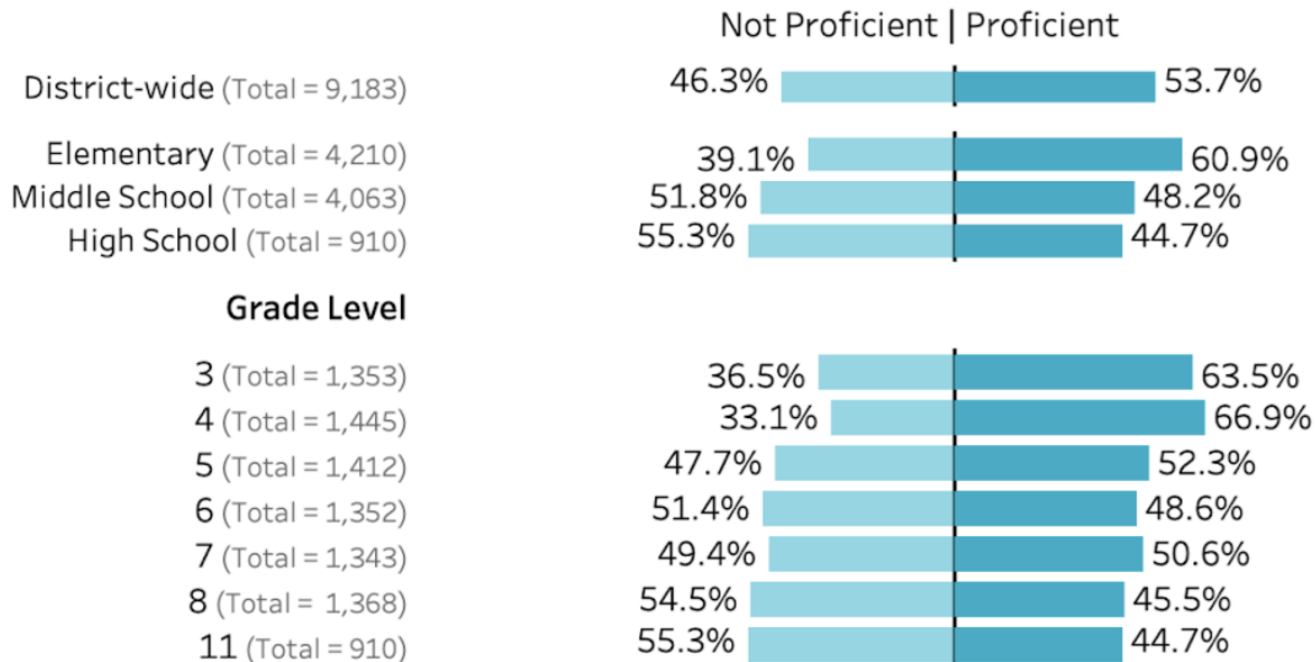
Curriculum Based Measurement (CBM): Monitors student progress over time in a specific area, such as reading fluency, math computation, or writing skills.

Adaptive: students given a grade level item – get it correct – next question is more difficult, incorrect answer – students receive easier question until students are performing on steady level.

Minnesota Comprehensive Assessment (MCA) Math Data



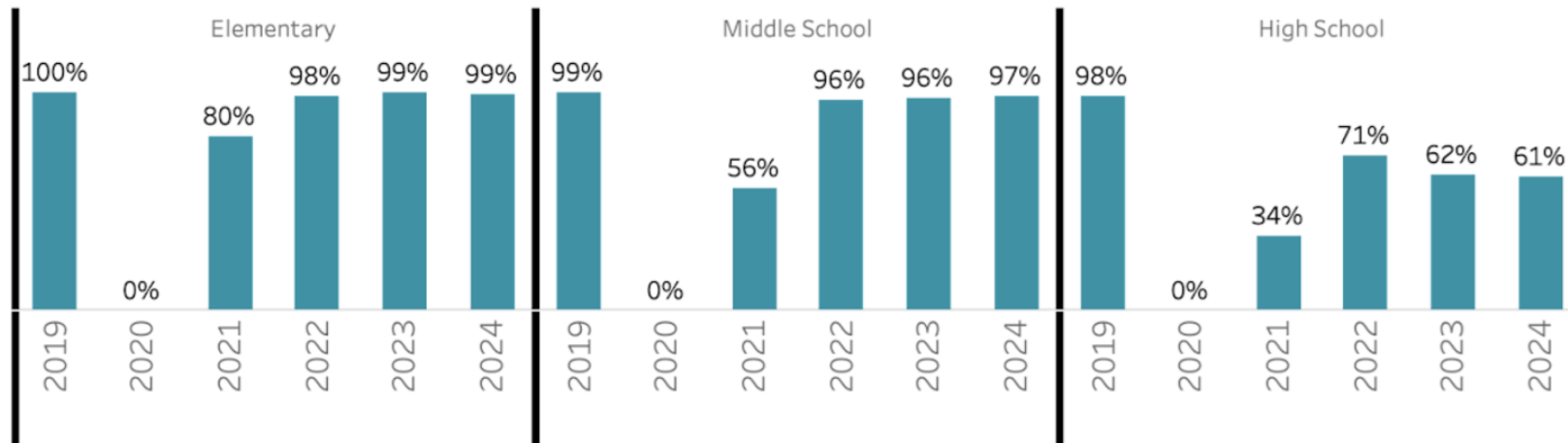
2024 MCA-III Math Proficiency



SoWashCo Schools MCA Participation Rates



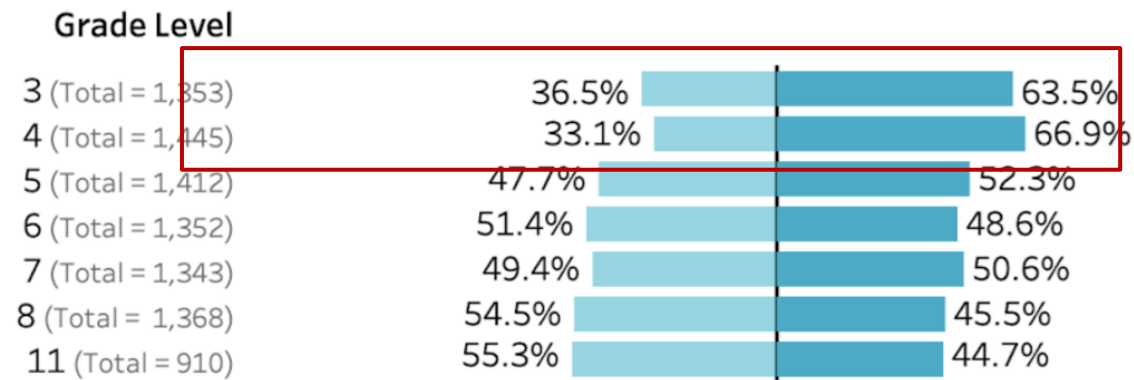
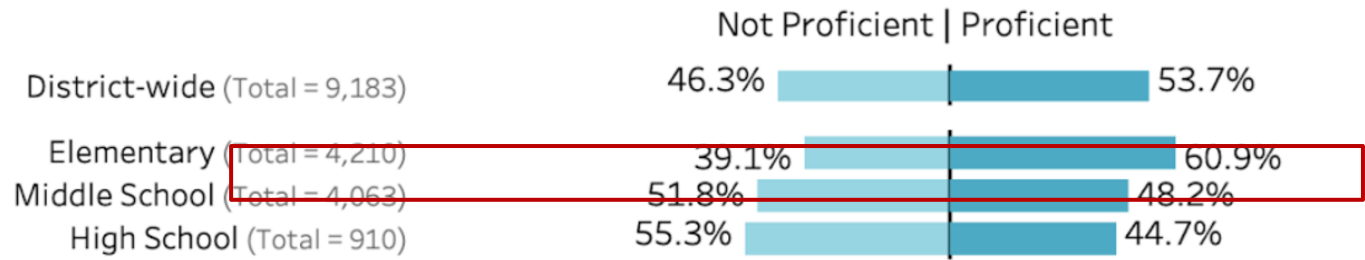
Math MCA-III



MCA Math Proficiency: Elementary Data: Grades 3, 4, 5

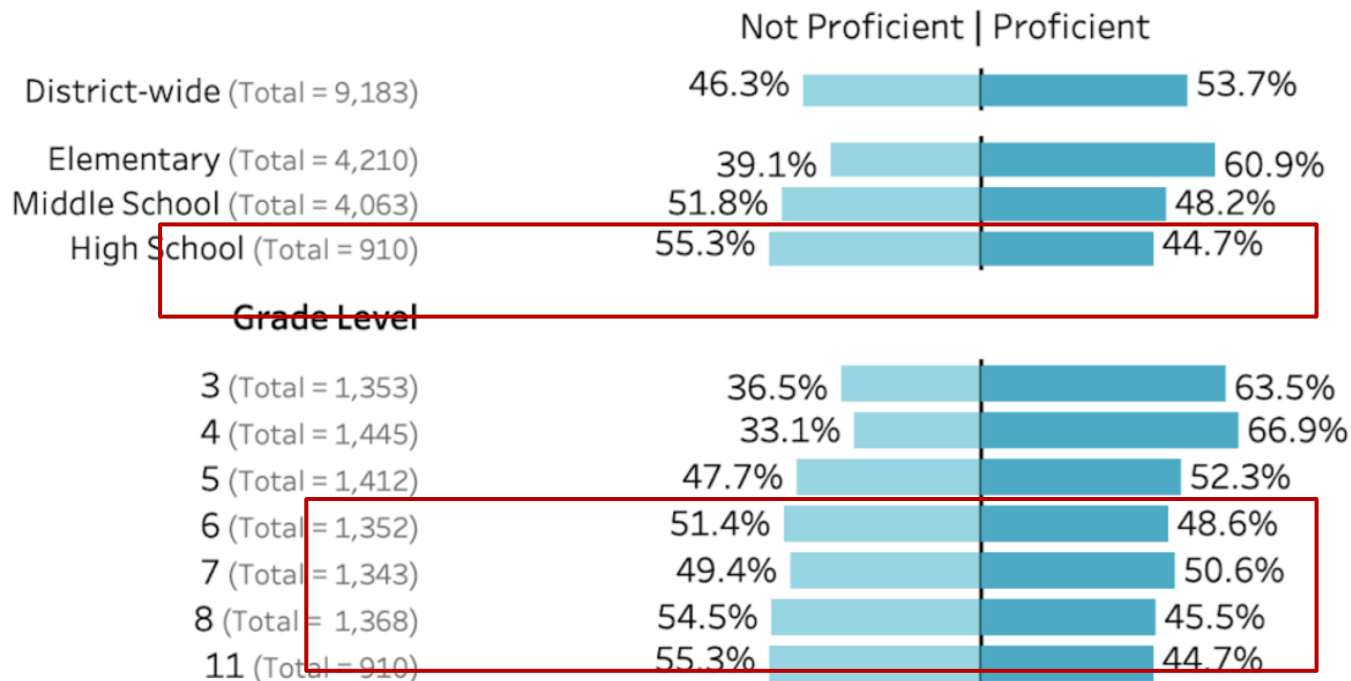


2024 MCA-III Math Proficiency

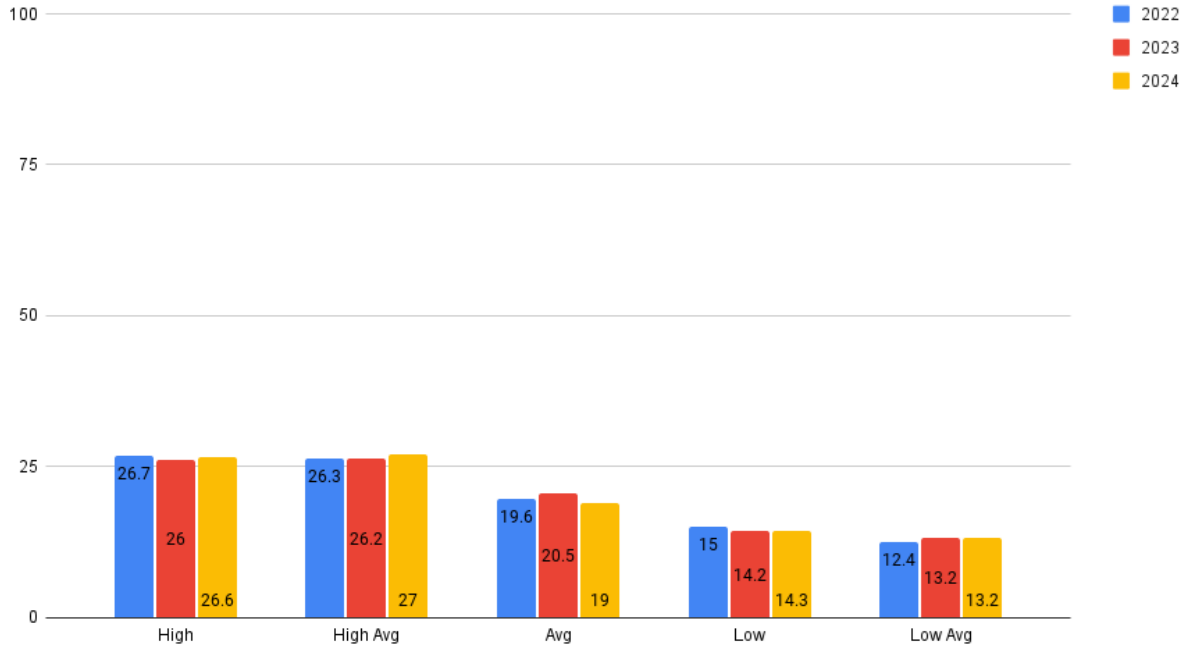


MCA Math Proficiency: Secondary Data: Grades 6, 7, 8, 11

2024 MCA-III Math Proficiency



Northwest Evaluation Association – Measures of Academic Progress (NWEA – MAP) Proficiency: Grades 2–8

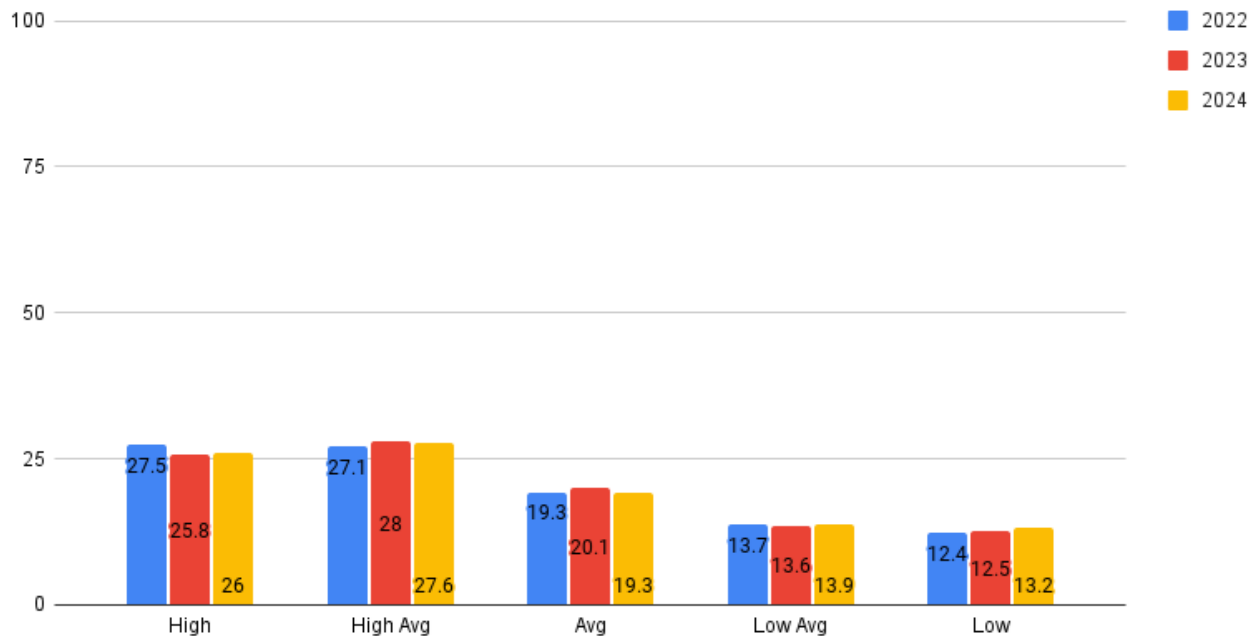


High and High Average:
61% and above

Average:
41%-60%

Low Average and Low:
40 % and below

NWEA MAP National RIT Percentage Norms: Grades 3, 4, 5



High and High
Average:
61% and above

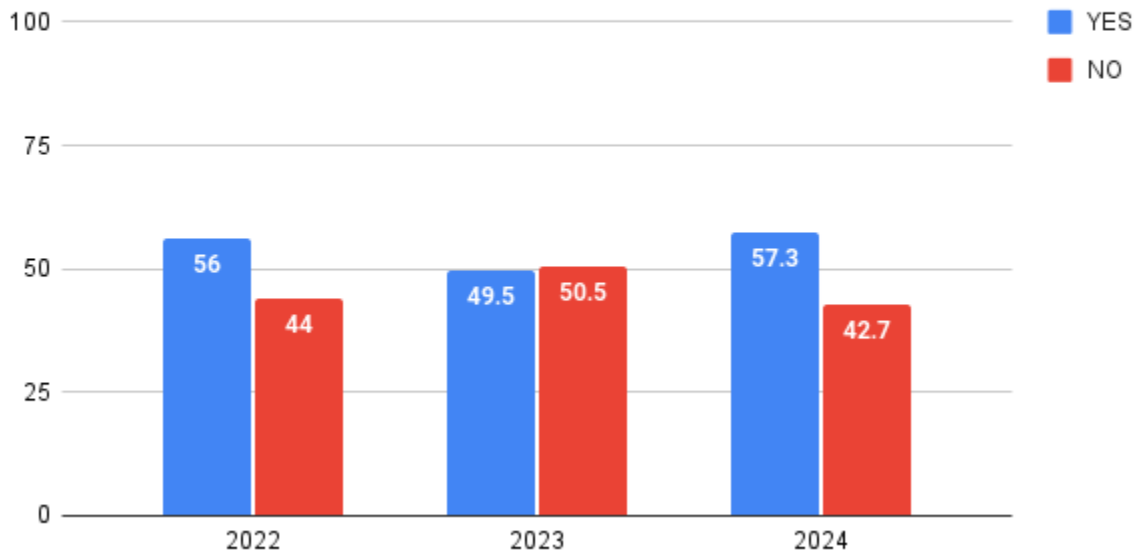
Average:
41%–60%

Low Average and
Low:
40 % and below

NWEA MAP Fall-to-Fall Projected Growth: Grades 3, 4, 5



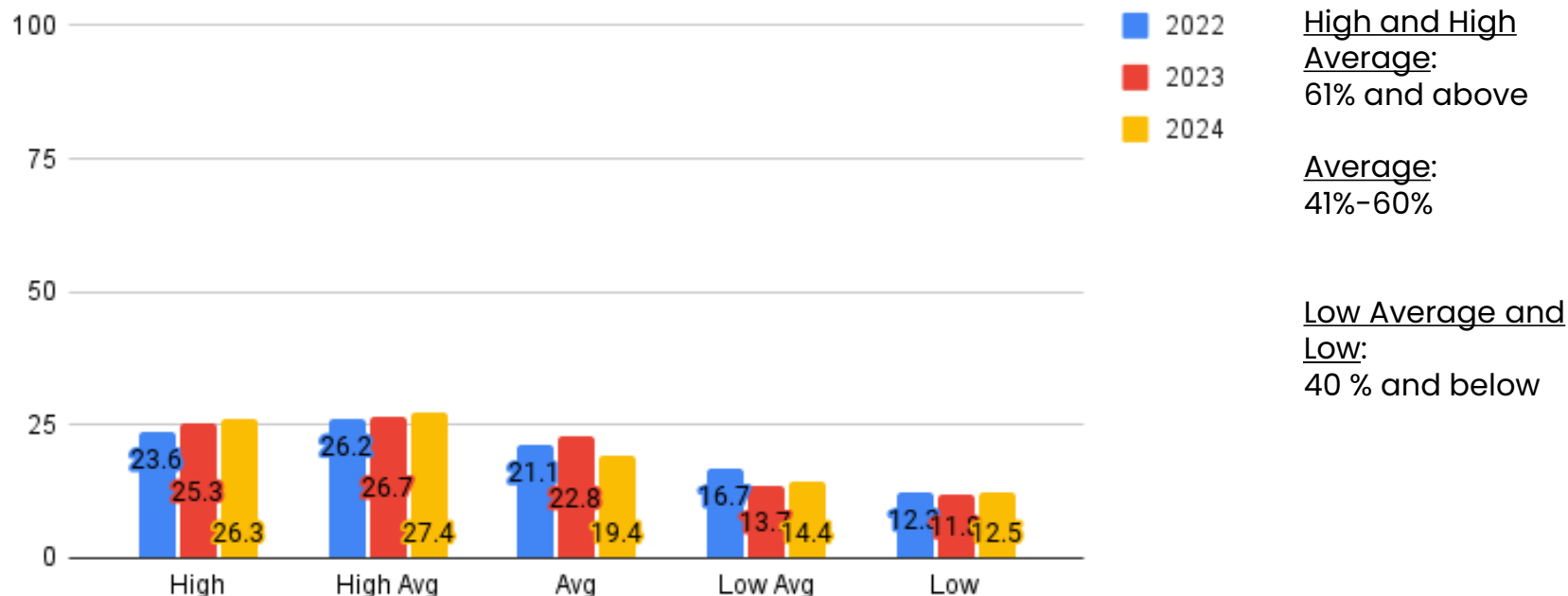
3rd, 4th, and 5th grade (Fall-to-Fall Projected Growth)



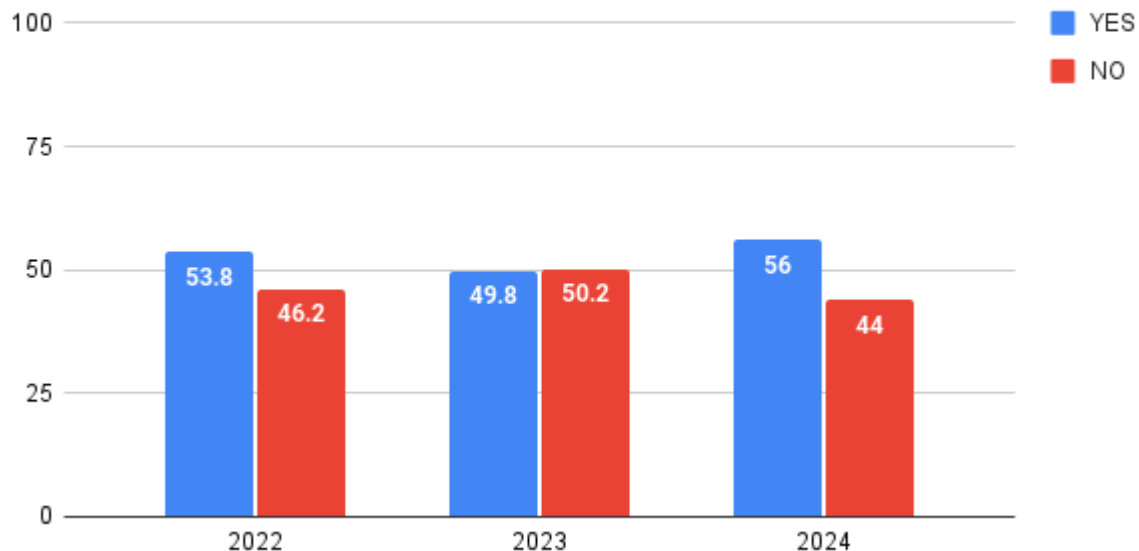
NWEA MAP National RIT Percentage Norms: Grades 6, 7, 8



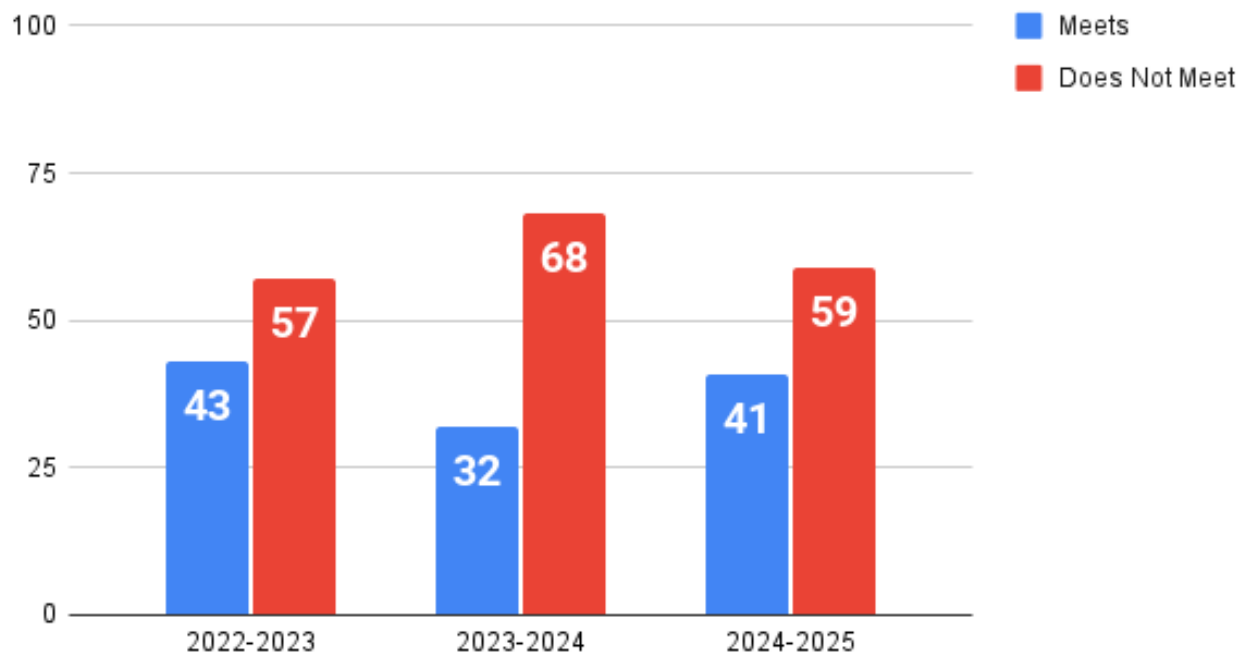
6th, 7th and 8th Grade (National RIT Percentage Norms)



NWEA MAP Fall-to-Fall Projected Growth: Grades 6, 7, 8



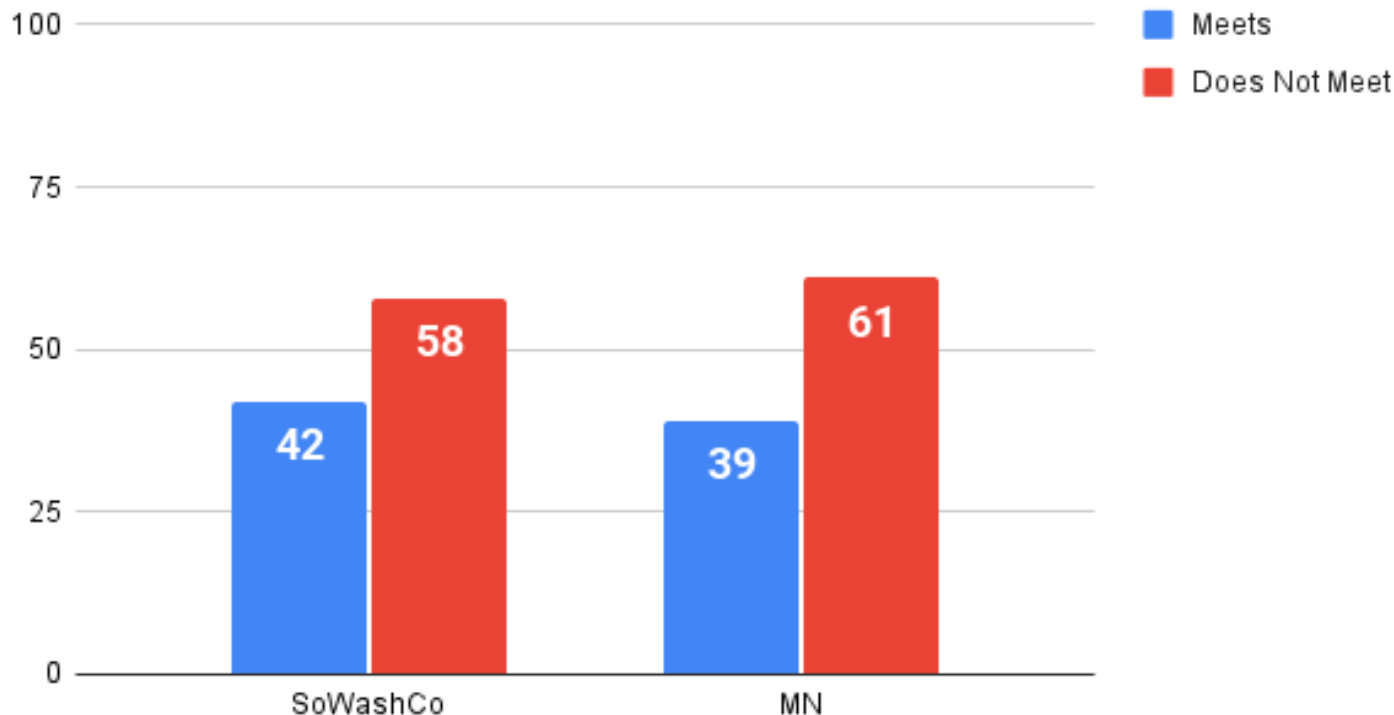
Career and College Readiness Pre-ACT Math: Grade 10



Career and College Readiness ACT Math: Grades 11, 12



Class of 2024 College Math Readiness Benchmark



A Look into our Elementary Math Classrooms

Elementary Math Instruction



- Strong Unit Planning Practices
- Solid Core Instruction
 - Notice and Wonder
 - Engaging Student Discussion
- Work Places and Small-Group Instruction
 - Meeting needs of all learners
 - DreamBox personalized path
- Using Data to Drive Instruction
 - MAP data (grades 2-5)
 - Bridges pre- and post-assessments
 - Number Corner checkups
 - DreamBox Math data



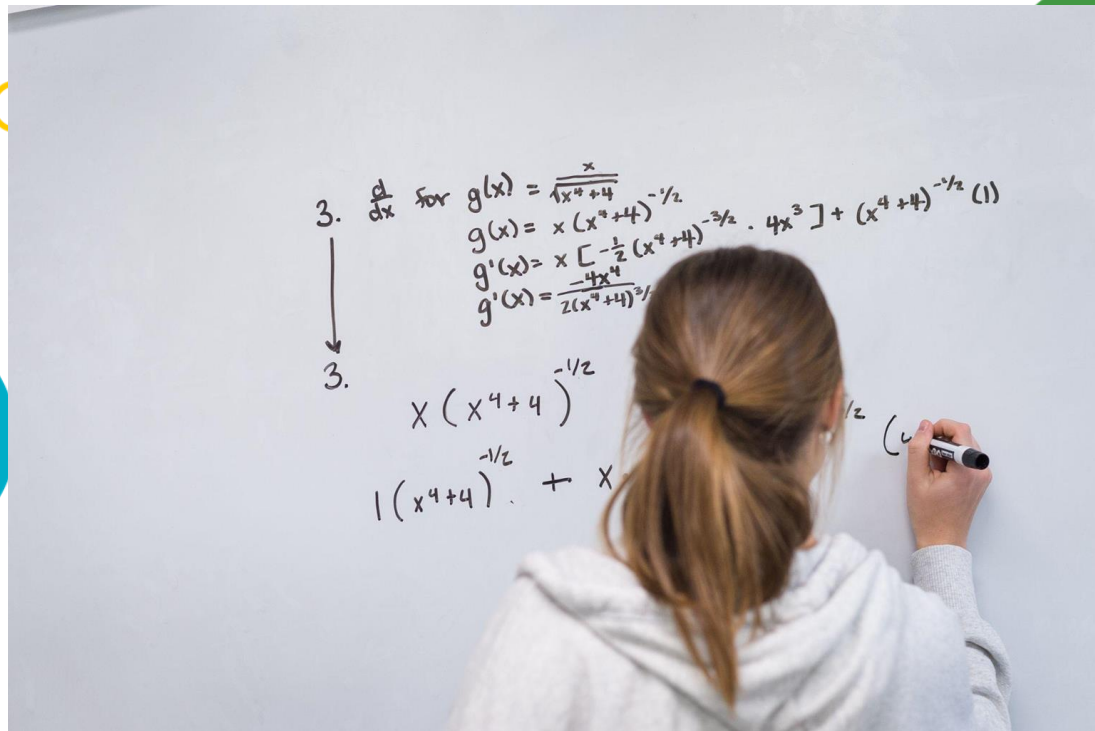
Mathematics in our Elementary Classrooms



Let's see what this looks like in action. We are going to view a video from a 2nd and 5th grade math classes (NFSI and LRES).

Secondary Math

Current Instructional Practices and Opportunities



Secondary Math in SoWashCo Schools



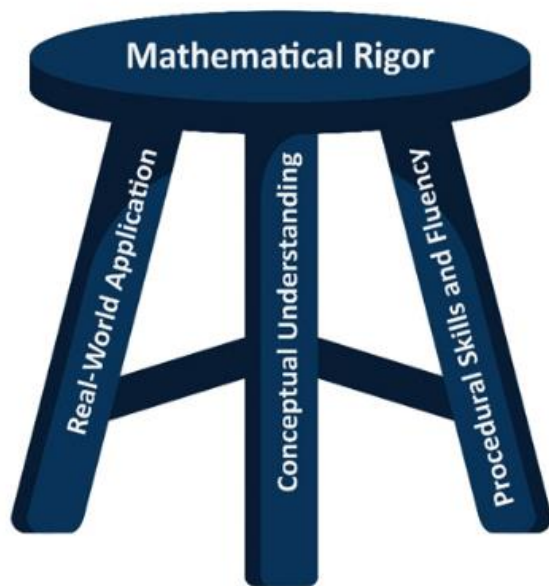
- Teachers are currently using the 2007 Minnesota Math Standards
- A range of instructional strategies employed
- Some more traditional approaches to math instruction
- Experimental work with Building Thinking Classrooms
- Use of individual instruction and practice as well as small groups
- Formative assessments that provide flexible revision on learning
- Games, manipulatives and daily activities used to engage students
- Schoology accessed for assignments, projects and assessments

Minnesota Math Standards

The Minnesota K-12 Academic Standards are the statewide expectations for student learning in K-12 public schools. School districts are required to put state standards into place so all students have access to high-quality content and instruction.



Summary of the 2022 Math Standards



The 2022 MN Math Standards pursue *mathematical Rigor* with an equal intensity of conceptual understanding, real world application, and procedural skill and fluency.

The aim is to develop students who are, confident in themselves as *doers, knowers*, and *sense-makers* of mathematics.

The Minnesota K-12 Academic Standards are the statewide expectations for student learning in K-12 public schools. School districts are required to put state standards into place so all students have access to high-quality content and instruction.

Shifts in the Standards from 2007 to 2022

	2007	2022
Theory	Mathematical <i>knowledge acquired through process</i> → problem solving, reasoning & proof, communication, connections, and representation.	Empower Mathematical Thinking Math Rigor → equal emphasis on; ➤ conceptual understanding ➤ real world application ➤ procedural skills & fluency
Practices & Context	Absent	8 Math Practices & 5 Contexts

Shifts in the Standards from 2007 to 2022

	2007	2022
Strand structure	4 Strands: 1. Number & Operation 2. Algebra 3. Geometry & Measurement 4. Data Analysis & Probability	3 Strands: (<i>Anchor Standards</i>) 1. Data & Probability (2) 2. Spatial Reasoning (2) 3. Patterns & Relationships (3)
Standards	Numerous → <i>grade dependent</i>	7 Anchor Standards
# of Benchmarks	Elementary- 133 Middle- 103 High- 71	Elementary- 186 Middle- 107 High- 78

Example of Standards in the Data and Probability Strand



Grade	Strand	Anchor Standard	Code	Benchmark
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5	Data and Probability	Data Sciences: Identify, formulate and investigate statistical questions by collecting data considering cultural perspectives, analyzing and interpreting data and communicating the results.	5.1.1.2	Compare and contrast between qualitative and quantitative data. (MP3, MP6) ✦
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9–11	Data and Probability	Chance and Uncertainty: Apply and explain the concepts of probability to interpret data, generate questions, predict and make informed decisions to solve problems and communicate ideas.	9.1.2.3	Apply probability concepts, such as intersections, unions and complements of events, and conditional probability and independence, to calculate probabilities and solve situations. (MP4) # ⚙
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Example of Standards in the Spatial Reasoning Strand

Grade	Strand	Anchor Standard	Code	Benchmark
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4	Spatial Reasoning	Measurement: Investigate measurement using a variety of tools, units, systems, processes and techniques in various cultures. Explain and reason with attributes, estimations and formulas to communicate measurement(s) and relationships effectively. Justify decisions and consider the reasonableness of the measurement.	4.2.3.3	Measure angles with a protractor. (MP5) ⚙
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7	Spatial Reasoning	Measurement: Investigate measurement using a variety of tools, units, systems, processes and techniques in various cultures. Explain and reason with attributes, estimations and formulas to communicate measurement(s) and relationships effectively. Justify decisions and consider the reasonableness of the measurement.	7.2.3.1	Demonstrate an understanding of the proportional relationship between the diameter and circumference of a circle and that the unit rate (constant of proportionality) is π . (MP1, MP2) ⚙ ⚙
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Example of Standards in the Patterns and Relationships Strand



Grade	Strand	Anchor Standard	Code	Benchmark
2	Patterns and Relationships	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.	2.3.6.3	Make conjectures and justifications involving subtraction and addition with true/false and open number equations. (MP3) \$
9–11	Patterns and Relationships	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.	9.3.7.9	Find the inverse of a given function and justify the results using tables, graphs or algebra. (MP4, MP6)

2022 Standards Review and Implementation Timeline*



Task	Review New Standards	Exploration of Standards & Adopt Resource(s)	Initial Implementation	Continued Implementation	Full Implementation
Year	2023 - 24	2024 - 25	2025 - 26	2026 - 27	2027 - 28
SIRC for SoWashCO	TLS review & 6 - 12 SIRC kick off	SIRC for Elementary, Middle, and High School	Grade level teams build Scope & Sequences	Grade level teams revise and implement Scp & Sqnc	Requirement to teach all math standards <u>Math MCA-IV</u>



Currently we are in the middle of this work.

**This is a very brief summary of the MDE Implementation Timeline.*

Elementary SIRC Process

Establish the SIRC
Team

Grounding the
Group in
Understanding

Studied Shifts in
the Standards

Worked through the
process of moving from
the benchmark to:

- essential questions,
- big ideas
- learning targets
written in student-
friendly "I can
statements" that
drive classroom
instruction

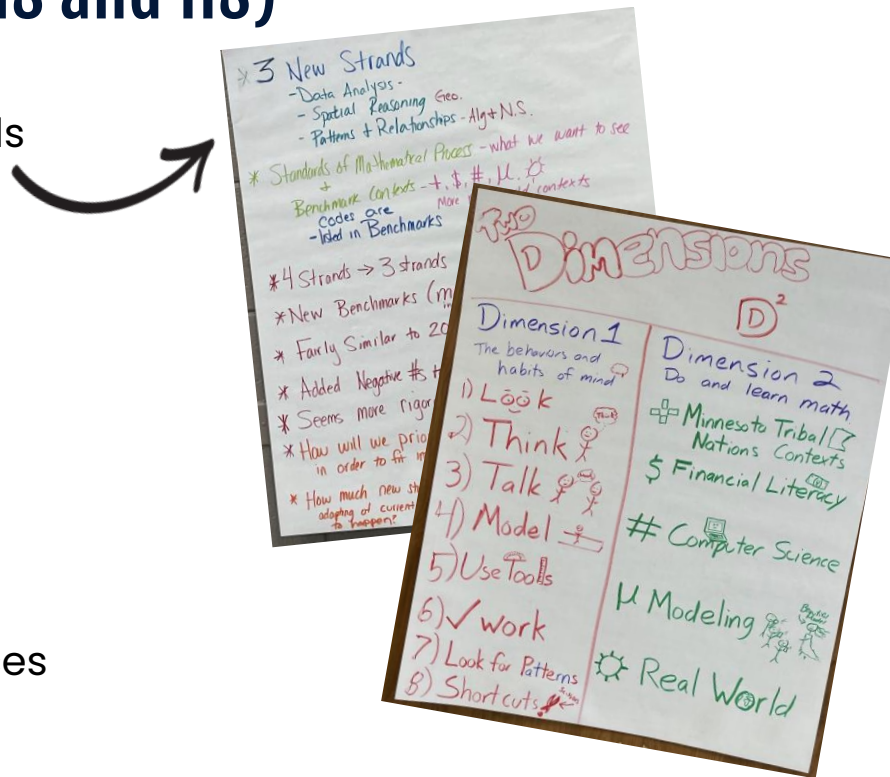
Next Steps for Elementary

- Update elementary progress report
- Review district data to determine if additional curricular resources are needed
- Begin scope and sequence planning for trimester one of 2025

Secondary SIRC Process

Work from last spring (combined MS and HS)

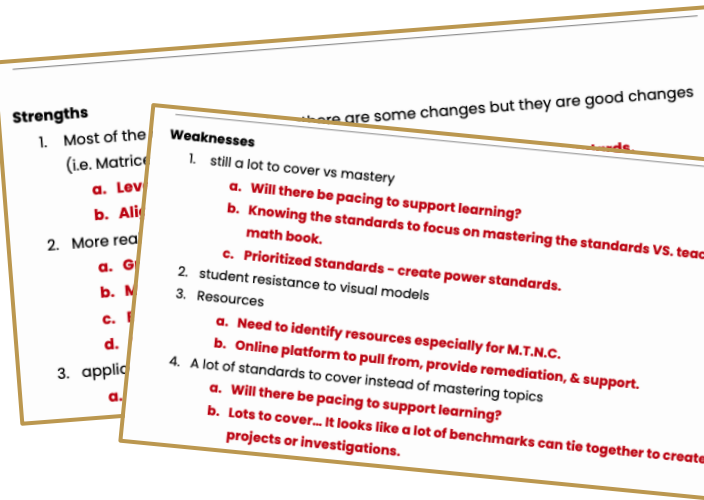
- Explored the structure of the new standards
- Compared and contrasted the 2007 and 2022 standards
 - Looked for shifts, areas of continuity, significant changes
- Developed and deepened our understanding the 8 Mathematical Practices and the 5 Benchmark Contexts



Secondary SIRC Process

Work from last spring

- Participated in a Strengths, Weaknesses, Opportunities, and Threats reflection with the team regarding the new standards
- Conducted grade level and cross grade level discussions regarding the new standards



Secondary SIRC Process



Work from this academic year (Separated into MS and HS teams)

- Reviewed the Teaching and Learning Services Rubric, which will be used to evaluate any potential curricular resources
- Developed instructional priorities with guidance from Minnesota Department of Education, Minnesota Council of Teachers of Mathematics (MCTM) and the Minnesota Math Standards.
- Translated these instructional priorities into specific classroom practices that promote mathematical thinking.

Secondary SIRC Process



Work from this academic year

- Administered an “Instructional Practices and Resources” survey to all math teachers, exploring priorities to look for in potential curricular resources
- Continued to “unpack” the benchmarks; moving from the benchmark, to essential questions, to learning targets, and finally to student-friendly “I can statements” that drive classroom instruction
- Began an informal review of potential curricular resources that support the instructional priorities developed by the SIRC team

Next Steps for Secondary



- Review of the “Instructional Practices and Resources” survey
- Solidify the teams’ pedagogical approaches
- Select standards and benchmarks that will be prioritized for the Multi-Tiered Systems of Support (MTSS) in place in SoWashCo Schools
- Sit for curricular resource vendors presentations
- Select a curricular resource that best aligns to the **criteria in the rubric**

Questions?