Whitefish Bay School District
PK-12 Mathematics Curriculum
Renewal and Design Report

May 26, 2021

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I. Introduction

During the 2019-2021 school years, a committee was formed to evaluate the current PK-12 Mathematics program and to recommend potential curriculum renewal and design enhancements. The last Mathematics program evaluation was completed during the 2011-2012 school year. At that time, the Wisconsin Model Academic Standards (WMAS) were used to guide our curriculum development and resource selection. The purpose of this report is two-fold:

1. to report on the PK-12 Mathematics Program Evaluation conducted in the 2019-2021 school years (due to the COVID-19 Pandemic), and
2. recommend modifications for the renewal and design of the mathematics curriculum and instructional practices, ensuring that the Whitefish Bay School District is:
    a. aligned and exceeding both current state and national standards;
    b. aligned to the most current best practice research in the mathematics and educational fields; and
    c. consistent with the WFB Focus Plan and the adopted seven thriving dispositions.

II. Background

This report is the result of work completed by the PK-12 Mathematics Evaluation Committee. In summary, the charge given to the committee was to:

- review past and existing Whitefish Bay mathematics practices, curriculum, and resources;
- review current research and evidence-based practices relevant to the committee;
- study contemporary curriculum, instruction, and assessment models to use in creating and implementing an improved PK-12 Mathematics program; and
- recommend next steps in the development of a design and renewal plan that is integrated with the Focus Plan for the District and the WFB Seven Thriving Dispositions.

In the spring of 2012, the **Whitefish Bay School Board received the last K-12 Mathematics program evaluation.** In March of 2012, a committee was formed to evaluate the mathematics program and make recommendations for revisions and improvements. The committee consisted of thirty team members, including teachers, administrators, and community members. The committee was chaired by the Director of Instruction, Laura Myrah. Below is the list of recommendations from the committee at that time:

1. Curriculum Development During Summer of 2013 *(Additional during summer of 2014)*
Total Cost: Up to $19,000- Summer curriculum writing up to 800 hours

Teachers will develop and/or update curriculum around Common Core State Standards, new resources, and the integration of 21st Century/College & Career Readiness Skills. In our district, we use a defined curriculum writing model, commonly known as Understanding by Design (UbD). This model ensures teachers:

- *Focus on the enduring understandings that provide a foundation for understanding new content, rather than focusing on isolated content as a means and end to learning.*
- *Focus on the essential questions that help provide students with a reason for seeking information required to answer those questions, or generate new responses.*
- *Minimize the number of standards covered in each unit and focus on depth of understanding of key standards and benchmarks.*
- *Specifically articulate the balance of content and skills in each unit, including college & career readiness skills.*
- *Clarify and describe products and performances that demonstrate proficiency of the standards.*
- *Note key instructional strategies used to meet students learning needs.*
- *Note the key resources, and integration of technology, used during each unit of instruction.*

1.K – 12 Guarantees in Mathematics Instruction
No direct costs

Every teacher demonstrates varying areas of expertise, interests, and instructional styles. Along with valuing that uniqueness, we believe a guaranteed and viable curriculum, through teaching from the adopted curriculum documents (including Common Core State Standards) help to ensure consistent success for our students. Further, we believe every student deserves instruction through research-proven practices. The newly developed "guarantees" outline the consistent instructional practices employed during mathematics instruction. (See Appendix A)

The instructional guarantees document will be highly useful in a few ways:

- *Documentation and communication of decisions around proven practices to implement, with current teachers.*
- *Documentation and communication of decisions around proven practices to implement, with newly hired teachers each year.*
- *Tool for principals to use during supervisory observations of teachers to spur conversations around instructional expectations, reflections and specific feedback on practice.*

2.High School Curriculum/Course Revisions & Resources

Cost from 2013-14 budget: Textbook/program costs will be determined as or after the new curriculum is written. These expenses will be covered through the high school textbook budget, arrived from families' textbook fees as usual, as a primary source and the Instruction Office Budget as a secondary source.

The high school math curriculum is currently a rigorous, strong, curriculum that covers most of the content expected by Common Core. The biggest impact on our curriculum will be in how it is taught, not what is taught.

Immediate Work:

To make room for the Common Core Standards, a need exists to remove some instruction of content that has been previously taught. (Examples included teaching fractions in Algebra 1, teaching $y = mx + b$ in Adv. Geometry, and definitions of types of triangles in Geometry.) At every level, mastery of topics will be expected, so that the high school math department can focus on tenets of Common Core (making sense of problems and persevering in solving them, reasoning abstractly and quantitatively, constructing viable arguments, and critiquing the reasoning of others in authentic, real-life problem situations).

The time saved in not re-teaching previously-mastered topics will be used to mathematically model and apply what students know to solve unique, challenging, and engaging problems. Some of that time is also needed to include or expand topics requiring more emphasis from the Common Core. For example, we need to address more of the "why" and not the "how". More time is for the students to be able to discuss problems mathematically without always being directly led to the correct solution.

Course revision plans:

- *Reevaluate and assess courses for students entering high school not ready to learn high school standards. The math department put forth a* ***Math 9*** *course for students not able to be successful yet in our pre-algebra course. The course will focus on individually assessing and building basic math skills within the pre-algebra context to prepare students for success their sophomore year. This class will run in fall 2013 for 8 SPED students.*

- ***Algebra 1-support****: 8th grade math has been preparing students for more success in Algebra concepts. Most of our pre-algebra students are well prepared for pre-algebra and could be successful in our Algebra curriculum with an additional support class. The idea of a double dose of algebra for 9th graders has several positive implications-including being with classmates, increased ACT scores, and increased readiness for college. New course description:*

  Research shows that doubling up on algebra instruction as a high school freshmen has a positive and substantial impact on college entrance exams and enrollment rates. With this research in mind, Algebra Support is designed for students who have the potential to be successful in Algebra 1 given a second period of math instruction. Absent this support, these students would need to take

Pre-Algebra their freshmen year and then take Algebra 1 as sophomores. Through Algebra Support, students will develop a solid foundation in basic mathematics and strengthen their algebra readiness skills. Moreover, students will advance their number sense and mathematical thinking skills, better positioning them for success in math courses beyond Algebra 1. Teachers and counselors will determine placement.

- ***Pre-Algebra*** *is currently offered to about 25% of freshman. The current plan involves reducing the number of sections to better meet students' needs. After Common Core is implemented at the middle school, further reduction will be possible.*

Summer 2013*:*

- *The math department will develop curriculum for Math 9 and the new Algebra Support class.*
- *All math teachers will request curriculum writing hours to implement changes to our existing courses, to realign our courses to the Common Core and infuse modeling and deeper application problems.*

Ongoing: *High School teachers are currently making changes in all of our math courses to further implement Common Core State Standards and practices as part of our professional practice. This professionalism is a core belief within the department that all math teachers are committed to.*

Future:

- *Algebra 1: The math department will make small changes right away, with more significant changes coming one to two years from now when the middle school students who have gone through Common Core enter high school. There will be far less need for review of middle school concepts.*
- *High school textbooks genuinely written to Common Core are not available yet. We will wait on adopting new textbooks for one to two years until more high-quality resources become available. First textbooks to be considered will be Algebra 1, Advanced Geometry and Advanced Algebra 2/Trig.*

The Common Core calls for a new vision for what high school Math classrooms will look like. There still needs to be a balance of direct instruction, small group collaboration, and individual instruction. However, our classrooms will need to promote student ownership for their own learning. We need to develop habits of mind in our students—only through in -depth learning can students achieve the skills they need to reach college and career readiness.

Specific Topic Implications of Common Core on High School Math Curriculum

- *More with Complex Number System (the complex plane)*
- *More with vectors (parallelogram rule/matrices)*
- *More with remainder theorem (synthetic/long division)*
- *Continue to add more with building functions (absolute value of a natural log, etc.)*
- *More with trig in Algebra 2*
- *More with invertible/1:1 functions*
- *More with translations, transformations, and dilations*
- *More with Equidistance Theorems*
- *More with Conics*
- *More with Constructions (Geosketch?)*
- *More with experimenting and predicting in Geometry*
- *More with discovering geometric formulas (solids, circles, etc.)*
- *More with real-life applications in geometry; e.g., discovering the formula for the SA of a cylinder and applying it a novel situation*

In general, the way teachers have time to go deeper and provide more depth and less breadth is to reteach less. Adopting the Common Core philosophy puts more responsibility for success on the students, but ultimately, will empower students to reach more in-depth levels of mathematical thinking and thrive in a changing, global society.

3.Consideration of Math Resource Center in the Future

Total Cost: Additional FTE costs unknown at this time

It is recommended that administration consider the development and implementation of a Math Resource Center within the typical district budgeting process.

Rationale: Since some repetition will be removed, students need tools and staff supports to help them fill in their gaps. In order to adequately support students, it is recommend a math resource center be developed, which would be staffed by a certified math teacher. This teacher would support individual students, answer questions, re-teach material as needed, etc. This resource center would also allow all students the opportunity to work with each other to complete homework and solve problems (not just students formally assigned to the Learning Center, which also has a math certified teacher). Another purpose of the math resource center could be to administer Tier 2 RTI interventions.

4.Middle School to High School Course Sequence

Different than the traditional math sequence of algebra beginning in high school and being the typical freshman year math class, the Common Core State Standards indicate that some algebra is taught in middle school. Incidentally, on average our district already has approximately 20% of its 8th graders taking algebra and entering high school math in geometry.

The Big Ideas Math program offers curriculum resources for two different paths of math instruction and learning. The middle school and high school teachers are working closely to design smooth transitions for students within the various course sequences available for our students. It is important to stress that the main focus of Common Core and our math curricular program is depth in learning over speeding through the math sequence of courses.

We anticipate, at least initially, the majority of our students will follow the traditional path of 8th grade math and algebra in 9th grade. Students already accelerated in math, or who meet the Gifted and Talented criteria for acceleration, will be in at least the faster sequence or even grade level accelerated more than one year. Also envisioned, after students move up through the elementary and middle school curriculum that is based on the more rigorous Common Core State Standards, we may find the majority of our students end up taking algebra in 8th grade.

5.Middle School Curriculum/Course Revisions & Resources

Total cost: $53,228

After significant study of, and experience with, mathematical & learning research, Common Core State Standards, and various math curricular programs, the Math Review Committee recommends we adopt ***Big Ideas Math*** *from Houghton Mifflin Harcourt. Seven programs were thoroughly reviewed and scored with our textbook/program evaluation rubric. The results from the scoring are below.*

As noted below from the current Mathematics Evaluation Committee, pieces of the recommendations were implemented while others were more systemic in nature or may have not been fully implemented. Below are the committee's observations around the strengths and opportunities in our current math implementation since the last review.

Strengths and Opportunities for our Current Math Program

Strengths (K-5)
• Teachers are using supplemental resources to reinforce concepts. (x2) • Hard-working teachers who collaborate to plan math instruction more often. (x3) • Teachers are seeking more information to meet students' needs. • More student engagement with math is beginning to happen. *(Why is that do you think?)* • Formative assessments such as exit slips being used. (x2) • Students want to learn and do well. • Teachers are using supplemental resources to reinforce concepts. • Hard-working teachers collaborate to create common curriculum and assessments. • Supportive families/community. (x3) • Seeking more information to reach students' needs. • Dedicated students. (x3) • More fidelity and use of Dreambox. (x2) • Fosnot   o But . . . struggle with the need to create so many pieces or purchase manipulations. • Conceptual learning with math facts. • Cohesive math instruction K-12. • Collaboration and Culture. • Common Core Aligned. (Better alignment than the previous resource Everyday Math.) • Better at emphasizing fewer concepts to mastery rather than too many at exposure level (depth over breadth). • Increased our attention to facts. • High School in College Math. • At RI, Math Facts in 5K. • Getting better at the balance to learn math facts. • Think Tanks. • Quick Quizzes are used for formative, targeted instruction. • End of unit expectations for mastery.
Opportunities (K-5)
• Moving beyond whole group instruction as the dominant teaching approach toward small group instruction, collaborative student work, and individualized instruction. (x3) • Move from whole group instruction to include more workshop model. • More opportunities are needed for students to explain thinking about mathematics. (x2) • Represent concepts in multiple ways to bridge between concrete and abstract symbols in math. • Allowing for multiple ways to represent a concept so that it can be transferred (tools and games). (x3) • Incorporate more effective problem-solving (authentic problem-solving and use of 21st century skills). • Representation strategies to allow students to share thinking in a variety of ways. • Need to incorporate more authentic problem solving. • Parent education. (x2) • Math talk time. • On-going teacher training.

- Reaching a large variety of learners.
- Movement from fixed to growth (teachers and students). (x2)
- Differentiation
    - Within planning and on the fly.
    - Student choice.
- Better use of technology.
    - Enhancing it to be further aligned with the Core Curriculum.
- Mathematics discourse.
- Efficient ways to provide 'extensive, specific feedback'.
- Transfer.
- Rich tasks/Exploration.
- Curriculum resource.
- All of the former strengths are still opportunities for growth.
- Spiraling concepts - currently not in Math Expressions.
    - Found that this really supported Students with Special Needs.
- CCSS aligned truly?
- Additional staff learning in mathematical understandings.
    - Understanding the progressions.
- Vertical alignment.
- Less disjointed.
    - Too many resources that we don't know or are readily available.
- Look at homework.
- More time.
    - Longer math blocks.
- Measures to track math practice.
- Fluency with facts (x, / especially).
    - Balance of automaticity with fluency.
    - While students use strategies, the process slows students down when engaged in multi-step procedures.
- Addressing the needs of highly capable versus students not yet at core level.
- Authentic problem solving.
- Parent support/Parent resources.
- Assessments which measure more than computation.
- Alignment from K-5 to 6-8.

Strengths 6-12

- WFB proven practices are aligned to NCTM.
- Strong mission statement.
- Content rigor.
- Hard-working, dedicated teachers.
- Positive intentions.
- Community is supportive.
- Strong structures, but need to be continuously changing contexts to stay culturally relevant.
- Combination of higher-level tasks and procedural fluency (conceptual understanding) - Conversation opportunity: What is the correct balance/ratio?
- Teachers are always working to improve instruction and seeking out better resources for

our students.
- Rigorous curriculum.
- Elem and MS understanding vs memorized BUT is it working if not seen at HS?
- Emphasis on discussion and looking at problems from different viewpoints and multiple strategies.
- MS block allows for time for differentiation.
- Alignment with CCSS.
- Hard-working and collaborating staff.
- Common assessments modified together.
- Balance of various strategies (#5 proven practices).
- Rigorous curriculum with high expectations.
- Improvement in reducing "bad math" attitude.
- MS- Common prep.
- MS- Longer classes.
- Consistency- same lesson, same day.
- List of proven practices is good.
- MS- Math workshop training.
- Math Practice Standards.
- All classes do modeling.
- Attend to precision.
- MP6 and MP9 at HS.
- MP7 at MS.
- Chromebooks in 6th and 7th- easier to integrate technology.
- Better 5th and 6th grade transition.
- No fractions in Algebra 1- no y=mx+n in Adv. Geo.
- No Math 9 class (SPED class).
- Algebra block.
- Pre-Algebra down from 25%.
- Algebra alignment between MS and HS and more with function transformations.

Opportunities 6-12

- Depth over breadth- not accomplished.
- Effective ongoing training was a goal, not really accomplished.
- Some core-values seemed to have changed- growth us fixed.
- Align practice to belief.
- Instructional rigor.
- Technology and the use of/training of.
- Communicate our belief with community.
- Including high school staff to be fully K-12.
- Discussions of what is the appropriate amount of depth.
- Strategy over speed.
- Efficiency is important, but doesn't necessarily mean lightning speed.
- Keeping contexts (real-world) attached to numbers- if students need improvement on number sense, they need to be making real-world connections.
- Addressing needs of highest and lowest learners.
- #1 recognizes and praise growth not just effort.
- HS- understanding vs memorized.
- Getting more student exploration by narrowing down "must have curriculum".

- Students currently struggle to persevere and work independently to allow for group work.
- Depth vs breadth (still need to improve).
- Articulating specific foundational skills needed as prerequisite for success.
- More vertical communication and alignment 6-12.
- Develop a better sense of effort and process of learning over mathematical ability.
- Continue emphasis at HS build on MS success.
- To make changes to improve learning opportunities.
- Max preps- collaboration opportunities (same as other teacher).
- Better vertical alignment.
- Curriculum that has resources for block schedule (Juicy problems).
- Online interactive resources.
- Address mission statement.
- How consistently are they being implemented. Math workshop training).
- HS ongoing teacher training.
- Is there enough focus on them? (Math practice standards).
- Inconsistent implementation of MP#3.
- At HS- learning games, hands on activities- some lost due to loss of instructional time.
- More student exploration.
- Technology.
- Class alignment with CCSM. (ex. Algebra standards taught in 8th grade or Algebra 2 taught in Algebra 1).
- No complex # plane.

Relationship of the Mathematics Curriculum Renewal and Design Process to the District Focus Plan

Focus Plan Goal: Every student will meet or exceed comprehensive learning standards to promote future success within our global society.

Action: Develop exemplary, standards-based curriculum and assessment.

Current Context: Through a better aligned scope and sequence of the mathematics curriculum that progresses seamlessly from grades PreK-12 – including targets for learning, parameters for implementation of the curriculum, and each teacher's ability to meet the needs of a broad range of learners in his or her classroom – the committee believes that we can work to address these gaps *and* improve instruction and learning for *all* students.

Of all school factors that impact school and student achievement, the primary factor in determining whether or not a school is successful in helping all students meet high standards, is whether or not that school has a guaranteed and viable curriculum. In Robert Marzano's meta-analysis of research

on effective schools (2003), he identifies a guaranteed and viable curriculum as having the following components:

- ***Opportunity to Learn*** – *Students have the opportunity to learn the standards through an articulated and aligned curriculum. Students aren't left with holes in their curricular program based on their placement.*
- ***Time and Viability*** – *The content that teachers are required to teach can be both taught and learned in the amount of time allocated for that subject area.*
- ***Essential Understandings*** – *The curriculum identifies those skills and understandings that are essential.*
- ***Commitment to Essential Content*** – *Through a process of curricular design, assessment, professional dialogue, supervision and evaluation, teachers and administrators are responsible and accountable for implementing the curriculum.*
- ***Protection of Time for Instruction and Learning*** – *Schools make every effort to convey the message that class time is sacred time and should be interrupted for important events only.*

(Robert Marzano; What Works in Schools: Translating Research Into Action 2003 pp 22-34)

These four factors are the critical factors that result in a supportive curriculum for all students. Through this process, we will map out a clear sequence of concepts and skills. We will write the curriculum using a framework that identifies essential content. More analysis of the current state of a guaranteed and viable curriculum in our PreK-12 Mathematics programming is shared later in this report.

Focus Plan Goal: Every student will experience a caring, inclusive learning environment that supports the development of the whole child with balanced attention to physical, social, emotional, and intellectual well-being.

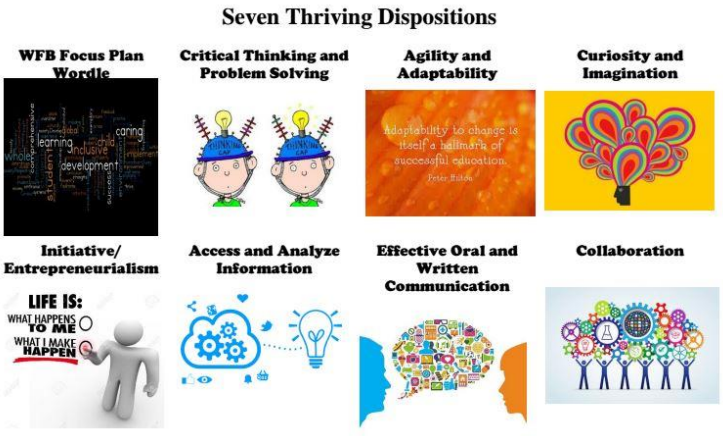
Action: This goal seeks to provide experiences, information, and connections that will prepare students to live, work, and relate in a rapidly changing and diverse world.

Current Context: The committee discussed meeting students' varying needs through the math curriculum and instructional practices. Deliberate care and strategies are implemented at all levels to ensure a supportive, caring environment wherein all students are treated respectfully and can feel successful. Differentiation techniques are used to meet varying levels of academic readiness, as well as social, cultural, and engagement practices. Furthermore, teachers understand that research indicates students' beliefs and attitudes about learning math are directly related to their performance; we look to focus on effort and engagement in math learning, over pure ability/achievement, in order

to build confidence and interest in mathematics. All of these practices promote a challenging yet supportive and high-interest learning environment to support the whole child.

Relationship of Mathematics to the Seven Thriving Dispositions

The thriving dispositions, as defined in the Transformational Educational Practices (TEP) report, that directly align to the mathematics are; critical thinking and problem solving, access and analyze information skills, and effective oral and written communication skills. The Standards of Mathematical Practices from the Common Core specifically places significance on using them as an instructional practice vehicle for content knowledge. Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).



Critical Thinking and Problem Solving

Organizations have flattened over time, and are organized in teams for specific projects. Work is no longer defined by a specialty; it is defined by the task or problem you and your team are trying to solve or the end goal you want to accomplish. The solution is not prescribed, and the biggest challenge is to have the critical thinking and problem solving skills to be effective in teams- because nobody is telling them exactly what to do!

1A. Reason Effectively

- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation.

1B. Use Systems Thinking

- Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems.

1C. Make Judgments and Decisions

- Effectively analyze and evaluate evidence, arguments, claims, and beliefs.
- Analyze and evaluate major alternative points of view.
- Synthesize and make connections between information and arguments.
- Interpret information and draw conclusions based on the best analysis.
- Reflect critically on learning experiences and processes.

1D. Solve Problems

- Solve different kinds of non-familiar problems in both conventional and innovative ways.
- Identify and ask significant questions that clarify various points of view and lead to better solutions.

Access and Analyze Information Skills

In the twenty-first century, we have to manage an astronomical amount of information flowing into our lives on a daily basis. We have to be able to access and evaluate information from many different sources.

5A. Access and Evaluate Information

- Access information efficiently (time) and effectively (sources).
- Evaluate information critically and competently.

5B. Use and Manage Information

- Use information accurately and creatively for the issue or problem at hand.
- Manage the flow of information from a wide variety of sources.
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information.

Effective Oral and Written Communication Skills

As more and more people are working in "virtual" offices, the ability to express one's views clearly and to communicate effectively across cultures is becoming increasingly valuable. Communication via email and Google hang-outs, requires the ability to communicate one's thoughts clearly and concisely, but also the ability to create focus, energy, and passion.

6A. Communicate Clearly

- Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts.
- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication for a range of purposes (e.g. to inform, instruct, motivate, and persuade).
- Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact.
- Communicate effectively in diverse environments (including multi-lingual).

Resources/Excerpts from:
http://www.p21.org/our-work/p21-framework

Wagner, T., *The Global Achievement Gap*, Basic Books, New York, NY. (2008)

III. Committee Membership and Organization

In this section, a description of the committee, leadership, organization, and timeline of the program evaluation process are included. A collaborative and representative team of stakeholders in the District is vital in carrying out a reliable and valid program evaluation. Thus, the Whitefish Bay School District's program evaluation committee was comprised of a cross-representation of classroom teachers, specialists, building administration, and community members.

Members	Position/Role
High School Representatives	
Christina Cattey (19-20 only)	Math/Science Teacher
Chad Ellefson	Collaboration Coach & Department Chair
Dave Glenn	Math Teacher
Linnea Logan (19-20 only)	Math Teacher/ Computer Science Teacher
Brandon Krzyzkowski	Math Teacher
Josiah Owen	Math Teacher
Cassie Sechtig	Math Teacher
Donna Woodnorth (19-20 only)	Math Teacher
Greg Zupek	Math Teacher
Lisa Taylor/ Brent Manor	Learning Center
Middle School Representatives	
Ben Clausen	Sixth Grade
Jen Justman	Sixth Grade
Ruth Zarling	Sixth Grade
Grace Bethany	Seventh Grade
Caroline Stevenson	Seventh Grade
Katelyn Albright	Seventh Grade
Emily MacKay	Eighth Grade
Joe Wieland	Eighth Grade
Becky Roloff	Eighth Grade
Elementary School Representatives	
Becki Koch	Junior Kindergarten- Cumberland
Kelly Kubricki	Junior Kindergarten- Richards
Jennifer Opelt	Kindergarten - Richards
Rachel Ruetz	Kindergarten- Cumberland
Michelle Mooney	First Grade- Richards
Deb Lincer	First Grade- Cumberland
Kevin Lazorik	Second Grade- Richards
Caroline Tauscher	Second Grade- Cumberland
Karen Eyers	Third Grade- Richards
Christine Stefanik	Third Grade- Cumberland
Katie Wilhelm	Fourth Grade- Richards
Julie Riedl	Fourth Grade- Cumberland

Tracey Mike (19-20 only)/Mary McClung	Fifth Grade- Richards
Shannon Izquierdo	Fifth Grade- Cumberland
Other Representatives	
Justin Nies	Elementary Associate Principal
Matt Rose	WFB MS Associate Principal
Julie Henningsen	WFB HS Associate Principal
Maria Kucharski	Director of Teaching and Learning
Allison Silveira-Haworth	Parent Representative
Alanna Koritzinsky	Special Education- Intermediate
Laura Laundrie	Special Education- Primary
Nick Momper	Special Education- MS
Kelly LeGrand	Special Education- HS
Susan Jones	IRC- Elementary
Matt Skinner	IRC- Elementary/ Math Recovery Specialist
Jodi Schmidt	IRC- Middle School
Beth Sutherland	IRC- High School
Steven Shaw	Math Interventionist

Timeline / Key Events of the Program Study and Evaluation

The PK-12 Mathematics Program Evaluation Committee operated in a four-part process as described below:

Information Phase

Date	Key Items	Support Materials
Summer 2018 July 16-19, 2018	Math Institute of Wisconsin- Summer Institute for IRCs and ½ of Administrative Team.	
Spring 2019- Ongoing	Preparing for Evaluation.	Core Teacher Text Hanover Articles Collection of Research
Spring 2019	Staff selection for committee participation 4K-5.	
Summer 2019 July 8-11, 2019	Math Institute of Wisconsin- Summer Institute for math curriculum renewal and design team and ½ of Administrative Team. The institute is a required for math curriculum and renewal design team members 4K-12.	
Fall 2019	Parent request for participation and selection for the committee.	Notification Materials Committee Application
Spring-Fall 2019	Final organization of committee membership.	Committee Membership Meeting Dates
Fall/Winter 2020	Math Institute of Wisconsin- Early Learning Services- Developing Young Mathematicians for 4K, K and Special Education Teams- ½ Team this Year.	
2020-2020 School Year	6-12 Math Institute of Wisconsin- Algebra Progression Training during Collaboratory Days.	
Fall/Winter 2021	Math Institute of Wisconsin- Early Learning Services- Developing Young Mathematicians for	

	4K, K and Special Education Teams- Remaining Staff.	

Work Team Phase

Date	Key Agenda Items	Support Materials
October 25, 2019 7:45-11:15 6-12 Committee Members	•Committee members will continue to develop community building relationships within our WFB learning community. •Committee members will explore resources to identify important teaching and learning strategies in mathematics. •Committee members will understand the updated changes in the Whitefish Bay Curriculum and Renewal cycle. •Committee members will identify the strengths and opportunities for growth from our last review.	✓WFB Cycle Document ✓Last Review ✓Texts ✓Chart paper for Anchor Charts ✓Notebook
November 11, 2019 1:15-3:45 6-12 Committee Members	Committee members will explore resources to identify important teaching and learning strategies in mathematics.	✓Texts ✓Chart paper for Anchor Charts ✓Notebook
December 5, 2019 7:45-3:45 4K-5 Committee Members	•Committee members will explore resources to identify important teaching and learning strategies in mathematics. •Committee members will understand the updated changes in the Whitefish Bay Curriculum and Renewal cycle. •Committee members will identify the strengths and opportunities for growth from our last review. •Committee members will explore resources to identify important teaching and learning strategies in mathematics.	✓WFB Cycle Document ✓Last Review ✓Texts ✓Chart paper for Anchor Charts ✓Notebook
January 17, 2020 6-12 Committee Members	•Committee members will explore the Forward Assessment and ACT questions and depth of knowledge comparison. •Committee members will identify the strengths and opportunities for growth from our last review by analyzing our MS and HS math achievement data.	✓Chromebooks ✓Survey ✓Presentation ✓Chart Paper
February 14, 2020 9:30-11:15 6-12 Committee Members	Committee members will explore resources to identify important teaching and learning strategies in mathematics.	✓Chromebooks ✓Survey ✓Presentation ✓Chart Paper ✓Texts/Readings

February 20, 2020 7:45-3:45 4K-5 Committee Members	•Committee members will explore resources to identify important teaching and learning strategies in mathematics. •Committee members will identify the strengths and opportunities for growth from our last review by analyzing our elementary math achievement data.	✓Chromebooks ✓Survey ✓Presentation ✓Chart Paper ✓Text/Readings
March 6, 2020 4K-12 Committee	Committee members will explore resources to identify important teaching and learning strategies in mathematics.	✓DPI Documents ✓Survey Results ✓Past Review ✓Mind the Gap Graphic ✓Cohort Data ✓Text/Readings
May 22, 2020	Committee worked with collaboration coaches to complete pandemic curriculum survey and to receive update on math curriculum and renewal cycle next steps.	✓Revised Timeline and math plan
2020-2021 PL Days ½ Days 6-12 Committee Members	6-12 Math Institute of Wisconsin- Algebra Progression Training during Collaboratory Days. 9/28/20, 11/30/20, 1/18/21, 2/25/21	✓MI Materials and planning
November 24, 2020 3:15-3:45 4K-5 Committee Members	Committee spent time reviewing where we are to date since the pandemic and the plan for the remainder of the school year.	
December 10, 2020 3:15-4:45 4K-5 Committee Members	Committee members will explore core curriculum resource for alignment to our mission, vision and state standards.	✓IMET Tool ✓Resource Access ✓Time
February 11, 2021 3:15-4:45 4K-5 Committee Members	Committee members will explore core curriculum resource for alignment to our mission, vision and state standards.	✓IMET Tool ✓Resource Access ✓Time
March 4, 2021 3:15-4:45 4K-5 Committee Members	Committee members will explore core curriculum resource for alignment to our mission, vision and state standards.	✓IMET Tool ✓Resource Access ✓Time
March and April 2021 9-12 Administrators and IRC	Explore core curriculum resource for alignment to our mission, vision and state standards.	✓IMET Tool ✓Resource Access ✓Time
March and April 2021 Department Meetings and Asynchronous Wednesdays 6-8 Committee Members	Committee members will explore core curriculum resource for alignment to our mission, vision and state standards.	✓IMET Tool ✓Resource Access ✓Time
April 27, 2021	Committee members review DRAFT of K-12	✓DRAFT of Board

3:15-4:45 4K-5 Committee Members	Math Report for recommendations and feedback.	Report
May 6, 2021 HS Math Chair	Reviewed HS math report recommendations.	✓DRAFT of Board Report

Board Phase

Date	Action
May 27, 2020	Board discussion of mission and goals in Instruction Committee Meeting.
June 10, 2020	Board approval of mission and goals.
April 22, 2021	Report completed following committee review.
April 28, 2021	Revised report completed for Teaching and Learning Committee review and approval.
May 26, 2021	Board of Education discusses and receives the report and recommendations regarding the PK-12 Mathematics program evaluation.
June 2, 2021	Board of Education PK-12 Mathematics program evaluation approval.

Curriculum Design Phase

Date	Key Items	Support Materials
Ongoing	District Collaboration Days- Establish norms, review standards and begin to create student friendly learning targets.	
Winter, Spring 2021	Review curriculum core resource needs.	IMET Tool
Spring-Summer 2021 Ongoing	Resource Purchases per Recommendation.	
Fall 2021	Interested teaching staff implement new curriculum	
2021-2022 School Year	Mathematics curriculum writers participate in Wisconsin Assessment Consortium training.	
Summer 2022	Units of Study curriculum and design (curriculum writing- Learning Targets only for CORE math courses).	
Fall 2022-Ongoing	Creation and implementation of the Units of Study and resources.	

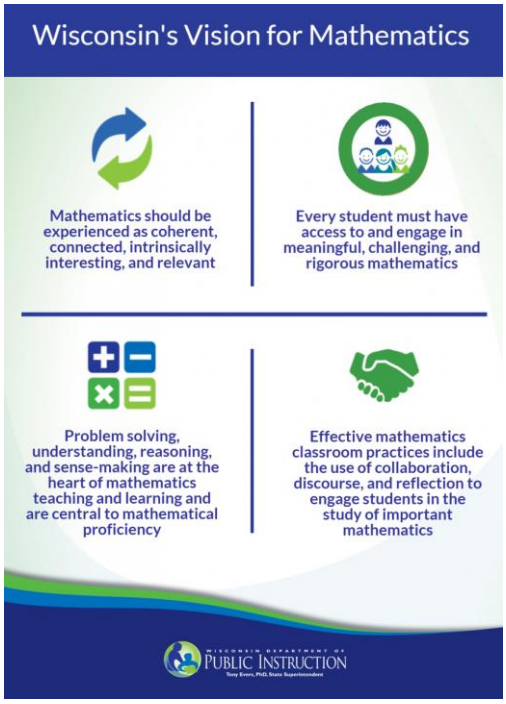
IV.Program Mission and Goals

School District of Whitefish Bay
K – 12 Mathematics
Mission Statement and Goals

Mission Statement

Every student will be empowered with mathematical reasoning, conceptual understanding, and procedural fluency necessary to excel in a changing world through mathematical experiences that are rich in curiosity, collaboration, and innovative problem-solving.

*Vision



*Equity Guiding Beliefs

- Every student has the right to learn significant mathematics.
- Mathematics instruction must be rigorous and relevant.
- Purposeful assessment drives mathematics instruction and affects learning.
- Learning mathematics is a collaborative responsibility.
- Students bring strengths and experiences to mathematics learning.
- Responsive environments engage mathematics learners.

Broad Goals

1. A focused, balanced coherent progression of mathematics learning, with an emphasis on proficiency with key topics, should become the norm. Any approach that continually revisits topics, without closure or mastery, is to be avoided.

2. Math curriculum and goals should **simultaneously develop conceptual understanding, computational fluency, and problem-solving skills**. These skills are mutually supportive. Teachers should emphasize these during instruction of:
   a. conceptual understanding of mathematical operations,
   b. fluent execution of procedures, and

c. fast access to number combinations jointly support effective and efficient problem solving.

3. To promote students becoming effective, efficient problem solvers, **instruction should emphasize thinking, and using math in the context of meaningful examples and situations**. Tasks that promote reasoning and problem solving are used regularly during instruction wherein students can transfer their understanding to new contexts/situations.

4. Teachers must strike an **effective use of instructional methodologies including**:
   a. whole group instruction.
   b. small group instruction and collaboration.
   c. individual/personalized instruction, as needed.

5. **Facilitate meaningful mathematical discourse and perseverance-** student builds a shared understanding of mathematical ideas by analyzing and comparing approaches and arguments, which is a key instructional strategy helping the brain process and remember concepts and skills.

6. **Build procedural fluency from conceptual understanding with whole number operations, which is dependent on sufficient and appropriate practice to develop automatic recall** of addition and related subtraction facts, and of multiplication and related division facts. This requires fluency with standard algorithms for addition, subtraction, multiplication, and division.

7. **Explicit instruction with students who have math learning difficulties has shown consistently positive effects on performance**. Explicit instruction means:
   a. teachers provide clear models for solving a problem type using an array of examples,
   b. students receive appropriate practice,
   c. students are provided opportunities to think aloud as they solve the problem, and
   d. students are provided with extensive, specific feedback.

8. Redefining Ready through College and Career Readiness- **Algebra is a college readiness indicator that is rooted in rigorous K-12 academic mathematics program.** Research shows the completion of Algebra II correlates significantly with success in college and earnings from employment. A major goal for elementary and early middle school math education should be the focus on three key areas: whole numbers, fractions and particular aspects of geometry and measurement, which are the critical foundations for Algebra in 8th grade and high school.

9. Teachers' expertise in both math content knowledge and proven instructional methodology are critical to the success of student learning.

10. Fidelity of instructional program ultimately results in consistent, targeted math learning, and achievement for all students. Textbooks do not solely constitute a comprehensive math program.

**Retrieved from Wisconsin Department of Public Instruction on 1.24.20: Board approved 6.10.20*

V. Student and Program Data Analysis Overview

The following was a list of District data used in our initial data analysis:

a. Wisconsin Forward Scores- Grades 3-8 for the 2016, 2017, 2018, 2019 school years.

b. Wisconsin ACT Aspire Scores- Grades 9-10 for the 2016, 2017, 2018, 2019 school years.

c. Wisconsin ACT Scores for Grade 11 for the 2016, 2017, 2018, 2019 school years.

d. AP Scores for the 2018-2019 school year.

e. University of Wisconsin Remedial Needs data.

f. District Math Guarantees Walk- Through data for the 2018-2019 school year.

g. Wisconsin Forward Test Item Analysis in Grades 3-8 for the 2018-2019 school year.

h. Analysis of Forward Test Exemplars

Data Considerations:

Changes in the data since the last review:

- Wisconsin Concept and Knowledge Exam (WKCE) through 2013-2014
- Wisconsin Badger Exam-2014-2015
- Wisconsin Forward Exam -2018-2019, 2017-2018, 2016-2017, 2015-2016

On the next several pages in this report is the data analyzed by the committee, along with some broad data statements made by the PK-12 Mathematics Committee.

A. Wisconsin Forward Scores

WFB Elementary- Sub-Group Data Matrices Math
Percent of Students Proficient or Advanced on Forward

Disaggregation Data for Math in Grade 3				
Year	**Special Education**	**White**	**African/American**	**All**
2015-2016	**40.0%**	**76.4%**	**38.5%**	**72.0%**
2016-2017	**47.4%**	**70.5%**	**21.1%**	**64.8%**
2017-2018	**47.1%**	**68.1%**	**11.1%**	**61.6%**
2018-2019	**36.0%**	**57.6%**	**00.0%**	**56.6%**

Disaggregation Data for Math in Grade 4				
Year	**Special Education**	**White**	**African/American**	**All**
2015-2016	**21.4%**	**67.1%**	**5.6%**	**60.5%**
2016-2017	**20.0%**	**67.1%**	**23.1%**	**60.5%**
2017-2018	**40.9%**	**61.7%**	**25%**	**70%**
2018-2019	**35.0%**	**71.2%**	**25%**	**67%**

Disaggregation Data for Math in Grade 5				
Year	Special Education	White	African/American	All
2015-2016	27.8%	66.7%	15%	60.4%
2016-2017	25%	68.2%	5.3%	59.5%
2017-2018	20%	70.9%	27.3%	66.8%
2018-2019	33.3%	69.9%	18.8%	67.3%

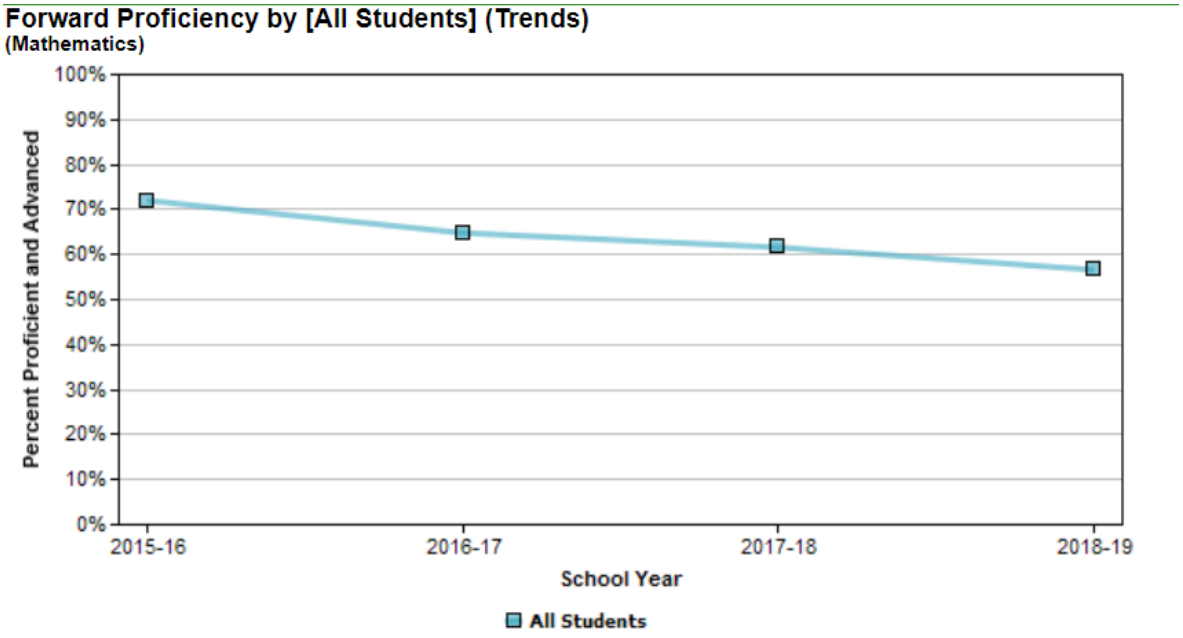
WFB Elementary- Sub-Group Data Matrices Math
Percent of Students Proficient or Advanced on Forward Categories

Disaggregation Data for Math in Grade 3					
Year	Geometry	Measurement and Data	N & O-Fractions	N & O-Base 10	Operations & Algebra
2015-2016	72.5%	74.1%	71.0%	72.0%	73.0%
2016-2017	63.8%	69.4%	52.3%	73.9%	69.4%
2017-2018	55.8%	64.8%	59.5%	64.7%	64.2%
2018-2019	55.7%	58.0%	54.8%	57.1%	58.0%

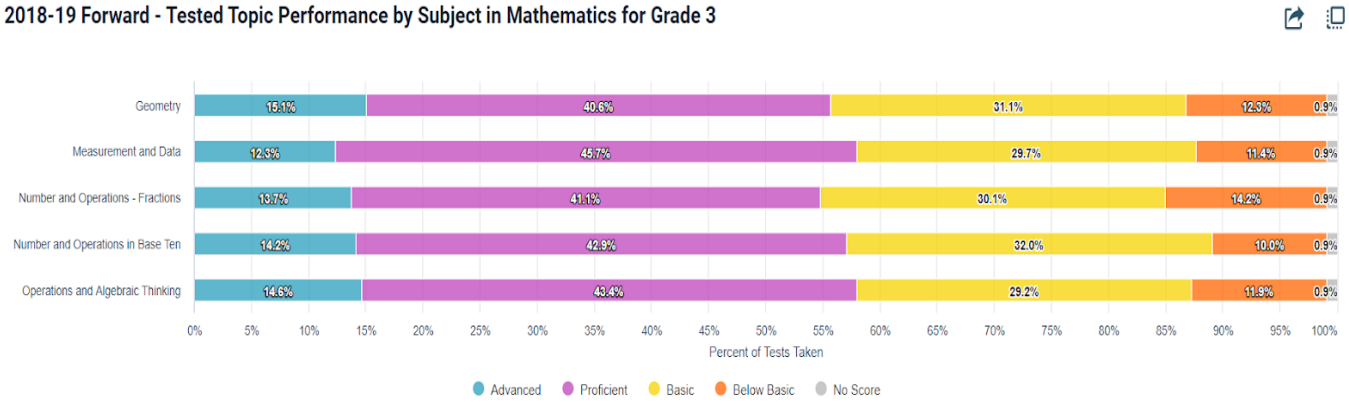
Disaggregation Data for Math in Grade 4					
Year	Geometry	Measurement and Data	N & O-Fractions	N & O-Base 10	Operations & Algebra
2015-2016	53.7%	58.8%	61%	60%	61.4%
2016-2017	54.4%	58.9%	56.4%	63.8%	62%
2017-2018	52.7%	56.5%	62%	62.5%	61.9%
2018-2019	62.5%	65%	65.9%	68%	69.6%

Disaggregation Data for Math in Grade 5					
Year	Geometry	Measurement and Data	N & O-Fractions	N & O-Base 10	Operations & Algebra
2015-2016	54.1%	56.7%	61.2%	62.2%	60.3%
2016-2017	54.2%	56.6%	61.5%	60.5%	58.5%
2017-2018	63.3%	65.8%	64.8%	64.3%	66.8%
2018-2019	66.8%	63.7%	68.3%	70.4%	66.3%

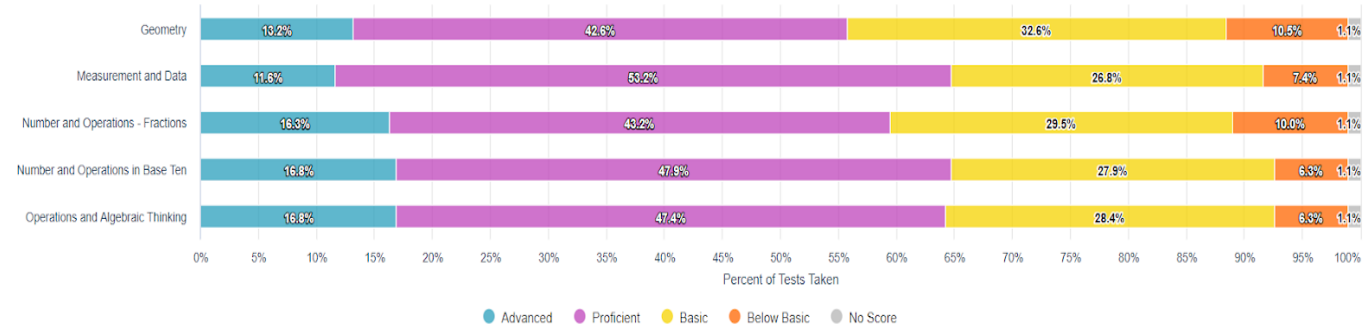
3rd Grade Forward Data- All Students



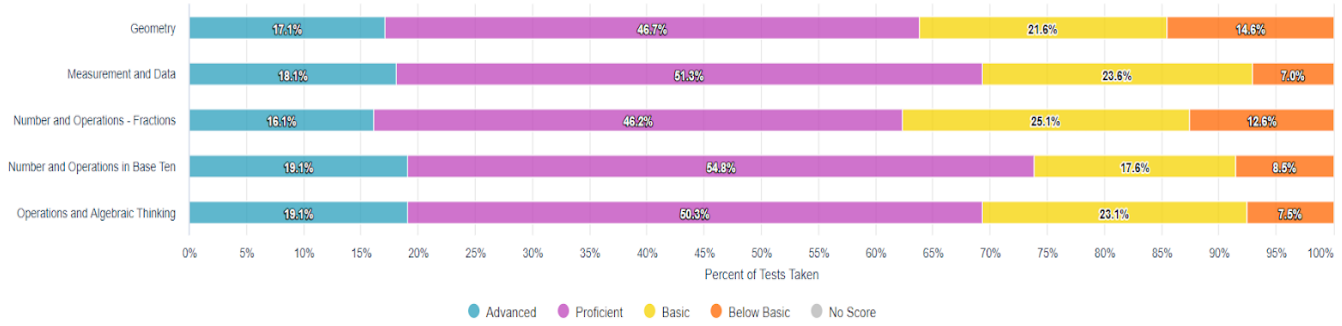
School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	All Students	193	139	72.0%
2016-17	All Students	199	129	64.8%
2017-18	All Students	190	117	61.6%
2018-19	All Students	219	124	56.6%



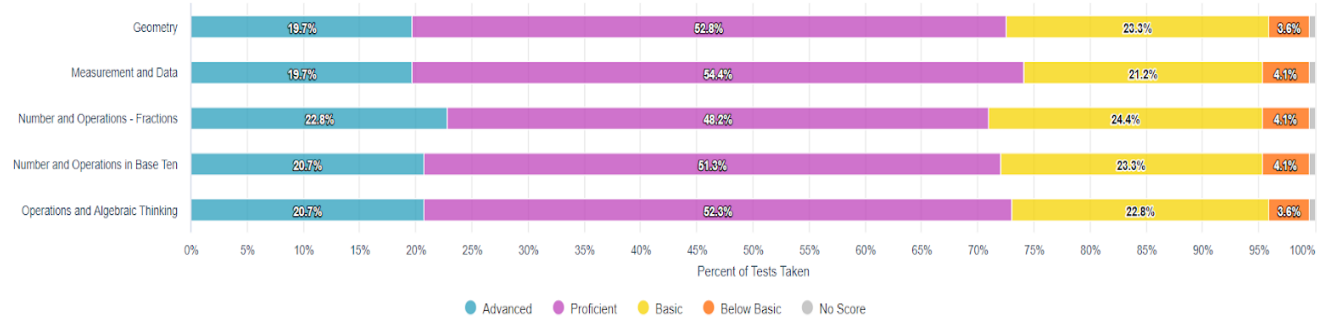
2017-18 Forward - Tested Topic Performance by Subject in Mathematics for Grade 3



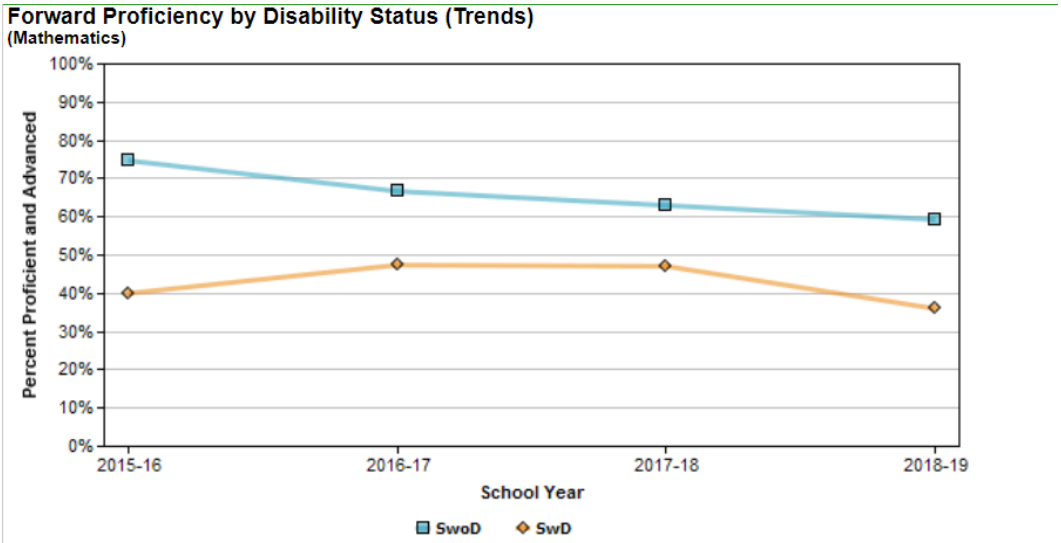
2016-17 Forward - Tested Topic Performance by Subject in Mathematics for Grade 3



2015-16 Forward - Tested Topic Performance by Subject in Mathematics for Grade 3

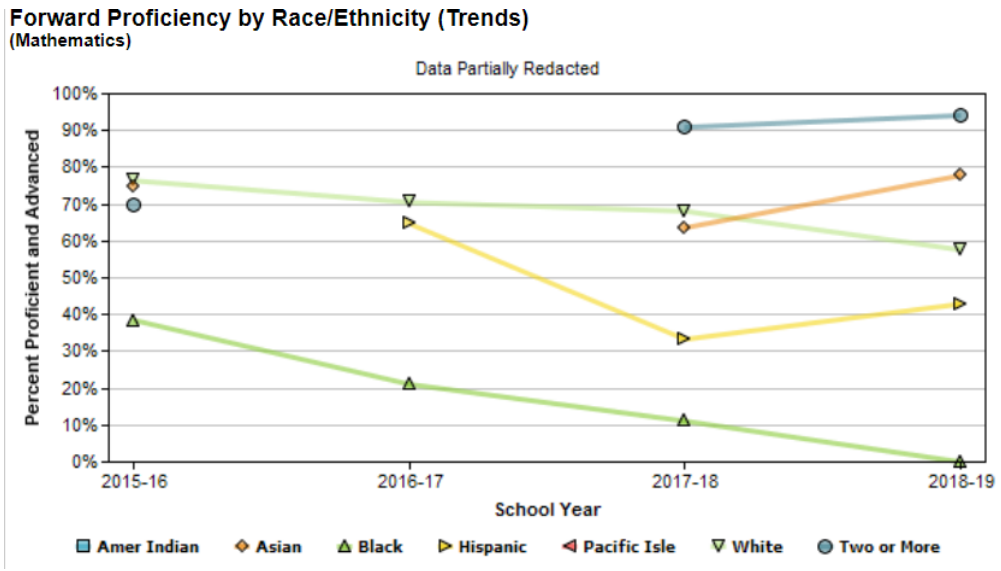


3rd Grade Forward- Disability



School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	SwoD	178	133	74.7%
2015-16	SwD	15	6	40.0%
2016-17	SwoD	180	120	66.7%
2016-17	SwD	19	9	47.4%
2017-18	SwoD	173	109	63.0%
2017-18	SwD	17	8	47.1%
2018-19	SwoD	194	115	59.3%
2018-19	SwD	25	9	36.0%

3rd Grade Forward- Race

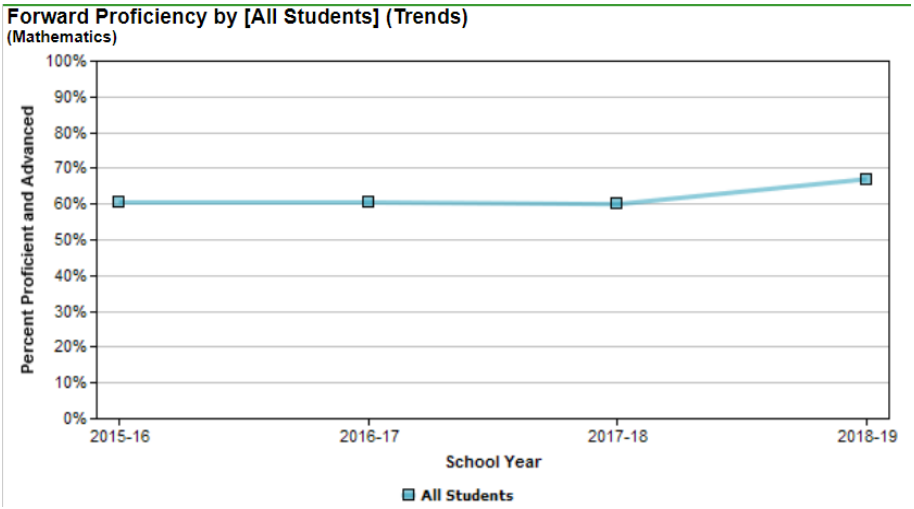


School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	Asian	12	9	75.0%
2015-16	Black	13	5	38.5%
2015-16	Hispanic	*	*	*
2015-16	Pacific Isle	*	*	*
2015-16	White	148	113	76.4%
2015-16	Two or More	10	7	70.0%
2016-17	Asian	*	*	*
2016-17	Black	19	4	21.1%
2016-17	Hispanic	17	11	64.7%
2016-17	White	149	105	70.5%
2016-17	Two or More	*	*	*
2017-18	Asian	11	7	63.6%
2017-18	Black	18	2	11.1%
2017-18	Hispanic	12	4	33.3%
2017-18	White	138	94	68.1%
2017-18	Two or More	11	10	90.9%
2018-19	Asian	9	7	77.8%
2018-19	Black	14	0	0.0%
2018-19	Hispanic	14	6	42.9%
2018-19	White	165	95	57.6%
2018-19	Two or More	17	16	94.1%

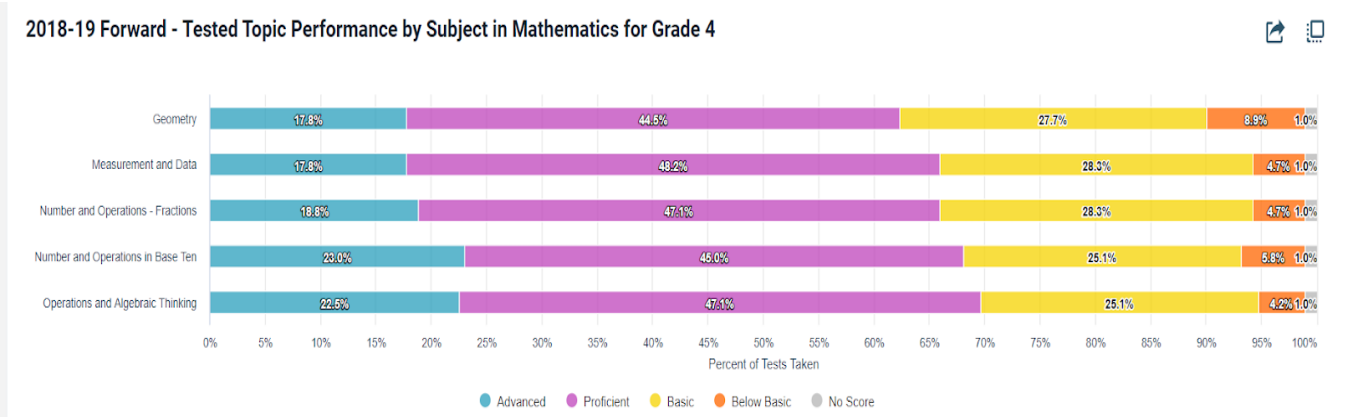
3rd Grade Trends

- The trend is down for all groups, except special education.
- The trend is down in all categories.
- We wonder if the fractions questions changed significantly from 2016-2017 compared to the other years.
- If when we teach fractions compared to when we take the test isn't a gap area.
- Noticed at times data and measurement is often skipped or the last unit for first and second grade.
- We are wondering how this scoring rubric is used? Are certain questions weighted more than others or do they fall in certain categories?

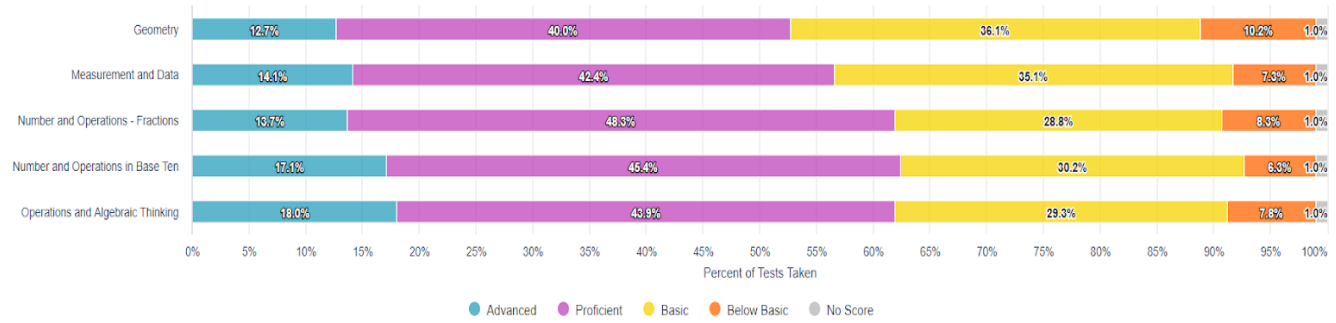
4th Grade Forward Data- All Students



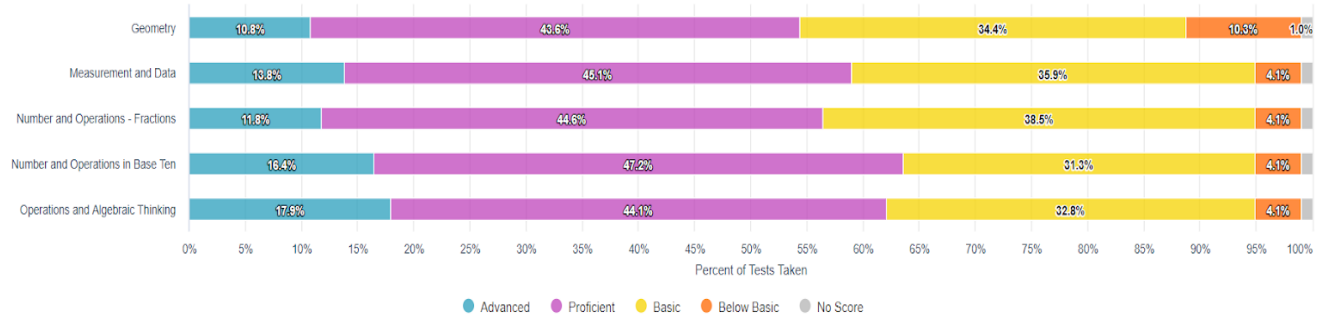
School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	All Students	205	124	60.5%
2016-17	All Students	195	118	60.5%
2017-18	All Students	205	123	60.0%
2018-19	All Students	191	128	67.0%



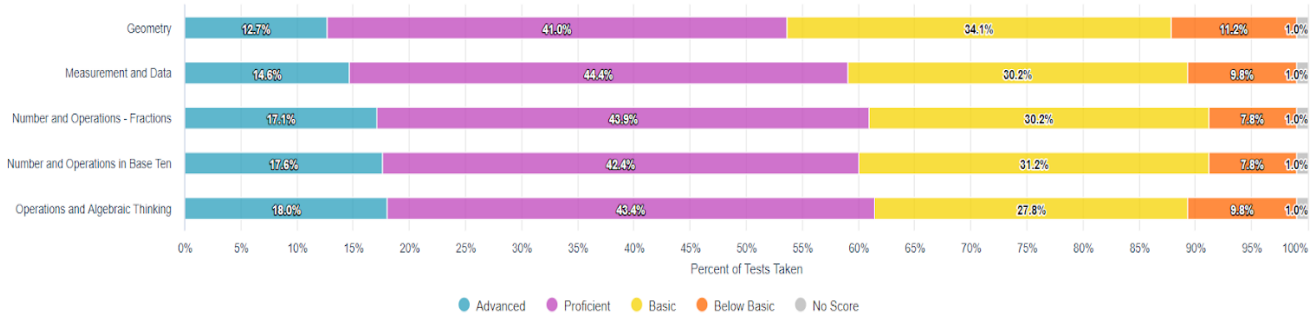
2017-18 Forward - Tested Topic Performance by Subject in Mathematics for Grade 4



2016-17 Forward - Tested Topic Performance by Subject in Mathematics for Grade 4

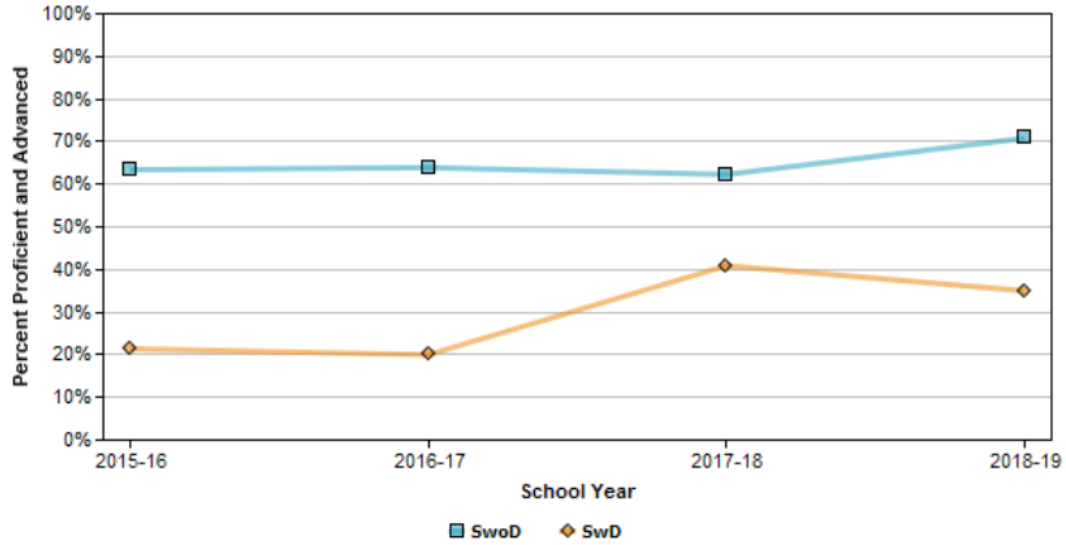


2015-16 Forward - Tested Topic Performance by Subject in Mathematics for Grade 4



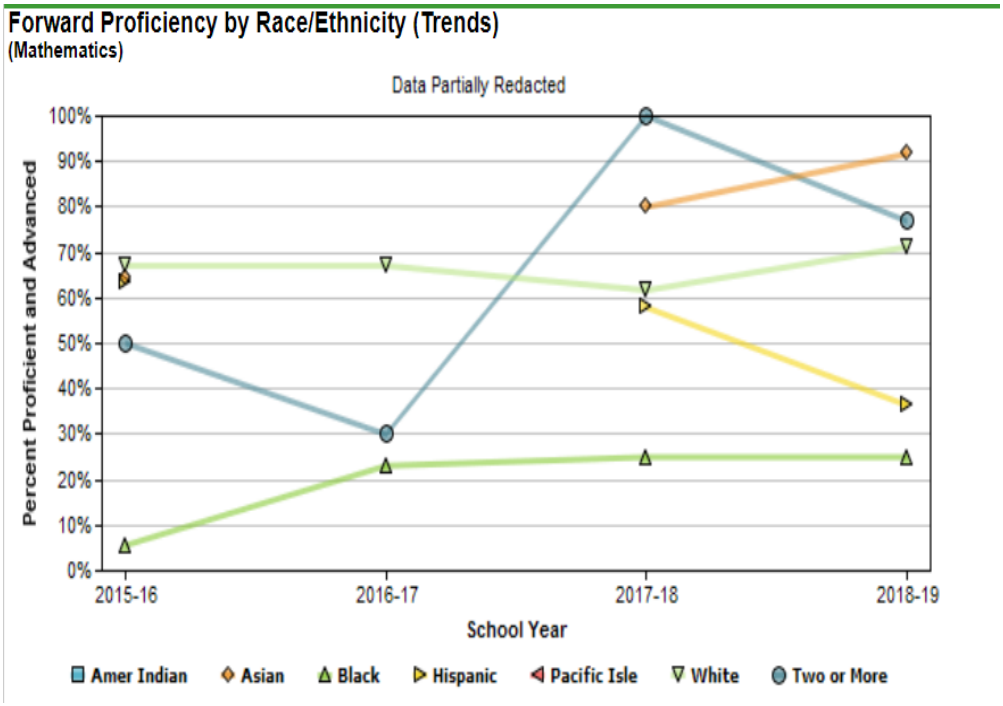
4th Grade Forward- Disability

Forward Proficiency by Disability Status (Trends)
(Mathematics)



School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	SwoD	191	121	63.4%
2015-16	SwD	14	3	21.4%
2016-17	SwoD	180	115	63.9%
2016-17	SwD	15	3	20.0%
2017-18	SwoD	183	114	62.3%
2017-18	SwD	22	9	40.9%
2018-19	SwoD	171	121	70.8%
2018-19	SwD	20	7	35.0%

4th Grade Forward- Race



School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	Asian	14	9	64.3%
2015-16	Black	18	1	5.6%
2015-16	Hispanic	11	7	63.6%
2015-16	White	152	102	67.1%
2015-16	Two or More	10	5	50.0%
2016-17	Asian	*	*	*
2016-17	Black	13	3	23.1%
2016-17	Hispanic	*	*	*
2016-17	Pacific Isle	*	*	*
2016-17	White	152	102	67.1%
2016-17	Two or More	10	3	30.0%

2017–18	Asian	10	8	80.0%
2017–18	Black	20	5	25.0%
2017–18	Hispanic	19	11	57.9%
2017–18	White	149	92	61.7%
2017–18	Two or More	7	7	100.0%
2018–19	Asian	12	11	91.7%
2018–19	Black	16	4	25.0%
2018–19	Hispanic	11	4	36.4%
2018–19	White	139	99	71.2%
2018–19	Two or More	13	10	76.9%

4th Grade Trends

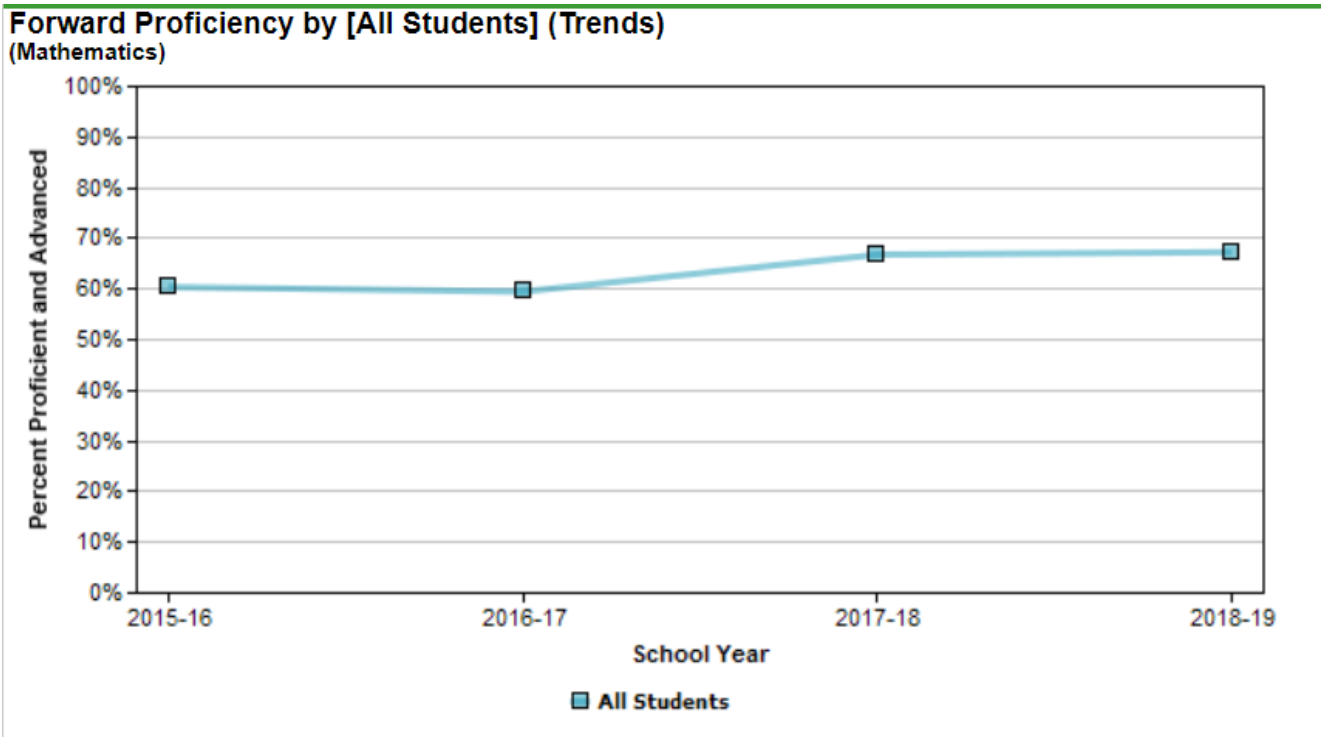
Observations re: proficiency levels for student groups:

- 2015-2016 to 2016-2017: Jump in proficiency for African American students, then stabilizes
  - What changed? Any instructional changes from one year to the next?
- 2015-2017: Overall increase in proficiency (all student groups).
- Considerable increase in proficiency percentage for SPED students from 2016-2017 to 2017-2018 (current 6th graders).
- With the exception of a dip in 2017-2018, the proficiency percentages for white students have remained fairly constant.
- The same year that SPED made a significant gain, the proficiency percentage for white students decreased (2017-2018).

Observations re: proficiency levels by mathematical domain:

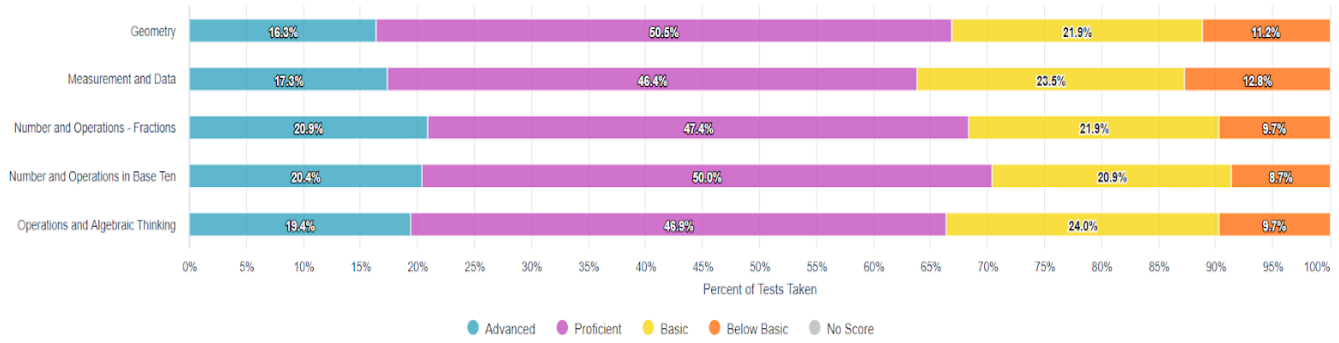
- Most consistent growth has occurred in geometry.
  - Almost a 10% increase in proficiency from 2017-2018 to 2018-2019
- 2018-2019: increase in proficiency percentages across all domains.
- In general, proficiency percentages by domain decreased during the same year WFB saw a decrease in proficiency among white students (2017-2018).
- JR: Reordering of Math Expressions at Cumberland may have contributed to this growth (geometry covered prior to Forward testing, as opposed to later in the year).
- Overall, across all domains, approximately ⅔ of students score proficient or advanced.
  - Balance across domains (e.g., one isn't significantly higher or lower than the others).

5th Grade Forward Data- All Students

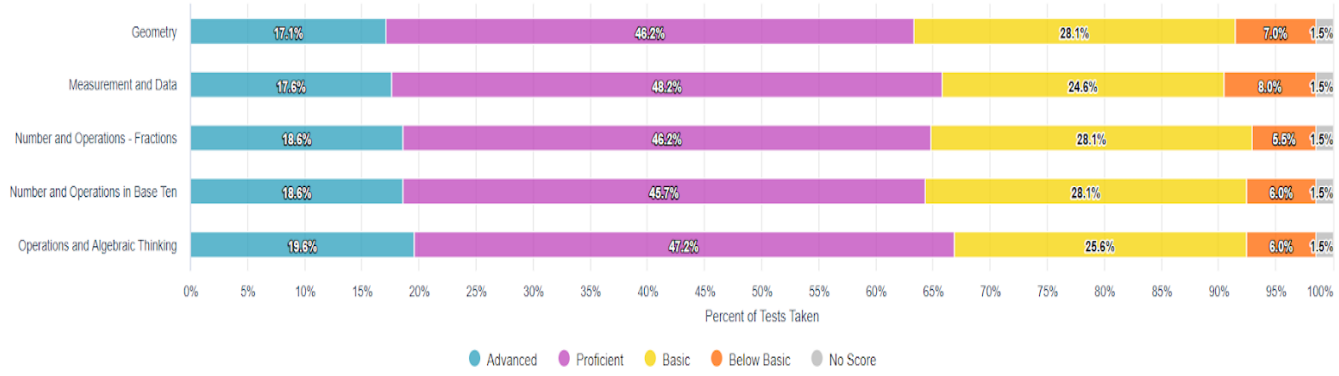


School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	All Students	222	134	60.4%
2016-17	All Students	205	122	59.5%
2017-18	All Students	199	133	66.8%
2018-19	All Students	196	132	67.3%

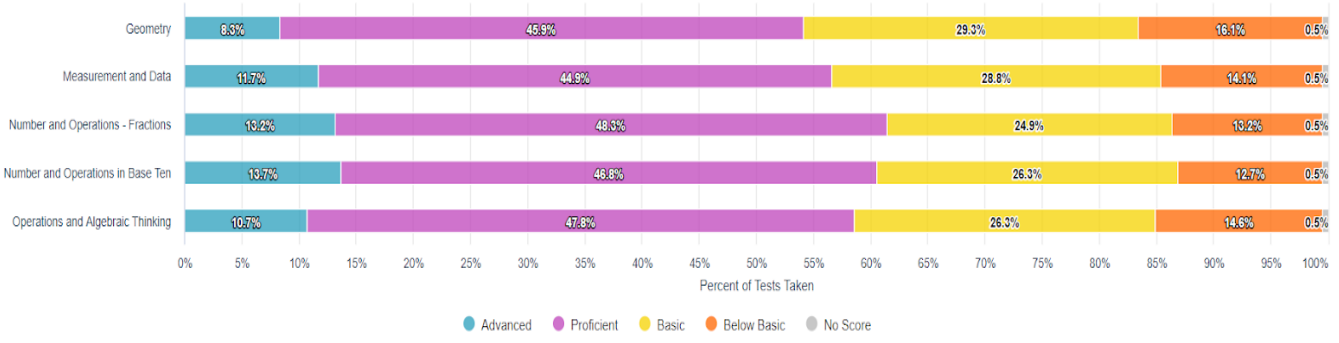
2018-19 Forward - Tested Topic Performance by Subject in Mathematics for Grade 5

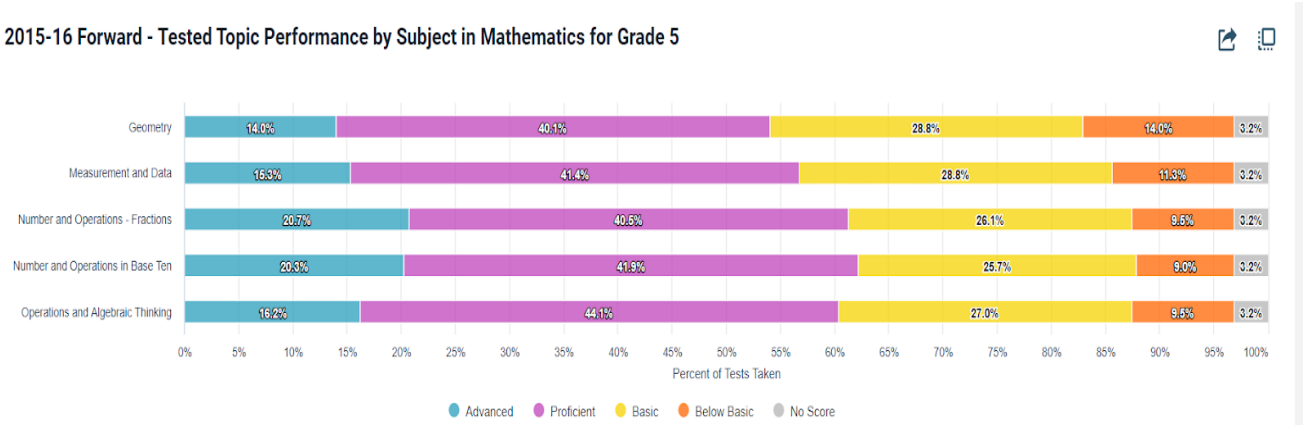


2017-18 Forward - Tested Topic Performance by Subject in Mathematics for Grade 5

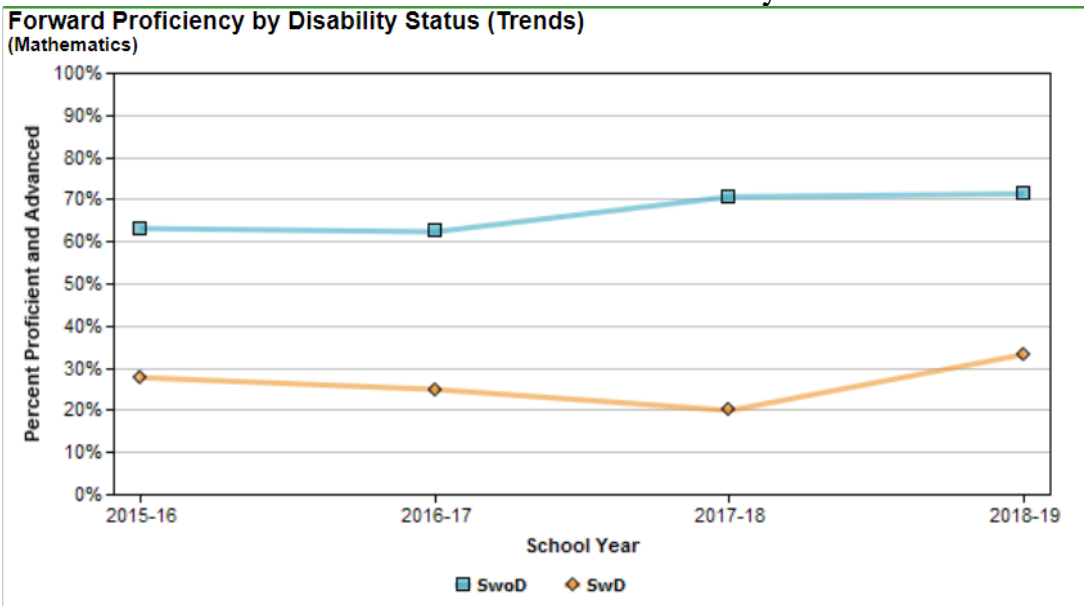


2016-17 Forward - Tested Topic Performance by Subject in Mathematics for Grade 5



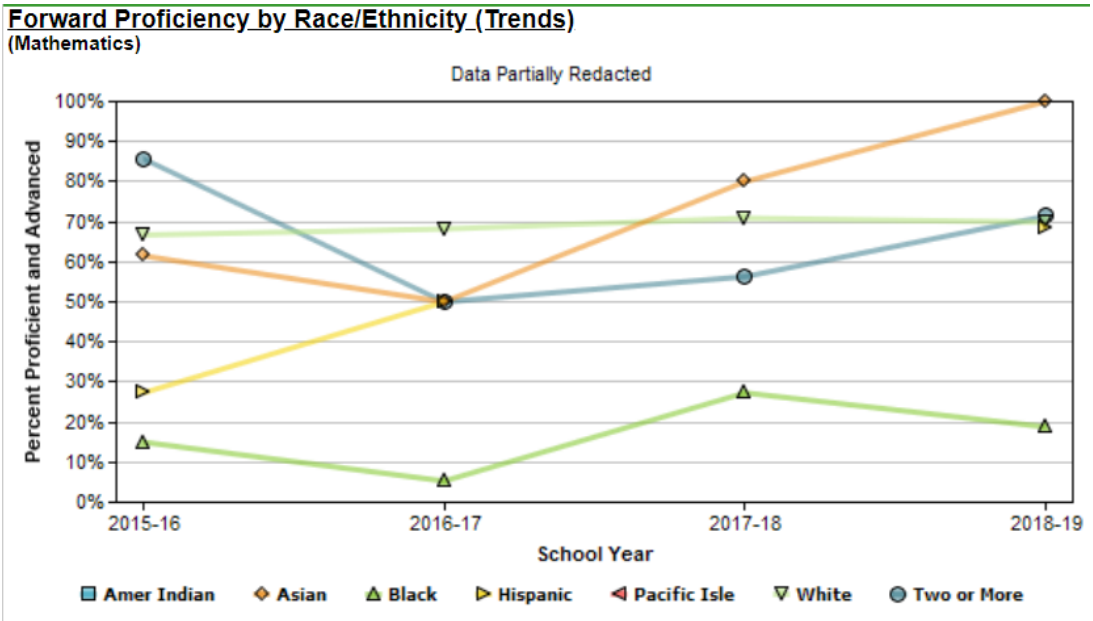


5th Grade Forward- Disability



School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	SwoD	204	129	63.2%
2015-16	SwD	18	5	27.8%
2016-17	SwoD	189	118	62.4%
2016-17	SwD	16	4	25.0%
2017-18	SwoD	184	130	70.7%
2017-18	SwD	15	3	20.0%
2018-19	SwoD	175	125	71.4%
2018-19	SwD	21	7	33.3%

5th Grade Forward- Race

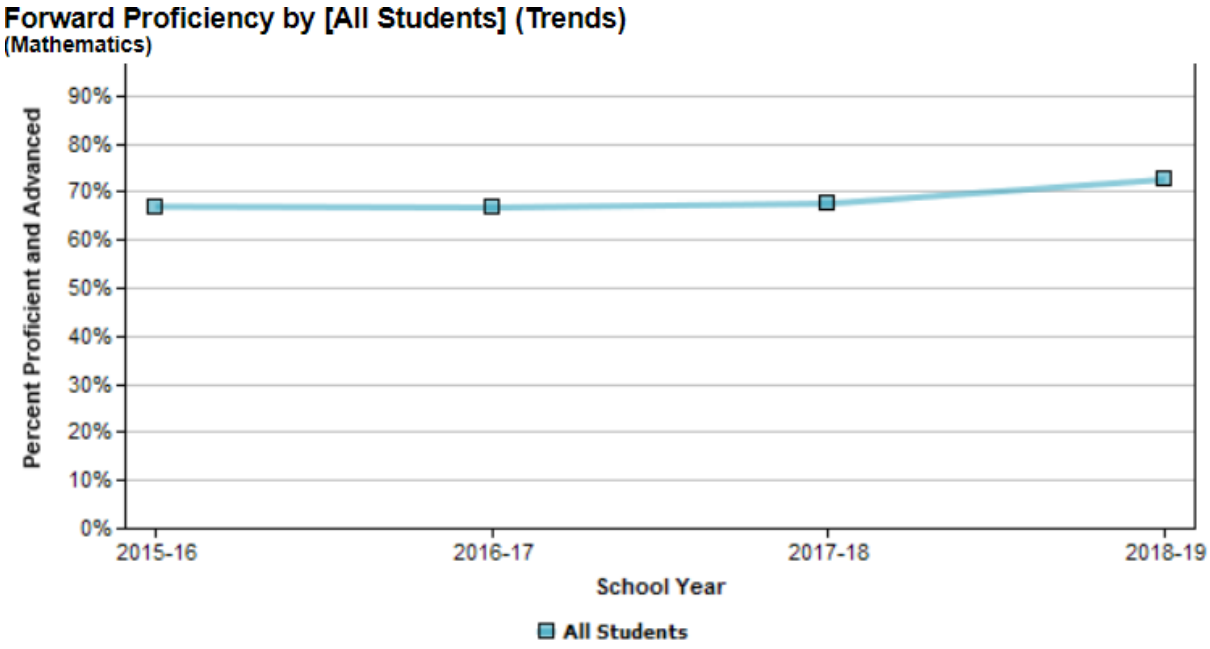


School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	Asian	13	8	61.5%
2015-16	Black	20	3	15.0%
2015-16	Hispanic	11	3	27.3%
2015-16	White	171	114	66.7%
2015-16	Two or More	7	6	85.7%
2016-17	Asian	12	6	50.0%
2016-17	Black	19	1	5.3%
2016-17	Hispanic	10	5	50.0%
2016-17	White	154	105	68.2%
2016-17	Two or More	10	5	50.0%

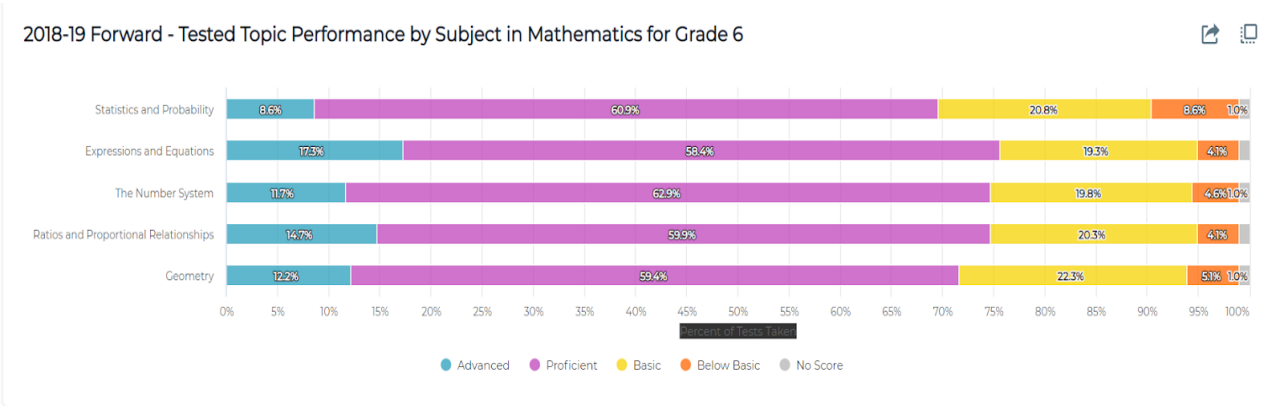
5th Grade Trends

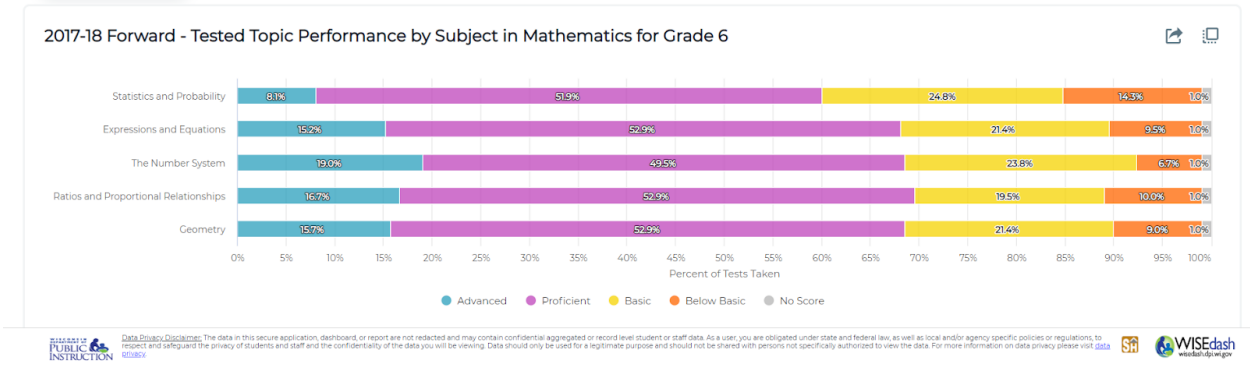
- Equity issues between our African American students and our white students.
- Scores increased as years went on, but this is not the same cohort. Did instruction change or did prior years set students up for greater success?
- The numbers are between 60% and 70% proficient and advanced, but that still leaves a large group of students that are basic or below.
- The students in special education are performing better than African American students.
- How many special education students are also African American?
- Forward Data indicates students as a whole are only 60% proficient, yet our Report Cards would show we are at Mastery in most areas by end of year. How is this not aligned? (Wondering about rigor in what is assessed at a classroom level vs. assessment done on Forward Exam.)

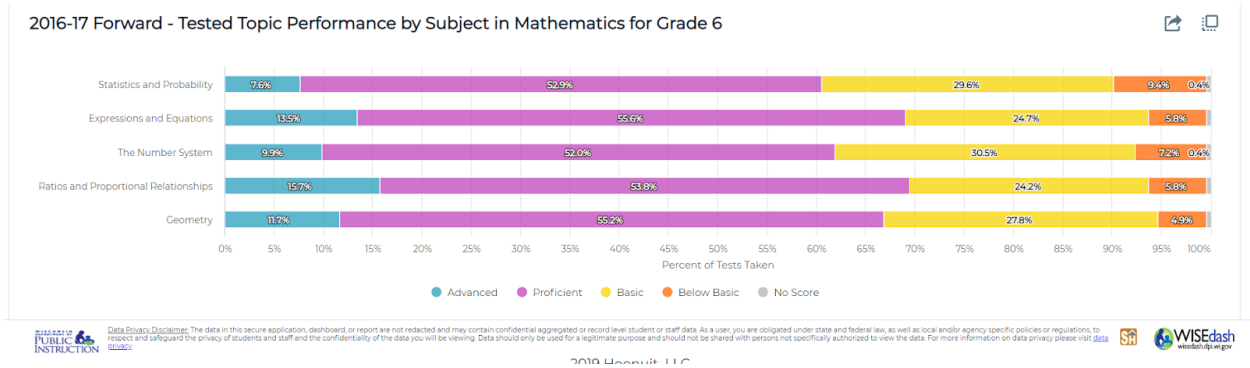
6th Grade Forward Data- All Students

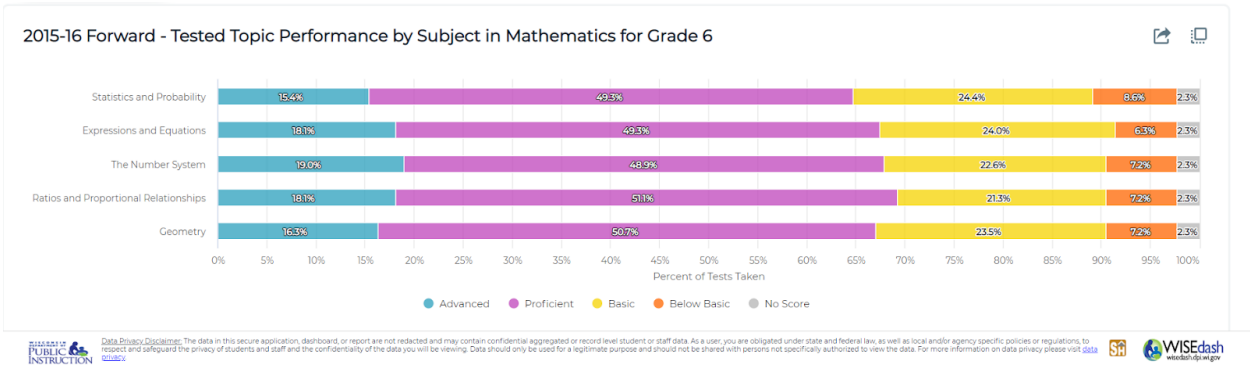


School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	All Students	221	148	67.0%
2016-17	All Students	223	149	66.8%
2017-18	All Students	210	142	67.6%
2018-19	All Students	197	143	72.6%





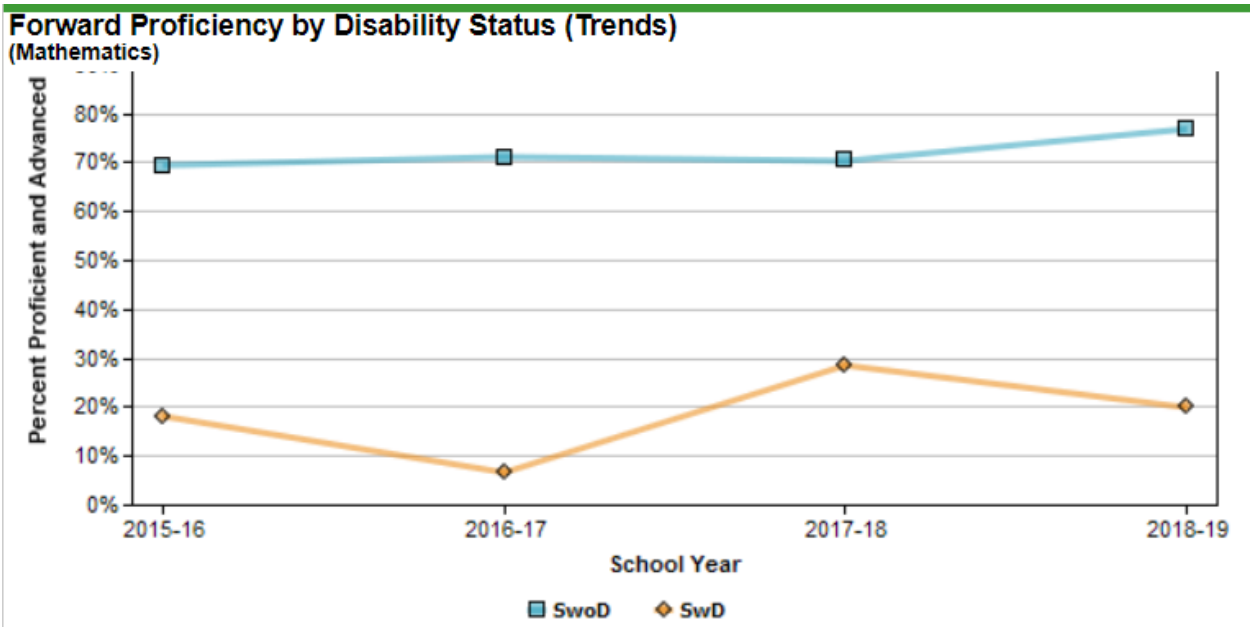




WFB Sub-Group Data Matrices Math Percent of Students Proficient or Advanced on Forward Disaggregation Data for Math in Grade 6				
Year	Special Education	White	African/American	All
2015-2016	18.2%	74.3%	17.4%	67%
2016-2017	6.7%	75.6%	9.5%	66.8%
2017-2018	28.6%	75.8%	6.3%	67.6%
2018-2019	20.0%	77.9%	15.9%	72.6%

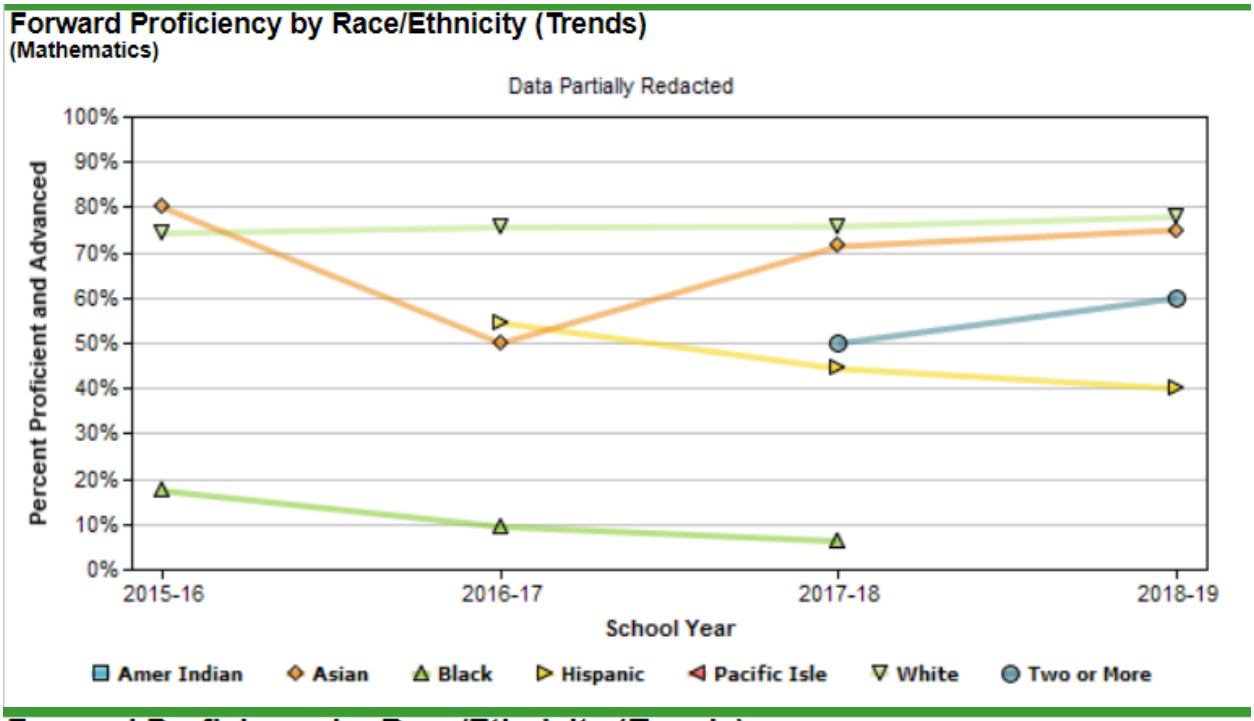
WFB Middle School- Sub-Group Data Matrices Math Percent of Students Proficient or Advanced on Forward Categories Disaggregation Data for Math in Grade 6					
Year	Statistics and Probability	Expressions and Equations	The Number System	Ratios	Geometry
2015-2016	64.7%	67.4%	67.9%	69.2%	67.0%
2016-2017	60.5%	69.1%	61.9%	69.5%	66.9%
2017-2018	60.0%	68.1%	68.5%	69.6%	68.6%
2018-2019	69.5%	75.7%	74.6%	74.6%	71.6%

6th Grade Forward- Disability



School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	SwoD	210	146	69.5%
2015-16	SwD	11	2	18.2%
2016-17	SwoD	208	148	71.2%
2016-17	SwD	15	1	6.7%
2017-18	SwoD	196	138	70.4%
2017-18	SwD	14	4	28.6%
2018-19	SwoD	182	140	76.9%
2018-19	SwD	15	3	20.0%

6th Grade Forward- Race



Forward Proficiency by Race/Ethnicity (Trends)
(Mathematics)

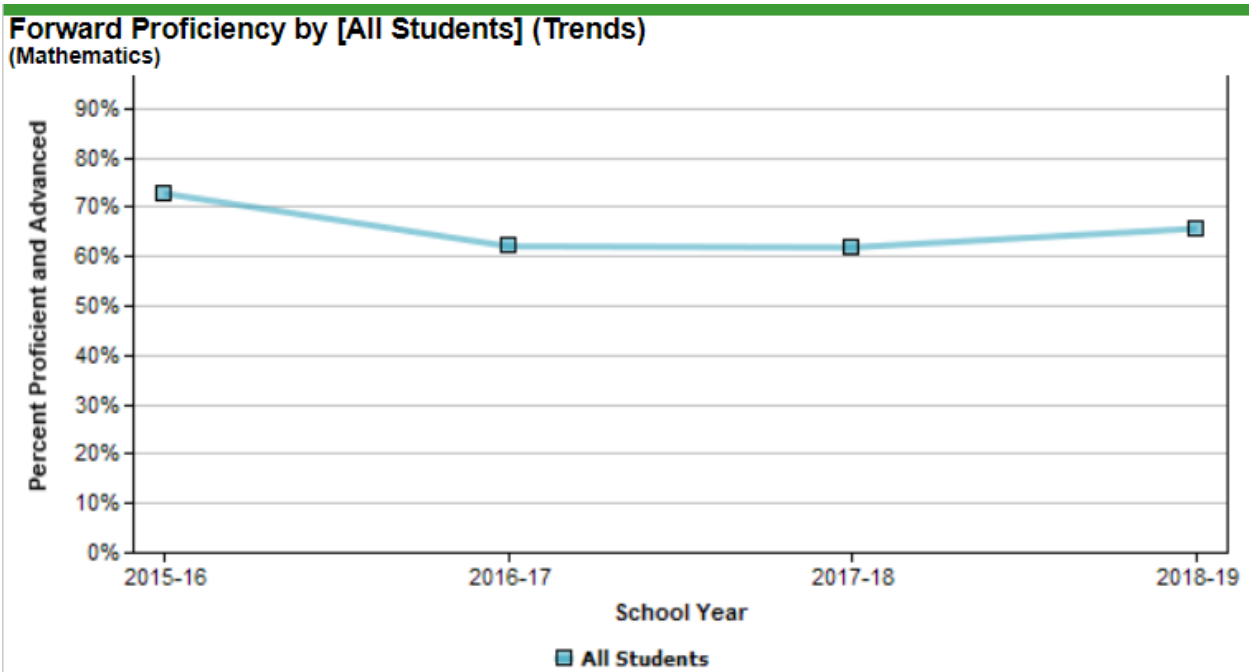
School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	Asian	15	12	80.0%
2015-16	Black	23	4	17.4%
2015-16	Hispanic	*	*	*
2015-16	White	167	124	74.3%
2015-16	Two or More	*	*	*
2016-17	Amer Indian	*	*	*
2016-17	Asian	12	6	50.0%
2016-17	Black	21	2	9.5%
2016-17	Hispanic	11	6	54.5%
2016-17	White	168	127	75.6%
2016-17	Two or More	*	*	*
2017-18	Asian	14	10	71.4%
2017-18	Black	16	1	6.3%
2017-18	Hispanic	9	4	44.4%
2017-18	White	161	122	75.8%
2017-18	Two or More	10	5	50.0%

2018-19	Asian	12	9	75.0%
2018-19	Black	*	*	*
2018-19	Hispanic	10	4	40.0%
2018-19	Pacific Isle	*	*	*
2018-19	White	149	116	77.9%
2018-19	Two or More	15	9	60.0%

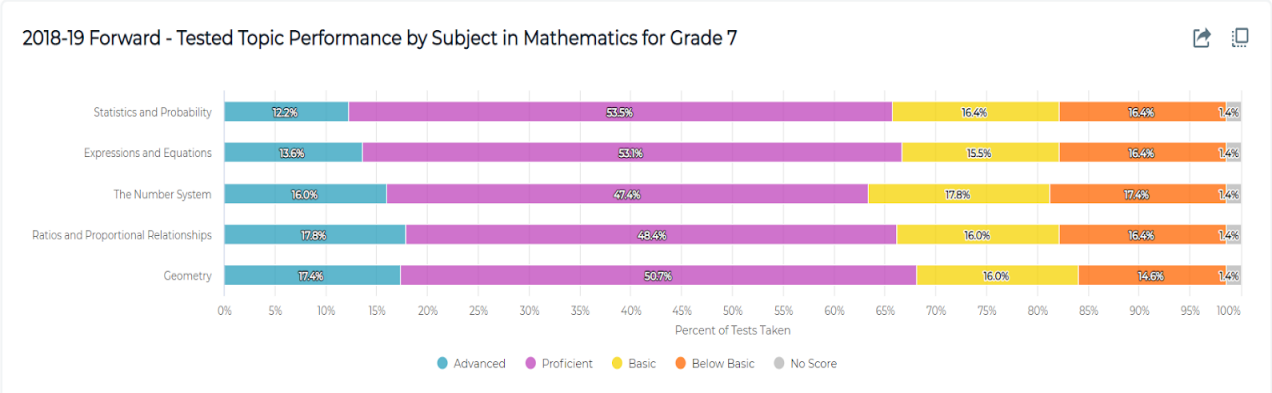
6th Grade Trends

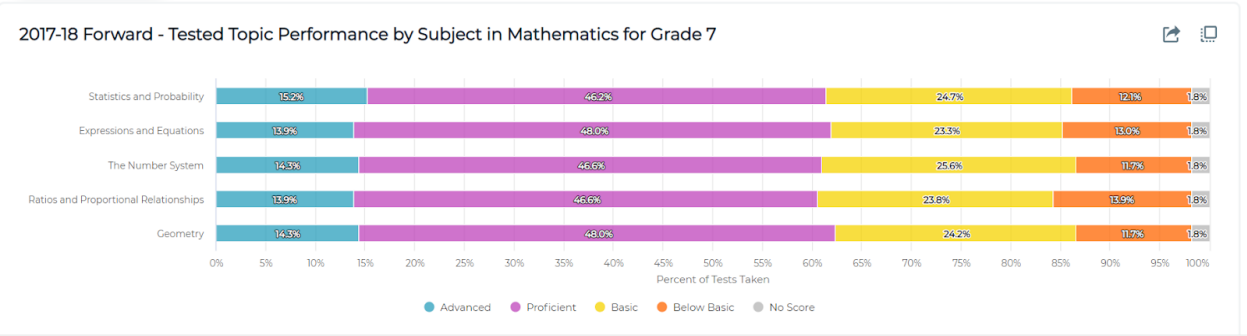
- With the sample size low, making a difference for 1 or 2 kids really makes a difference in the percentages.
- Why is 2016-2017 so different than the other years?
- Did the scores increase in 2018-2019 do better in part because of Chromebooks?
- We notice, 2018-2019 students participated in math discussions at a high level and were able to do task work at a high level.
- All strands are around the 60-70th percent.
- Stats and probability is our lowest- taught after Forward exam.
- Stats continues to be one of the lowest strands throughout 7th and 8th grade.
- A special education cohort was 6.7%, 0%, 7% - what was done differently

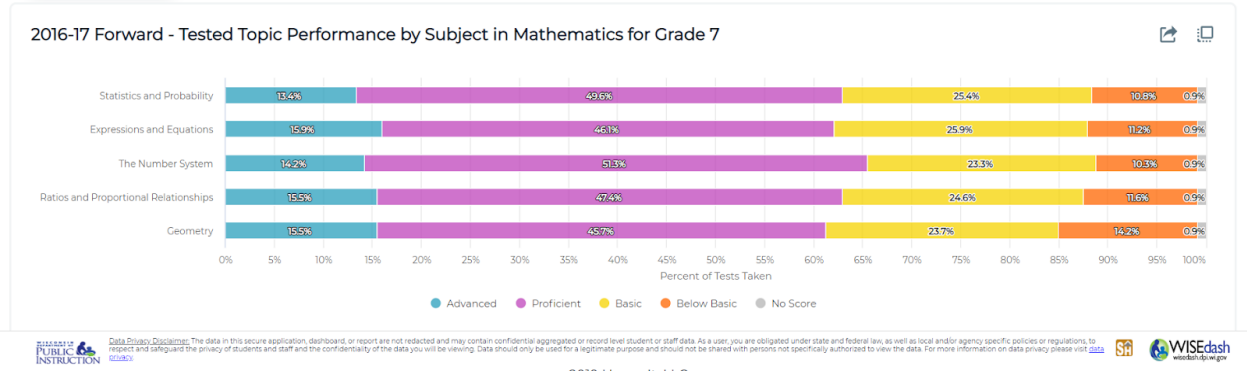
7th Grade Forward Data- All Students



School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	All Students	235	171	72.8%
2016-17	All Students	232	144	62.1%
2017-18	All Students	223	138	61.9%
2018-19	All Students	213	140	65.7%



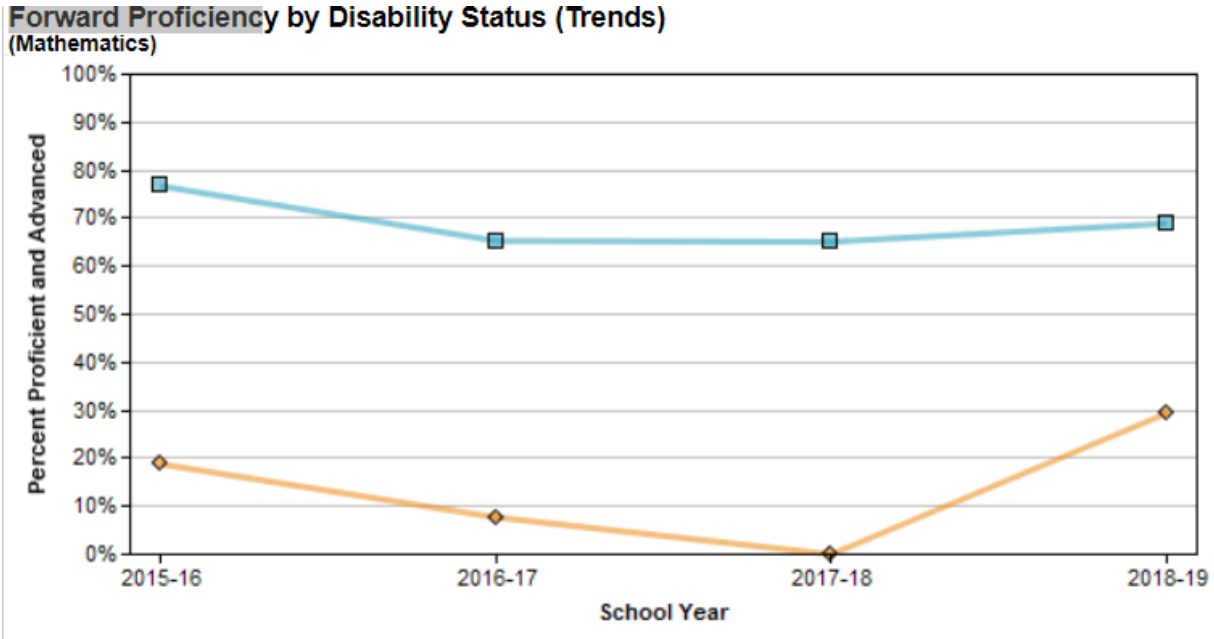




WFB Sub-Group Data Matrices Math Percent of Students Proficient or Advanced on Forward Disaggregation Data for Math in Grade 7				
Year	**Special Education**	**White**	**African/American**	**All**
2015-2016	**18.8%**	**78.9%**	**20%**	**72.8%**
2016-2017	**7.7%**	**67.8%**	**17.4%**	**62.1%**
2017-2018	**0%**	**67.7%**	**11.1%**	**61.9%**
2018-2019	**29.4%**	**75.2%**	**5.9%**	**65.7%**

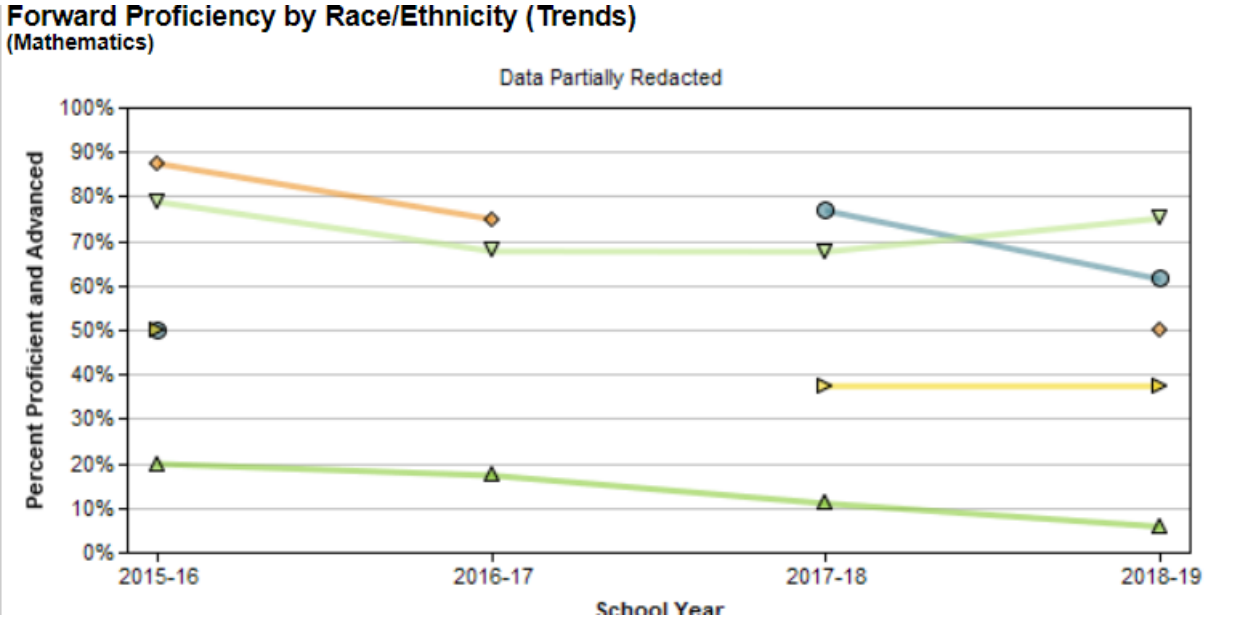
WFB Middle School- Sub-Group Data Matrices Math Percent of Students Proficient or Advanced on Forward Categories Disaggregation Data for Math in Grade 7					
Year	Statistics and Probability	Expressions and Equations	The Number System	Ratios	Geometry
2015-2016	70.7%	72.3%	74.5%	71%	73.2%
2016-2017	63%	62%	65.5%	62.9%	61.2%
2017-2018	61.4%	61.9%	60.9%	60.5%	62.3%
2018-2019	65.7%	66.7%	63.4%	66.2%	68.1%

7th Grade Forward- Disability



School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	SwoD	219	168	76.7%
2015-16	SwD	16	3	18.8%
2016-17	SwoD	219	143	65.3%
2016-17	SwD	13	1	7.7%
2017-18	SwoD	212	138	65.1%
2017-18	SwD	11	0	0.0%
2018-19	SwoD	196	135	68.9%
2018-19	SwD	17	5	29.4%

7th Grade Forward- Race

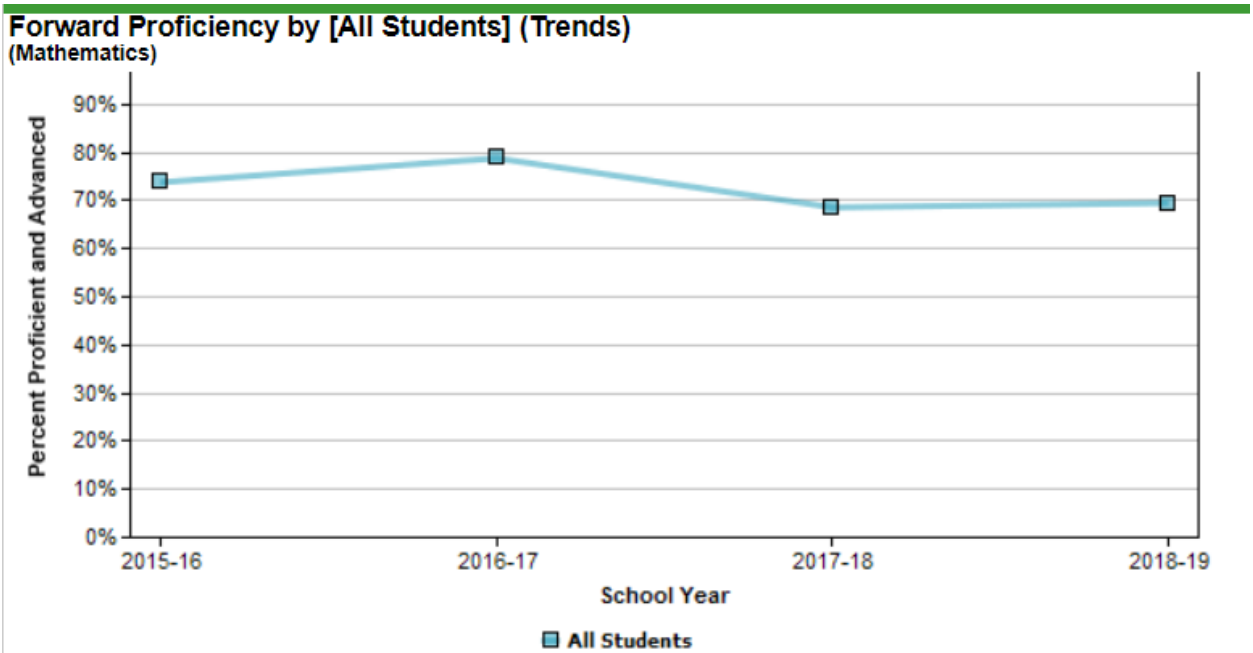


School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	Asian	16	14	87.5%
2015-16	Black	15	3	20.0%
2015-16	Hispanic	10	5	50.0%
2015-16	White	180	142	78.9%
2015-16	Two or More	14	7	50.0%
2016-17	Asian	16	12	75.0%
2016-17	Black	23	4	17.4%
2016-17	Hispanic	*	*	*
2016-17	White	177	120	67.8%
2016-17	Two or More	*	*	*
2017-18	Amer Indian	*	*	*
2017-18	Asian	*	*	*
2017-18	Black	18	2	11.1%
2017-18	Hispanic	16	6	37.5%
2017-18	White	164	111	67.7%
2017-18	Two or More	13	10	76.9%
2018-19	Asian	14	7	50.0%
2018-19	Black	17	1	5.9%
2018-19	Hispanic	8	3	37.5%
2018-19	White	161	121	75.2%
2018-19	Two or More	13	8	61.5%

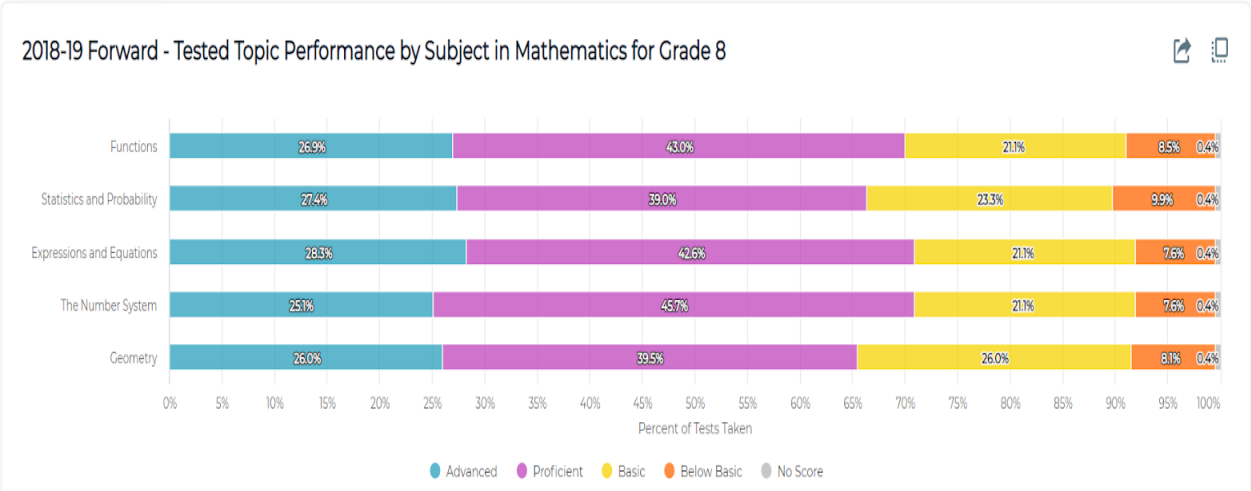
7th Grade Trends

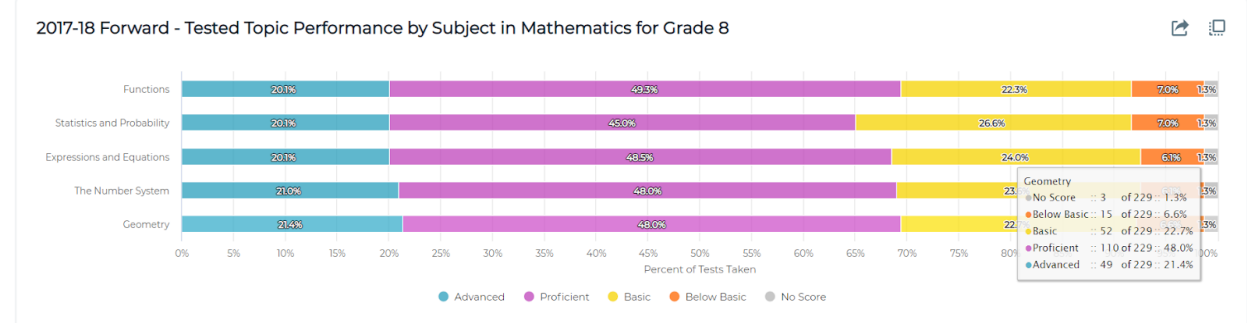
- Overall data of the domains was consistently between 60-70% for all four years. Between 2015 to 2018 there was a decrease in proficiency each year, and an increase in 2018-2019.
- SwD in 7th grade are consistently below 30% reaching proficiency.
- African American students in 7th grade are consistently no more than 20% reaching proficiency.
- White students in 7th grade are consistently ⅔ or more reaching proficiency.
- There is very little difference between domains in all years.

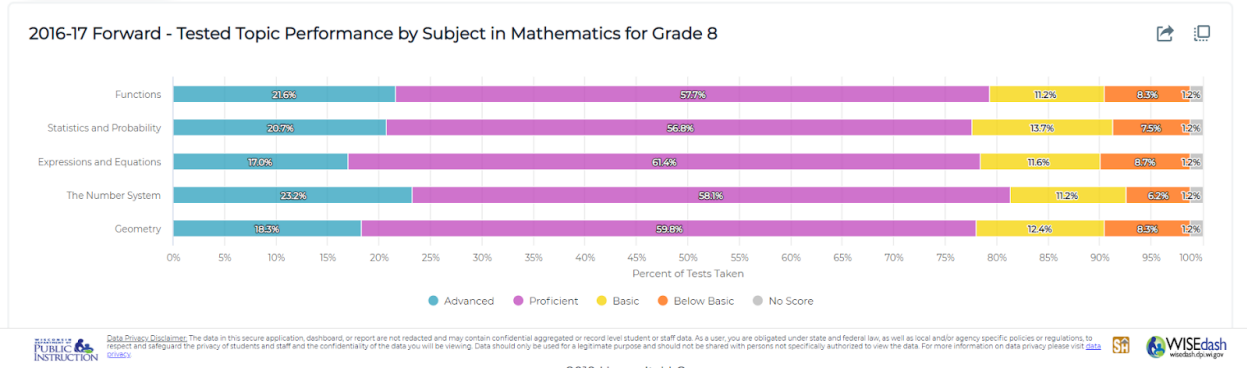
8th Grade Forward Data- All Students

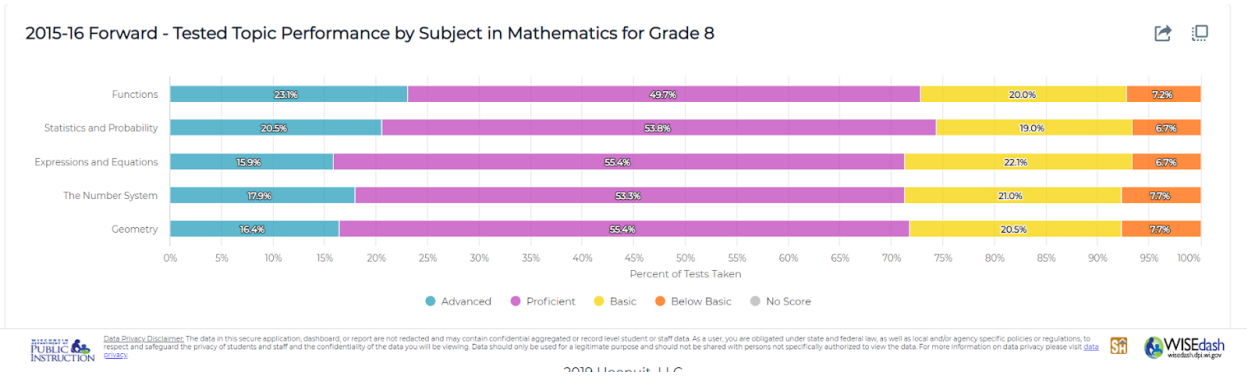


School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	All Students	195	144	73.8%
2016-17	All Students	241	190	78.8%
2017-18	All Students	229	157	68.6%
2018-19	All Students	223	155	69.5%




2017-18 Forward - Tested Topic Performance by Subject in Mathematics for Grade 8
Functions
Statistics and Probability
Expressions and Equations
The Number System
Geometry
20.1%
49.3%
22.3%
7.9%
1.3%
20.1%
45.0%
26.6%
7.0%
1.3%
20.1%
48.5%
24.0%
6.1%
1.3%
21.0%
48.0%
23.
21.4%
48.0%
22.
Geometry
No Score :: 3 of 229 :: 1.3%
Below Basic :: 15 of 229 :: 6.6%
Basic :: 52 of 229 :: 22.7%
Proficient :: 110 of 229 :: 48.0%
Advanced :: 49 of 229 :: 21.4%
0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50% 55% 60% 65% 70% 75% 80%
Percent of Tests Taken
Advanced
Proficient
Basic
Below Basic
No Score

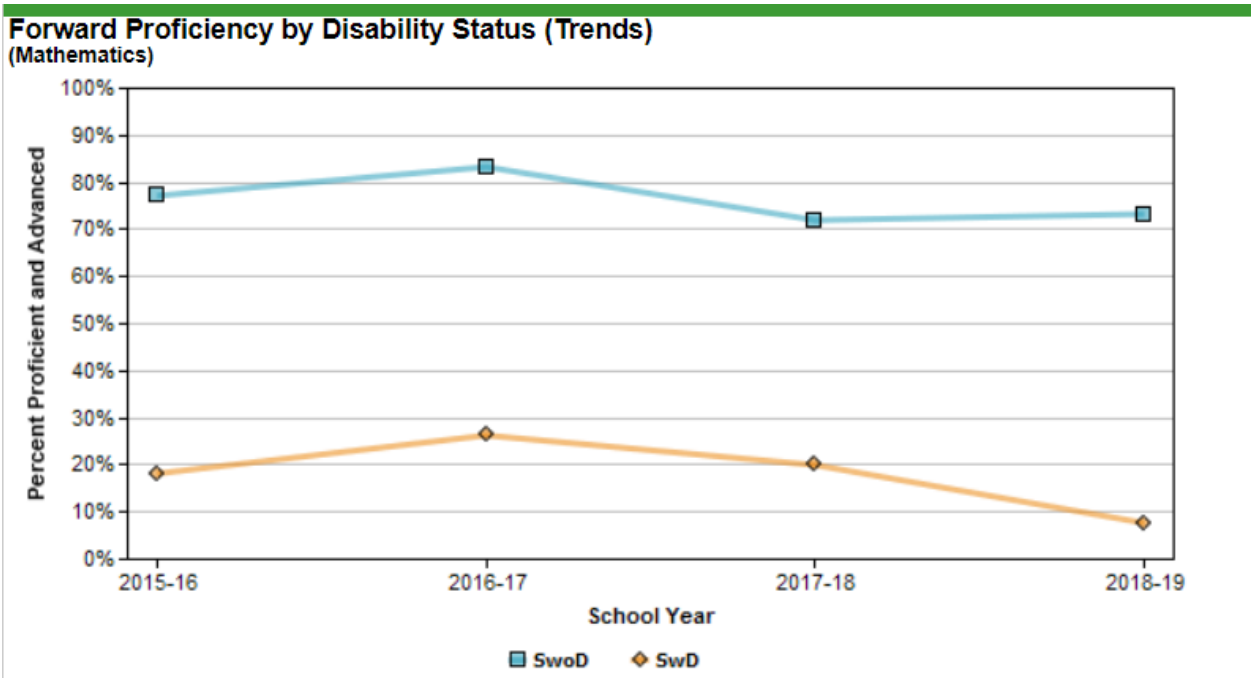

2016-17 Forward - Tested Topic Performance by Subject in Mathematics for Grade 8
Functions
Statistics and Probability
Expressions and Equations
The Number System
Geometry
21.6%
57.7%
11.2%
8.3%
1.2%
20.7%
56.8%
13.7%
7.5%
1.2%
17.0%
61.4%
11.6%
8.7%
1.2%
23.2%
58.1%
11.2%
6.2%
1.2%
18.3%
59.8%
12.4%
8.3%
1.2%
0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50% 55% 60% 65% 70% 75% 80% 85% 90% 95% 100%
Percent of Tests Taken
Advanced
Proficient
Basic
Below Basic
No Score
Data Privacy Disclaimer
WISEdash


2015-16 Forward - Tested Topic Performance by Subject in Mathematics for Grade 8
Functions
Statistics and Probability
Expressions and Equations
The Number System
Geometry
23.1%
49.7%
20.0%
7.2%
20.5%
53.8%
19.0%
6.7%
15.9%
55.4%
22.1%
6.7%
17.9%
53.3%
21.0%
7.7%
16.4%
55.4%
20.5%
7.7%
0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50% 55% 60% 65% 70% 75% 80% 85% 90% 95% 100%
Percent of Tests Taken
Advanced
Proficient
Basic
Below Basic
No Score
Data Privacy Disclaimer
WISEdash

WFB Sub-Group Data Matrices Math Percent of Students Proficient or Advanced on Forward Disaggregation Data for Math in Grade 8				
Year	**Special Education**	**White**	**African/American**	**All**
2015-2016	**18%**	**80%**	**22%**	**74%**
2016-2017	**26%**	**84%**	**33%**	**79%**
2017-2018	**20%**	**73%**	**21%**	**69%**
2018-2019	**7%**	**75%**	**18%**	**70%**

WFB Middle School- Sub-Group Data Matrices Math Percent of Students Proficient or Advanced on Forward Categories Disaggregation Data for Math in Grade 8					
Year	**Statistics and Probability**	**Expressions and Equations**	**The Number System**	**Functions**	**Geometry**
2015-2016	**74%**	**71%**	**71%**	**73%**	**72%**
2016-2017	**78%**	**79%**	**81%**	**80%**	**78%**
2017-2018	**65%**	**69%**	**69%**	**69%**	**69%**
2018-2019	**67%**	**71%**	**71%**	**70%**	**66%**

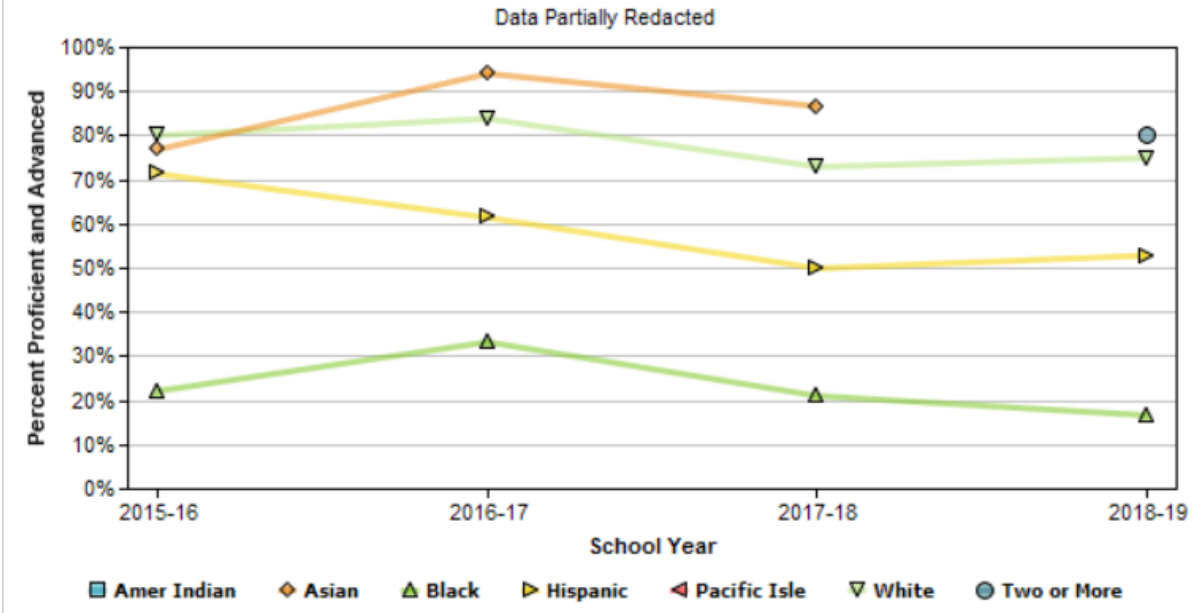
8th Grade Forward- Disability



School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	SwoD	184	142	77.2%
2015-16	SwD	11	2	18.2%
2016-17	SwoD	222	185	83.3%
2016-17	SwD	19	5	26.3%
2017-18	SwoD	214	154	72.0%
2017-18	SwD	15	3	20.0%
2018-19	SwoD	210	154	73.3%
2018-19	SwD	13	1	7.7%

8th Grade Forward- Race

Forward Proficiency by Race/Ethnicity (Trends)
(Mathematics)



School Year	Group By	Students in Group	Proficient and Advanced	Percent of Group
2015-16	Amer Indian	*	*	*
2015-16	Asian	13	10	76.9%
2015-16	Black	18	4	22.2%
2015-16	Hispanic	7	5	71.4%
2015-16	White	151	121	80.1%
2015-16	Two or More	*	*	*
2016-17	Asian	17	16	94.1%
2016-17	Black	18	6	33.3%
2016-17	Hispanic	13	8	61.5%
2016-17	Pacific Isle	*	*	*
2016-17	White	180	151	83.9%
2016-17	Two or More	*	*	*
2017-18	Amer Indian	*	*	*
2017-18	Asian	15	13	86.7%
2017-18	Black	19	4	21.1%
2017-18	Hispanic	14	7	50.0%
2017-18	White	174	127	73.0%

8th Grade Trends

- 2016-2017 is significantly higher than all other years by at least 5%.
- Special education was higher by at least 6%, white 4%, African American 11%.
- Overall, SPED has decreased significantly, but everyone has decreased. After peaks in 2016-2017, everyone has decreased: SPED 19%, white 9%, African American 15%.
- Again 2016-2017 was the highest year for every strand.
- Consistency amongst the strands--no one strand is significantly better or worse than the other.

B. Wisconsin ACT Aspire Scores

High School Mathematics Scores- State Assessment System

Math- ACT Aspire

Ready or Exceeding

Year/ Grade	Entire grade	Male	Female	White	Black	Asian	Hispanic	Am Indian	IEP	Econ Disadv
2018-19 9th grade	77%	79%	74%	83%	35% (28)	87% (22)	50% (14)	<4 students	27% (11)	63% (8)
2018-19 10th grade	76%	76%	76%	81% (217)	22% (23)	65% (28)	75% (12)	14% (7)	18% (22)	<4 students
2017-18 9th grade	80%	83%	79%	86%	31% (26)	82% (28)	78% (14)	50% (6)	32% (22)	<4 students
2017-18 10th grade	76%	74%	78%	80%	24% (17)	83% (17)	100% (7)	<4 students	0% (8)	<4 students
2016-17 9th grade	78%	76%	80%	82%	40%	71%			27%	40% (5)
2016-17 10th grade	70%	68%	73%	77%	20%	75%			15% (13)	55% (9)
2015-16 9th grade	73%	73%	72%	79%	24%	76%				
2015-16 10th grade	67%	69%	66%	73%	5%	76%				

Math- ACT Aspire

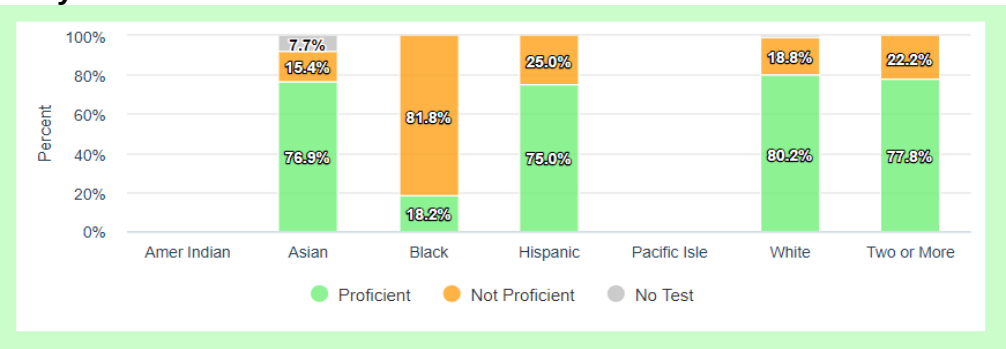
In Need of Support

Year/ Grade	Entire grade	Male	Female	White	Black	Asian	Hispanic	Am Indian	IEP	Econ Disadv
2018-19 9th grade	11%	10%	12%	6%	43% (28)	9% (22)	29% (14)	<4 students	55% (11)	25% (8)
2018-19 10th grade	12%	13%	12%	8%	52% (23)	11% (28)	17% (12)	86% (7)	64% (22)	<4 students
2017-18 9th grade	11%	11%	12%	8%	46% (26)	7% (28)	14% (14)	33% (6)	59% (22)	<4 students
2017-18 10th grade	11%	12%	10%	7%	53% (17)	18% (7)	0% (7)	<4 students	63% (8)	<4 students
2016-17 9th grade	7%	8%	6%	3%	35%	24%			36%	40%
2016-17 10th grade	12%	11%	12%	6%	56%	13%			54%	22%
2015-16 9th grade	12%	14%	10%	6%	52% (25)	11.7% (17)				
2015-16 10th grade	12%	9.6%	14.8%	8%	63% (only 19 students)	6%				

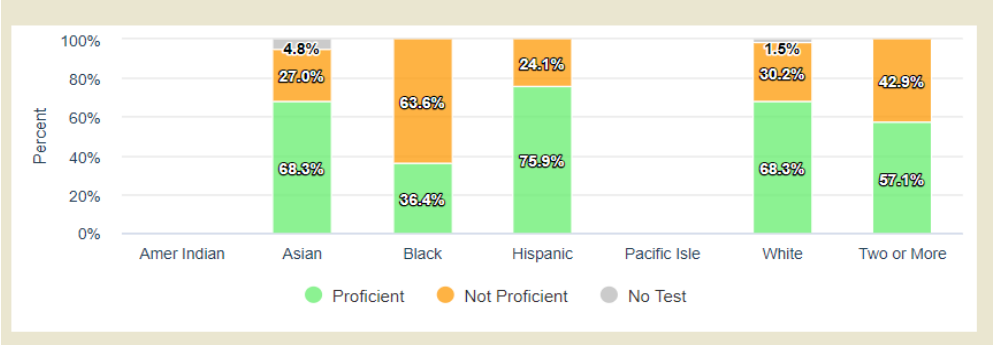
C. Wisconsin ACT Scores

2014-2015 ACT Proficiency by District and Race/Ethnicity

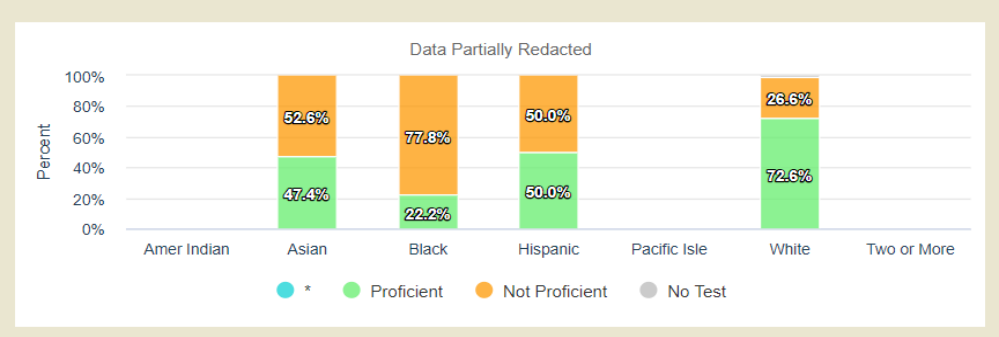
Whitefish Bay



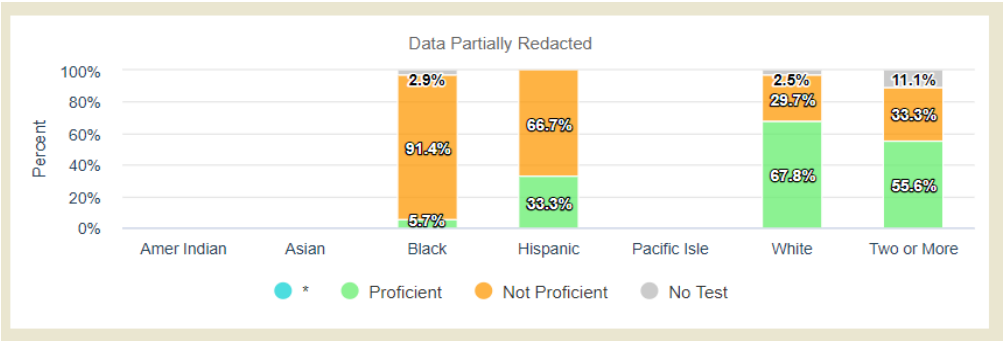
Elmbrook



Mequon-Thiensville

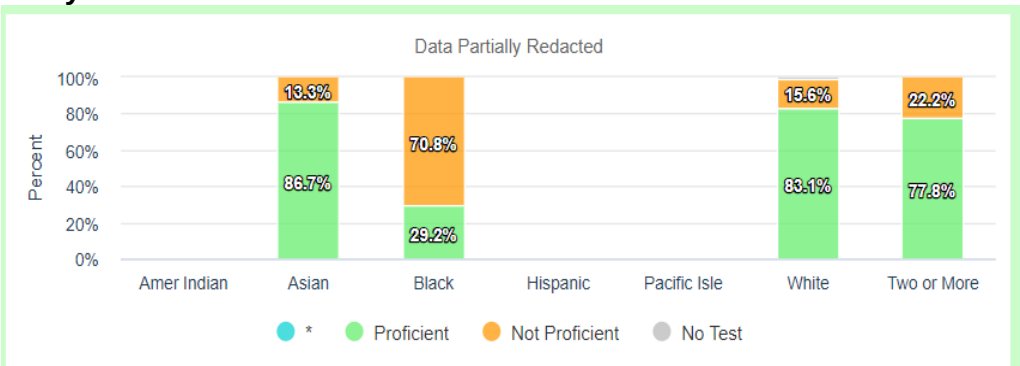


Shorewood

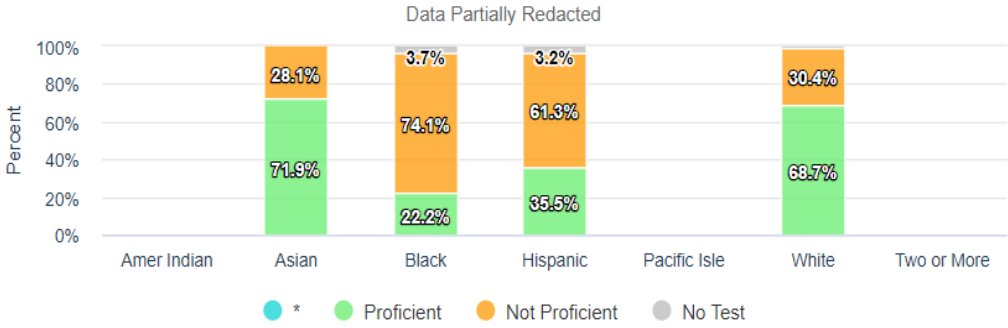


2015-2016 ACT Proficiency by District and Race/Ethnicity

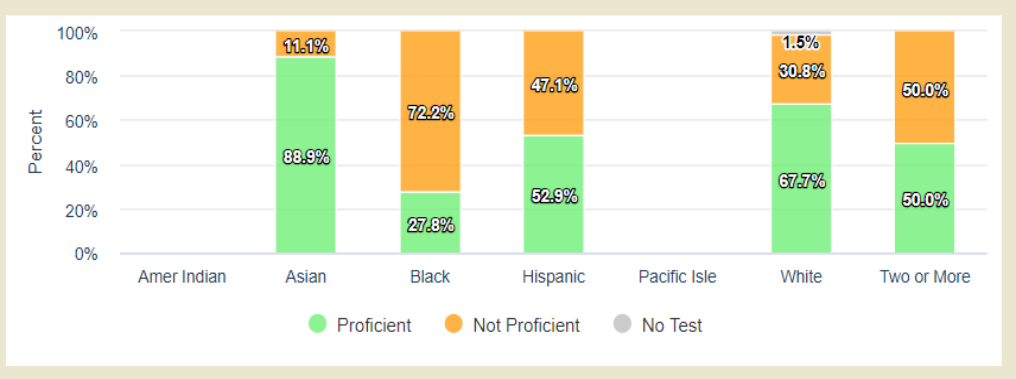
Whitefish Bay



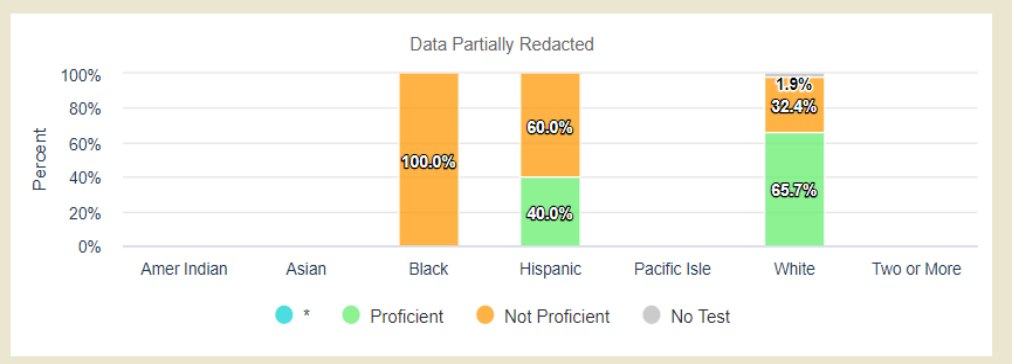
Elmbrook



Mequon-Thiensville

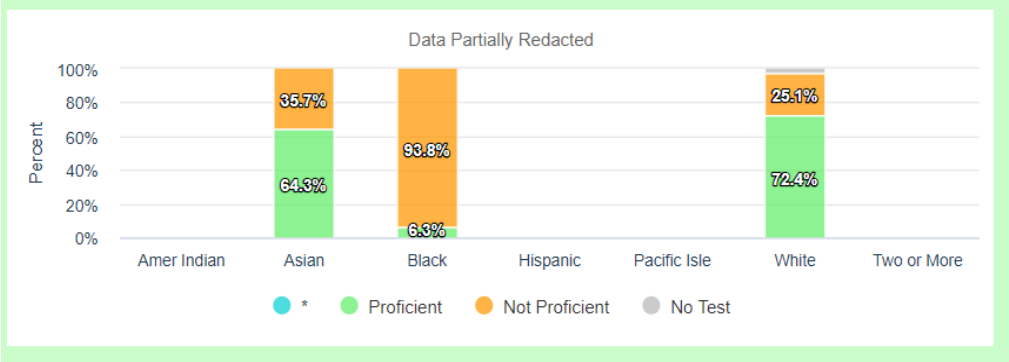


Shorewood



2016-2017 ACT Proficiency by District and Race/Ethnicity

Whitefish Bay



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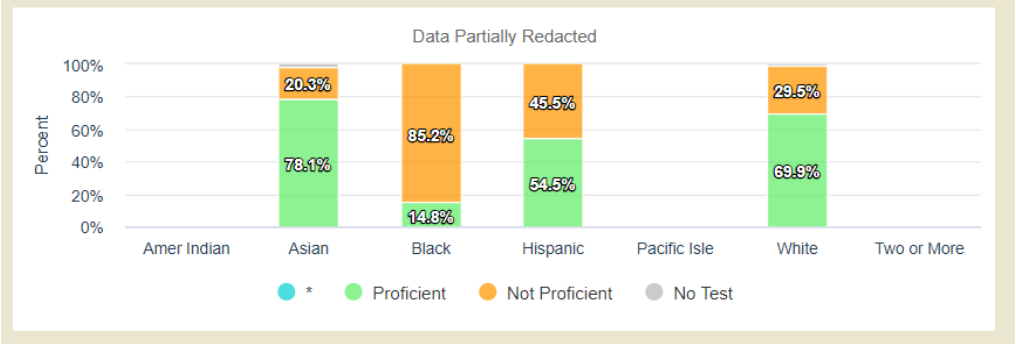

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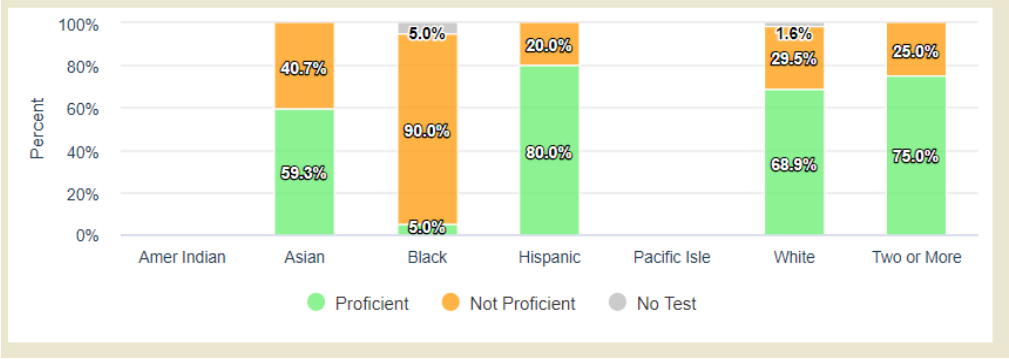
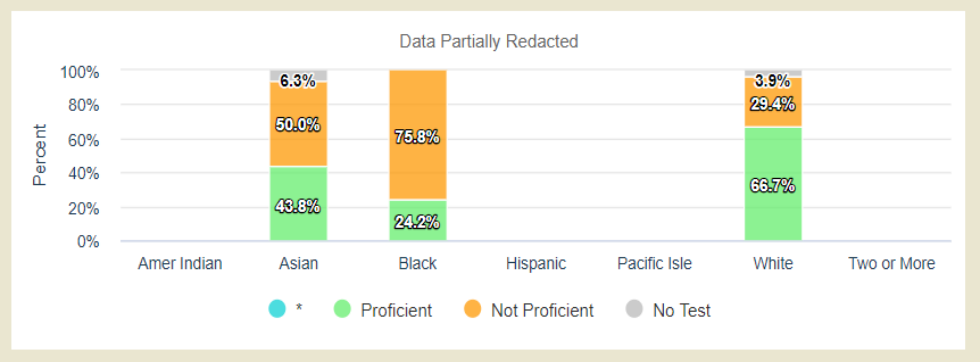
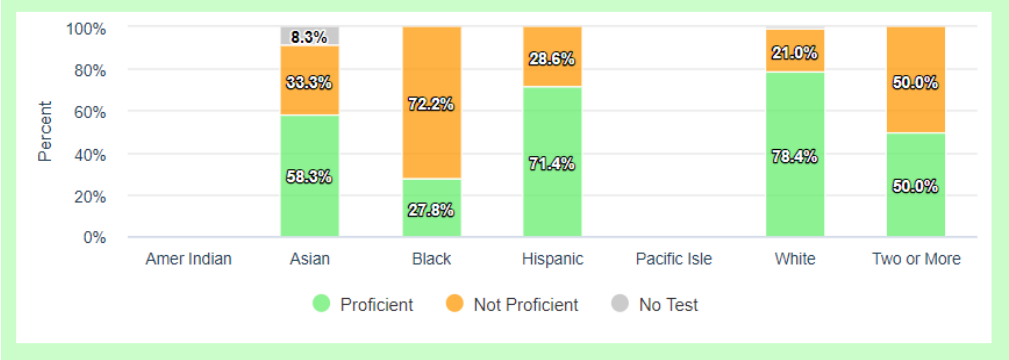


Shorewood



2017-2018 ACT Proficiency by District and Race/Ethnicity

Whitefish Bay



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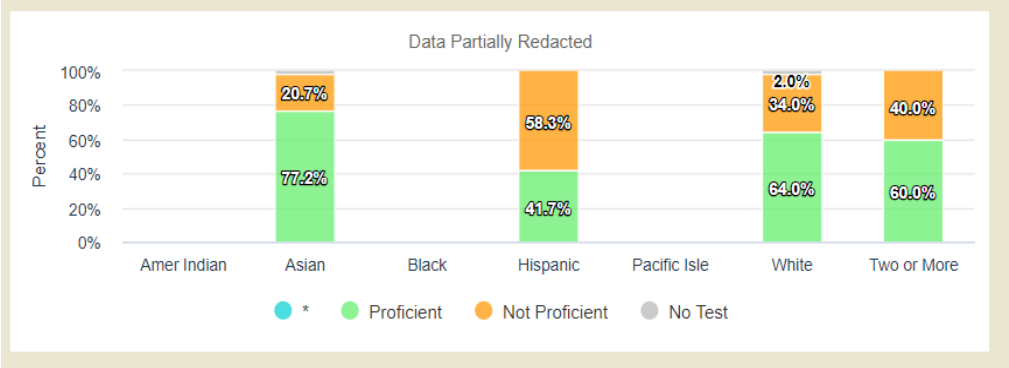
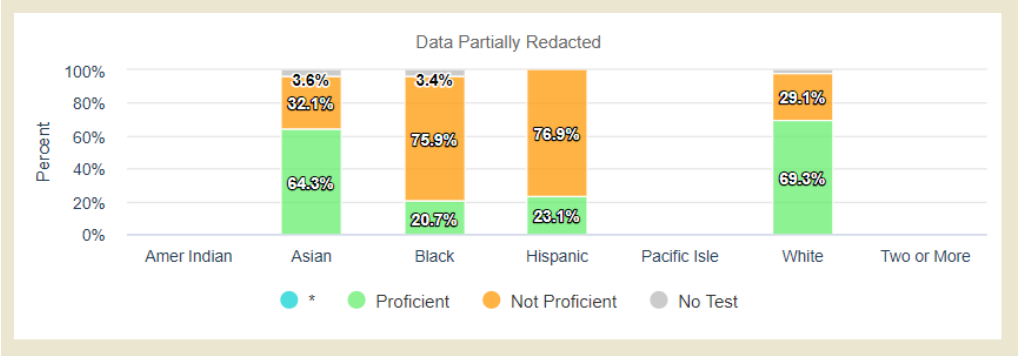
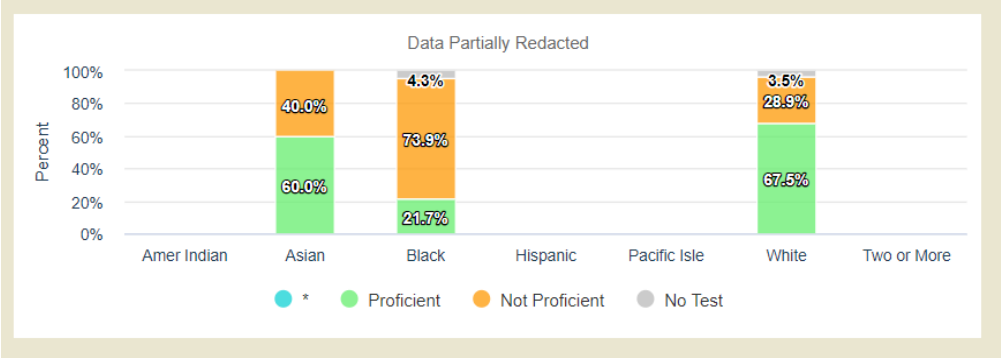


Mequon-Thiensville

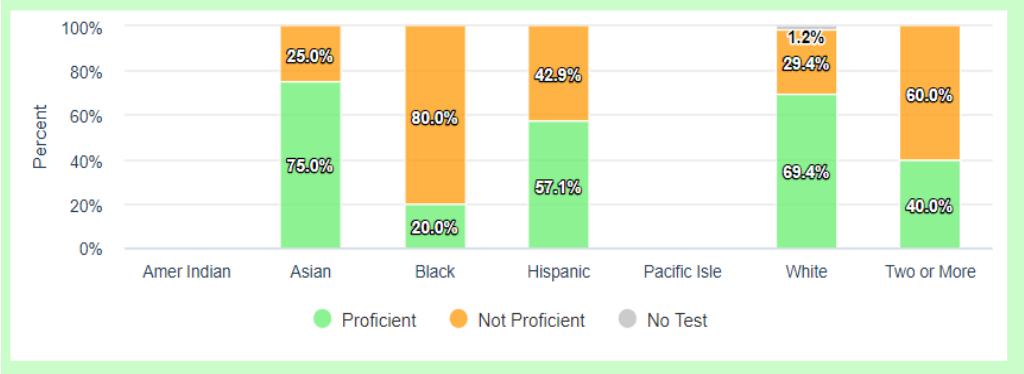


Shorewood



2018-2019 ACT Proficiency by District and Race/Ethnicity

Whitefish Bay



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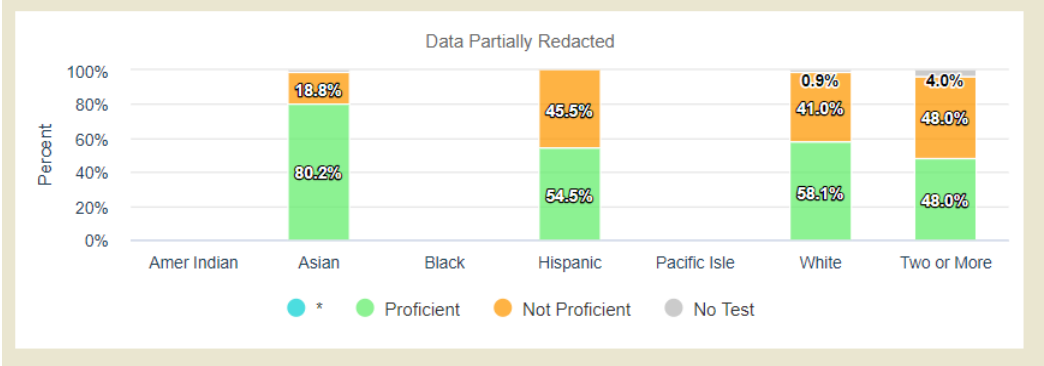
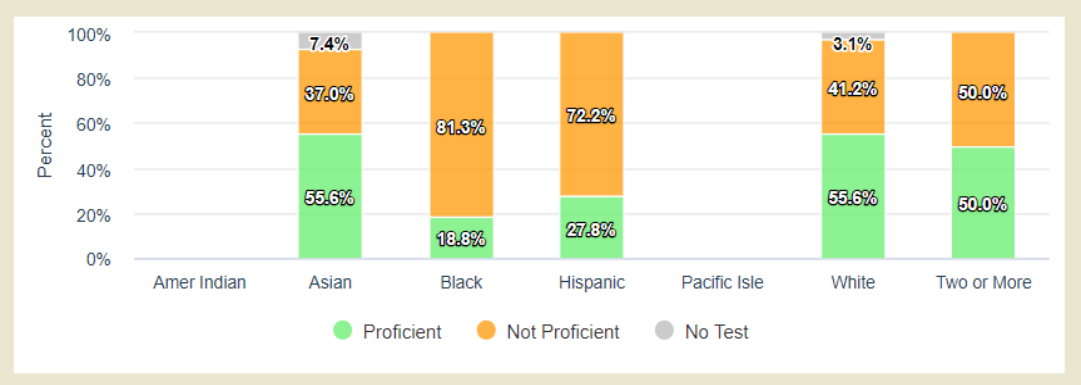


Mequon-Thiensville



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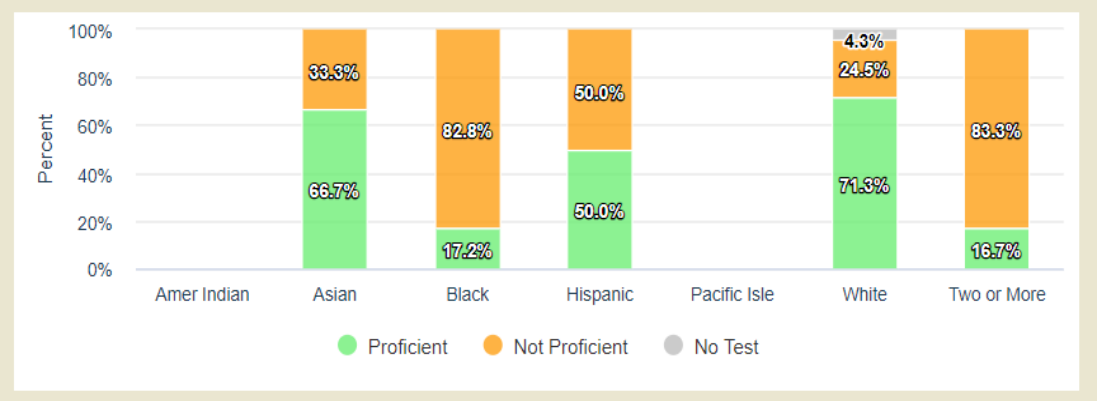
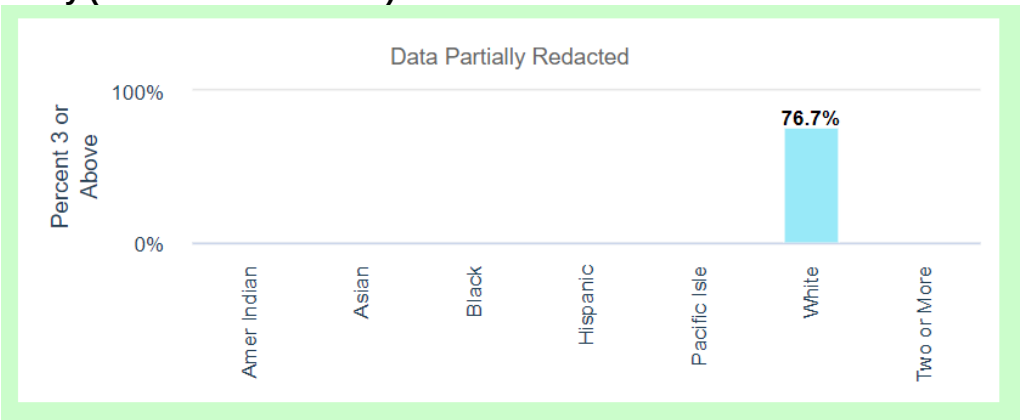


D. Whitefish Bay AP Scores

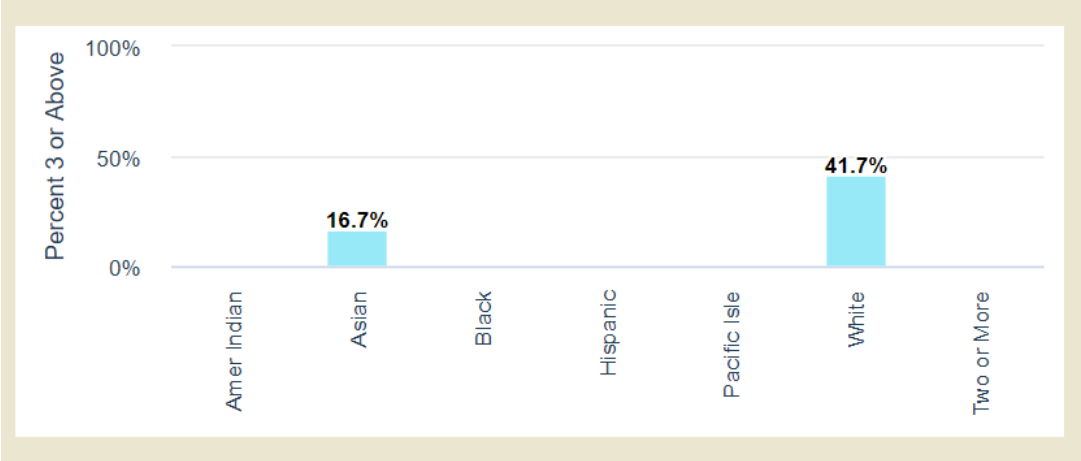
2018-2019 AP 3 or Better (By Race) District Comparison- Calculus AB, Calculus BC, AP Stats

2018-2019 AP 3 or Better (By Race) District Comparison- Calculus AB

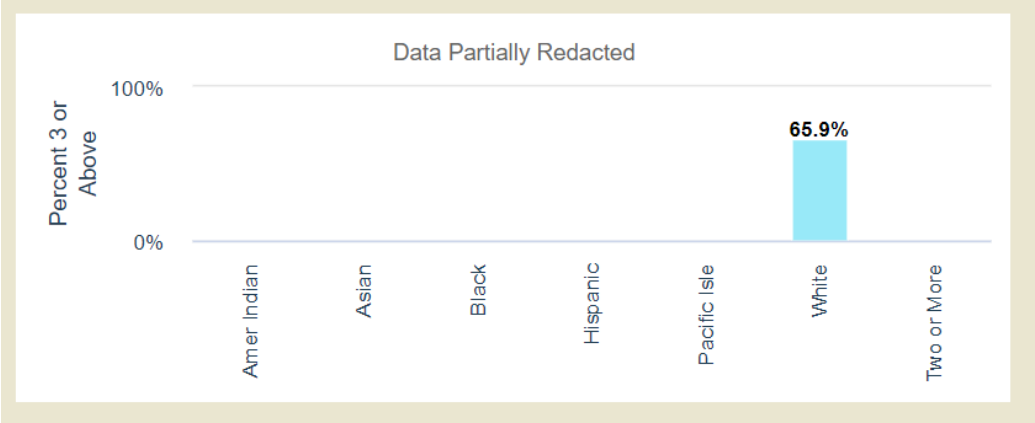
Whitefish Bay (42 total exams taken)



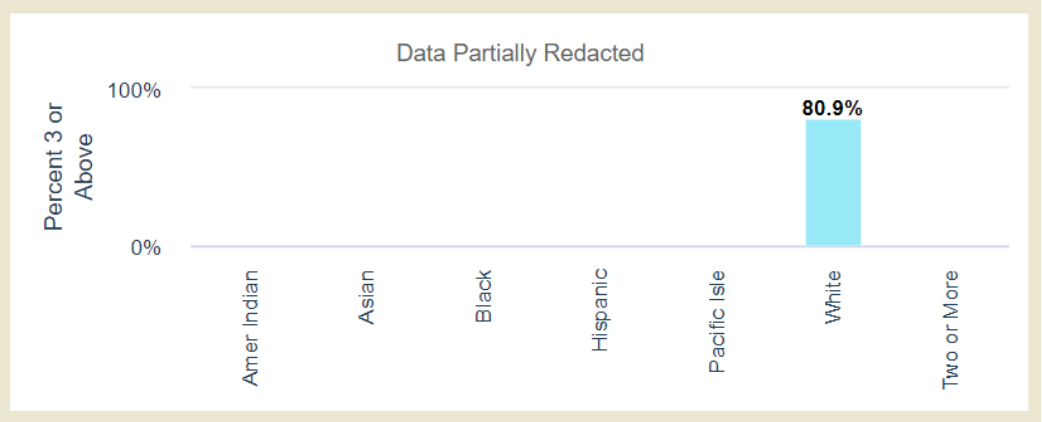
Elmbrook (42 total exams taken)



Mequon-Thiensville (49 exams taken)

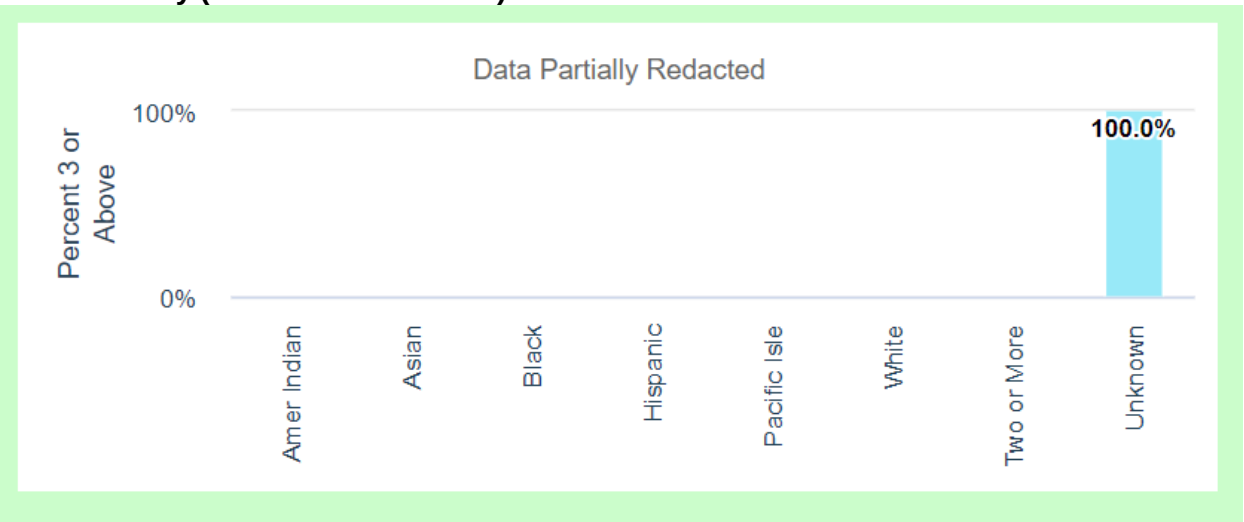


Shorewood (56 total exams taken)

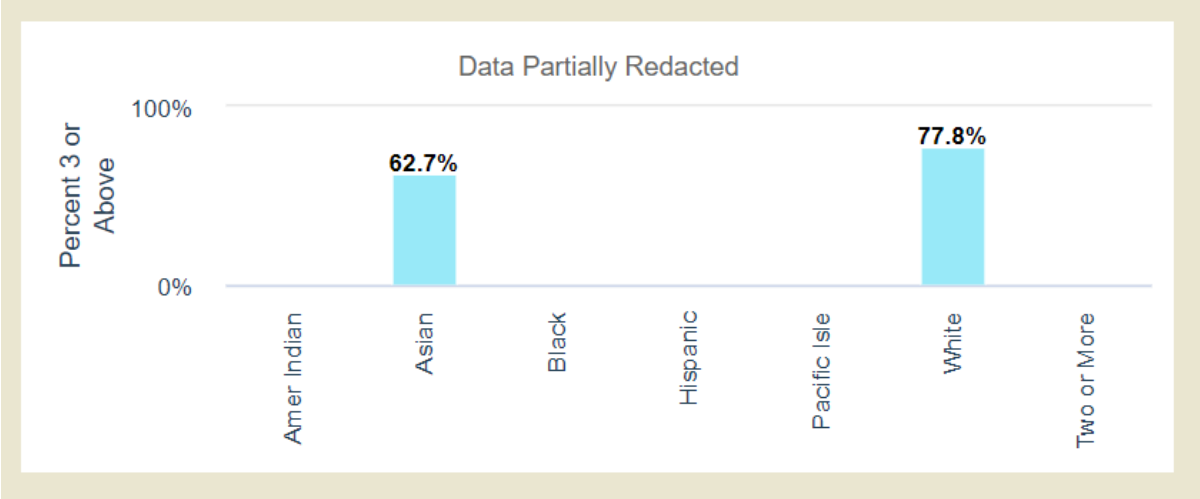


2018-2019 AP 3 or Better (By Race) District Comparison- Calculus BC

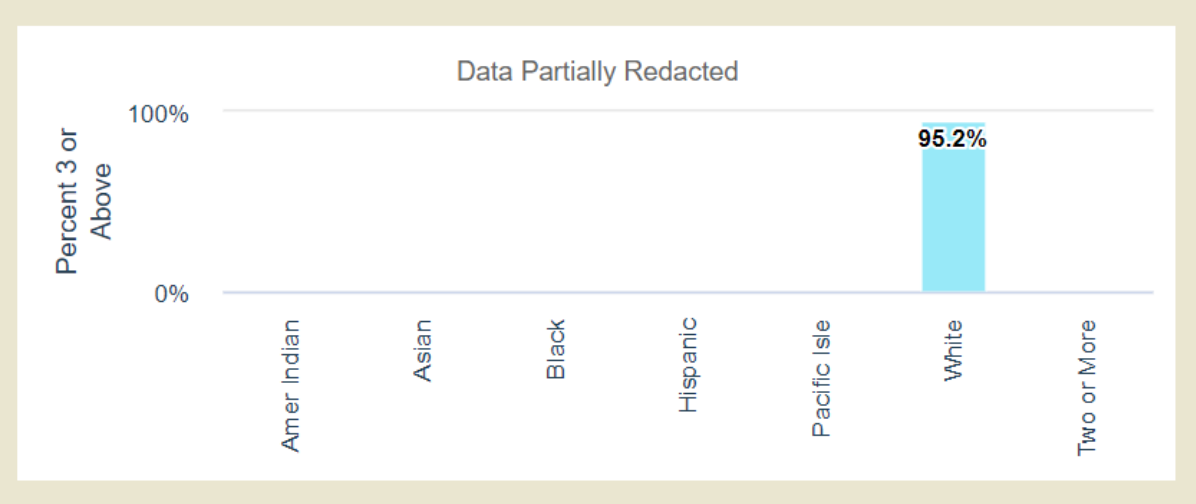
Whitefish Bay (20 total exams taken)



Elmbrook (132 total tests taken)



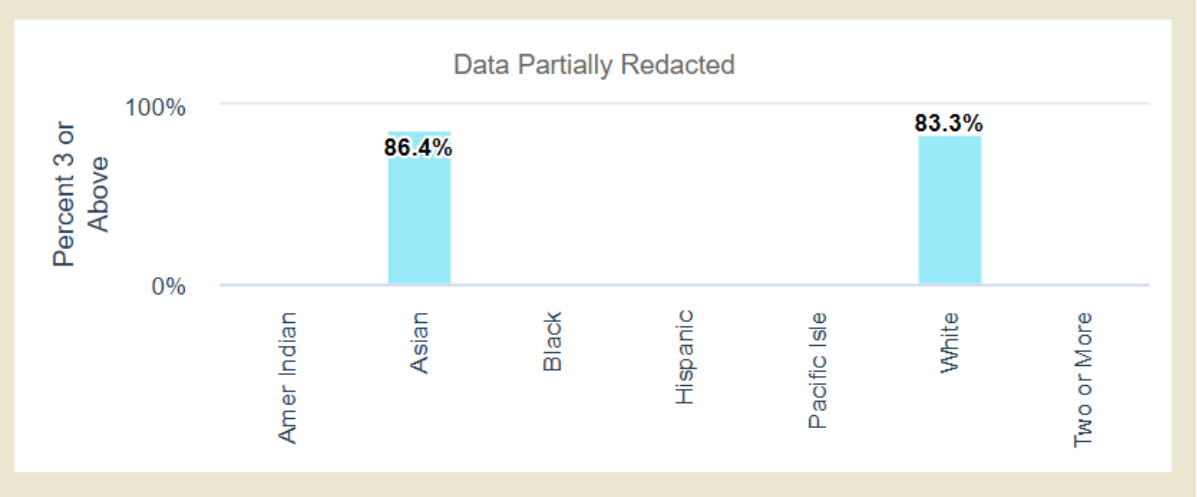
Mequon-Thiensville (54 total tests taken)



2018-2019 AP 3 or Better (By Race) District Comparison- AP Stats

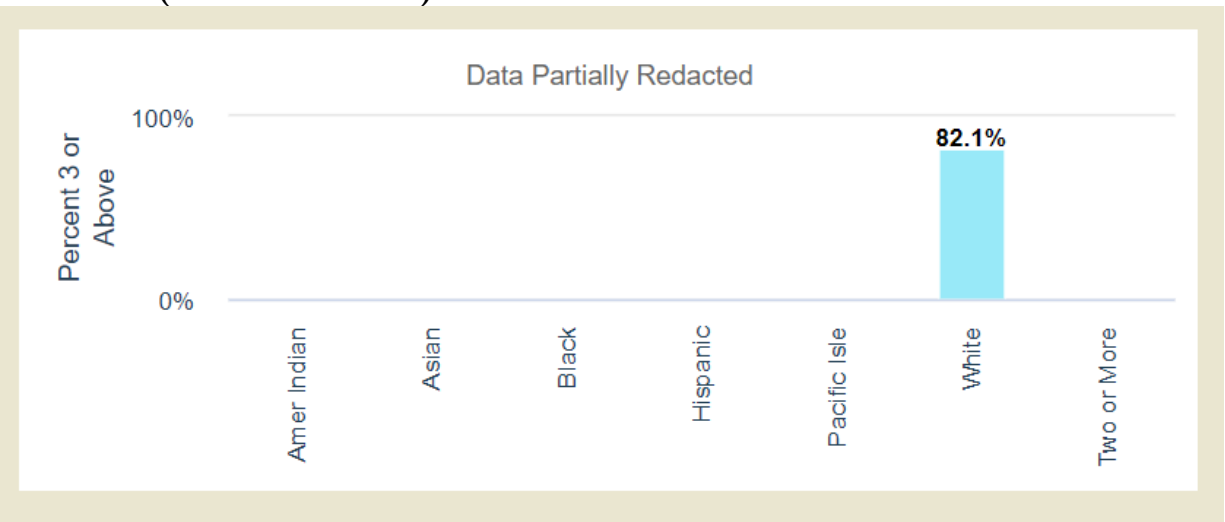
Whitefish Bay (17 tests taken) All data redacted

Elmbrook (141 tests taken)



Mequon-Thiensville (43 tests taken) All data redacted

Shorewood (34 total tests taken)



E. University of Wisconsin Remedial Courses

University of Wisconsin System
Report of Remedial Education Needs
Whitefish Bay High School

Year	New Freshmen	# Math Remediation Required	% of Math Remediation Required
Fall 2015	115	9	7.8
Fall 2016	95	8	8.4
Fall 2017		*	
Fall 2018	86	12	14

* 6 or fewer students needed remediation

F. District Guarantees Ratings

District Math Guarantees "Look For" Walk-Through Data Collection
2018-2019 School Year

	CU				RI				MS				HS				District			
	% M	% A	% B	% N	% M	% A	% B	% N	% M	% A	% B	% N	% M	% A	% B	% N	% M	% A	% B	% N
1. Teachers will consistently teach to adopted curriculum documents to meet Common Core State Standards.	100%	0%	0%	0%	78%	18%	4%	0%	78%	22%	0%	0%	80%	10%	10%	0%	84%	13%	4%	0%
2. Students will participate in dailiy math talk.	29%	43%	28%	0%	3%	40%	49%	4%	11%	44%	44%	0%	0%	30%	60%	10%	11%	39%	45%	4%
3. Students will engage in instruction in multiple settings.	30%	58%	12%	0%	16%	54%	30%	0%	11%	78%	11%	0%	10%	60%	30%	0%	17%	63%	21%	0%
4. Teachers will establish a community where students are surrounded by math.	33%	59%	8%	0%	28%	58%	15%	0%	33%	56%	11%	0%	0%	70%	30%	0%	23%	61%	16%	0%
5. . Teachers will use formative and summative assessments to inform instruction.	26%	13%	28%	33%	17%	7%	16%	61%	0%	44%	33%	22%	10%	10%	70%	10%	13%	19%	37%	32%
6.Students will make sense of problems and persevere in solving them	19%	62%	11%	8%	12%	58%	27%	4%	0%	78%	22%	0%	0%	60%	40%	0%	8%	64%	25%	3%
7. Students will reason abstractly and quantitatively	34%	35%	23%	8%	4%	50%	34%	12%	11%	67%	22%	0%	0%	70%	30%	0%	12%	55%	27%	5%
8. Students will construct viable arguments and critique the reasoning of others.	4%	45%	34%	17%	0%	28%	48%	23%	11%	44%	44%	0%	0%	30%	60%	10%	4%	37%	47%	13%
9. Students will model with mathematics.	70%	19%	11%	0%	28%	43%	22%	8%	11%	78%	11%	0%	0%	40%	60%	0%	27%	45%	26%	2%
10. Students will use appropriate tools strategically.	64%	28%	8%	0%	29%	38%	16%	17%	22%	67%	11%	0%	20%	50%	30%	0%	34%	46%	16%	4%
11. Students will attend to precision	53%	26%	14%	8%	33%	33%	23%	12%	33%	44%	0%	22%	0%	80%	20%	0%	30%	46%	14%	10%
12. Students will look for and make use of structure.	34%	58%	4%	0%	3%	74%	15%	8%	11%	33%	0%	56%	0%	70%	30%	0%	12%	59%	12%	16%
13. Students will look for and express regularity in repeated reasoning.	4%	45%	18%	33%	0%	38%	14%	48%	11%	33%	0%	56%	0%	50%	30%	20%	4%	41%	16%	39%
14. Students will make mathematical connections.	13%	37%	34%	17%	0%	33%	13%	54%	11%	33%	22%	33%	10%	40%	50%	0%	8%	36%	30%	26%

M= Meets **A= Approaching** **B= Below** **N=Not Observed**

K-12 Math Guarantees Walk-Through Data Committee Observations

Team	Notice	Wonder
High School	•Attending to precision and make sense of structure align to how instruction looks at WFBHS •HS does not have a lot of meets •Biggest below is in summative and formative assessment •Inconsistent implementation •Students engaging in math talk was low at	•What does successful "Math Talk" consist of? •How many formative assessments per class period are "meets"? •Would it be better to reduce guarantees to better meet them and better serve students? •What could HS do to better meet them? •What impact does the block have on ability to meet all standards?

	HS and we believe that should be a major focus •Middle School seems to have more meets than HS •Positives (>= 70%) •Meeting CCSS •Attend to Precision •Structure •Reason Abstractly and Quantitatively •Appropriate tools •Instruction in multiple settings •Needs Improvement •Math Talk •Construct Viable Arguments •Modeling with Mathematics •Formative and Summative Assessments	
Middle School	•Students will participate in Daily Math talk 11% meet for MS total. •Students will construct viable arguments 11%. •Using the department meetings to address some of the issues on the survey and taking them on goals. •Students will make mathematical connections- across the board, seems surprising it's not higher. •High School does better starting at 11, 12, and 13. •78% meet teaching the CCSS. •Need to work on daily math talk. •Need to incorporate formative and summative assessment. •#2-12 are student-focused not adult focused.	•How would the numbers look different if the observation time was longer? •11, 12, 13 better because that's when you can get to those things-kids are more serious about their grades and their progress? •It's difficult to exhibit all pieces in a 30-minute window. •How would lessons look today after another year of work on the workshop model? •Were all teachers observed during the same lesson? •How could these be timelier and relevant to make these conversations and feedback more meaningful?
Elementary	•We are noticing that there is an area of growth in making mathematical connections across both elementary schools. In 1st grade (Cu) there is an 'N' in that area. •It is noticed that in 4th grade at Cu and at RI, #5 (formative and summative to inform instruction), this was overall 0% meets between schools. •We noticed that #6, is approaching grade-levels. Students are not persevering and that is an observation noted by classroom teachers. •We have noticed that we consistently	•We wonder were the walkthroughs done during only one math block for each grade-level or over several days. •I wonder if there is a connection between #8 (construct viable arguments), #2 (participate in daily math talk) and #13 (look for and express). Are we doing math talks effectively to allow student discussion? •We wonder if # 8 should state - "Students will critique the reasoning of others while constructing viable arguments." •I wonder about the differences across grade-levels when it comes to model with mathematics (#9). It is really high is some grade-levels and in

	teach the adopted math curriculum. •We are noticing that we need to include more math talk or number talk routines, which will allow for more practice in #8 (viable arguments). •We noticed there is an area of growth needed on #13 where students are able to look for and express regularity in repeated reasoning. •We noticed there is high percentages of approaching in many areas. •- Below Progress is evenly spread among staff and standards •Critiquing and thinking the reasoning of others was low across both buildings •Modeling is strong •We all seem to be teaching the standards •Inconsistencies across the guarantees seem to be at ⅓, ⅓, ⅓ •Depth of details is truly in the Math Expressions TE - research and approach ARE in place, but staff have not had any learning around these pieces. •Expertise and ongoing teacher training is missing - WISMI experiences have provided a tip of the iceberg in learning and understanding the standards •Teachers need to own the learning - cannot be imparted by a peer who has the training. •3 Years in time with no added training or focus on Math learning, so considering THAT, we are in a pretty good place! •Some of these guarantees might have been hard to notice in just one snapshot. •Comparing classrooms and schools might be difficult since different parts of the lessons might have been observed. What would the data look like if each classroom was observed at the same point in the lesson (mini lesson) •Both elementary schools seem to be consistently in the approaching areas. Which means that we have some great things going and our challenge is to figure out what we need to build on and what we need to foster success. •Expectations and depth in which these guarantees will be noticeably differ upon the grade level. For example, math in kindergarten will look quite different than in middle school.	others it is very low. •We wonder if we have a consistent understanding of what precision means in mathematics. •Could those standards missing or not observed or at a "B" have been due to when in the block of math class the lesson was observed? •How are student conceptual understandings related directly to the ability to critique and reason? •Regularity and repeated reasoning was less often observed, but how do we gain clarity of that Math Practice? •How do we create and environment of productive struggle? •Is our allotted time for Math Expressions not enough time to do it all and to do it well? •Would more time in Mathematics support greater access to the guarantees? •Do we see Formative Assessment as something that happens or is it something that needs to be intentional and preplanned? (Per National Board Certification) •Solve and Discuss routine in ME regarding to a word problem takes at least 10 minutes per problem - so how do we fit it all in and get it all done? •It might be easier to look at the entry points if there were just two categories vs 4 such as Present or Not Present. •What tools and resources do we need to help build upon the areas in which we notice some opportunities for growth? •Can we gain more valuable data by also looking at STAR data? Or, if we did this walkthrough more often?

G. Wisconsin Forward Test Item Analysis

Math Review Forward Test Item Analysis

Sample of Data Reviewed for Each Grade Level
8th Grade Multiple Choice- Forward 2018

08 Select Grade

MC	Math Grade 8			
Multiple Choice				
DOK	# of Qs	Correct	Incorrect	% Correct
1	7	1123	473	70.4%
2	26	3768	2160	63.6%
3	2	279	177	61.2%
Domain	# of Qs	Correct	Incorrect	% Correct
EE	8	1198	626	65.7%
F	8	1232	592	67.5%
G	7	1053	543	66.0%
NS	5	710	430	62.3%
SP	7	977	619	61.2%

8.EE - Expressions & Equations
8.F - Functions
8.G - Geometry
8.NS - The Number System
8.SP - Statistics & Probability

Standard	# of Qs	Correct	Incorrect	% Correct
8.EE.1	1	80	148	35.1%
8.EE.2	2	385	71	84.4%
8.EE.3	1	88	140	38.6%
8.EE.5	1	148	80	64.9%
8.EE.6	1	193	35	84.6%
8.EE.7	1	173	55	75.9%
8.EE.8	1	131	97	57.5%
8.F.1	1	118	110	51.8%
8.F.2	3	460	224	67.3%
8.F.4	2	362	94	79.4%
8.F.5	2	292	164	64.0%
8.G.1	2	254	202	55.7%
8.G.3	1	157	71	68.9%
8.G.4	1	177	51	77.6%
8.G.5	1	165	63	72.4%
8.G.6	1	159	69	69.7%
8.G.7	1	141	87	61.8%
8.NS.1	5	710	430	62.3%
8.SP.1	2	331	125	72.6%
8.SP.2	1	107	121	46.9%
8.SP.3	3	458	226	67.0%
8.SP.4	1	81	147	35.5%

8th Grade Short Answer- Forward 2018

SA	Math Grade 8			
Short Answer				
DOK	# of Qs	Correct	Incorrect	% Correct
1	2	153	300	33.8%
2	3	311	361	46.3%
3	0	0	0	

Domain	# of Qs	Correct	Incorrect	% Correct
EE	2	152	298	33.8%
G	1	55	167	24.8%
NS	2	257	196	56.7%
	0	0	0	

Standard	# of Qs	Correct	Incorrect	% Correct
8.EE.1	1	72	155	31.7%
8.EE.8b	1	80	143	35.9%
8.G.8	1	55	167	24.8%
8.NS.2	2	257	196	56.7%

8th Grade Technology Enhanced- Forward 2018

TE	Math Grade 8			
Technology Enhanced				
DOK	# of Qs	Correct	Incorrect	% Correct
1	0	0	0	
2	5	488	648	43.0%
3	1	155	72	68.3%

Domain	# of Qs	Correct	Incorrect	% Correct
F	2	213	241	46.9%
G	2	285	170	62.6%
NS	1	105	122	46.3%
SP	1	40	187	17.6%

Standard	# of Qs	Correct	Incorrect	% Correct
8.F.2	1	88	138	38.9%
8.F.3	1	125	103	54.8%
8.G.2	1	130	98	57.0%
8.G.5	1	155	72	68.3%
8.NS.2	1	105	122	46.3%
8.SP.4	1	40	187	17.6%

Grade	Observations of Forward Test Item Analysis
3	The 3rd grade Forward assessment indicates strength in the domain of Numbers and Operations in Base Ten where students need to fluently demonstrate adding and subtracting within 1000. Opportunities for growth may most often be found in the domain of Measurement and Data where students are less successful in demonstrating their understanding with concepts of area and perimeter. Measurement and Data and Numbers and Operations with fraction understandings presented as growth opportunities when

	working with short answer questions. Depth of Knowledge Level 3 questions with technology enhancement were met with a 54% success rate. These are problems that put math in context and ask students to act on the provided information. When working to answer problems that utilize tech support our students were successful just under 28% of the time in the area of Operations and Algebraic Thinking, which appears to be in contrast to the short answer questions.
4	The 4th grade Forward assessment indicates strength in the domain of geometry with a growth opportunity in algebraic and operational thinking. Technology enhanced questions in Depths of Knowledge levels 2 and 3 are a challenge for our students. Providing students the time to practice these types of questions on line can be very beneficial in the future. It does not seem to matter in what mathematical domain it is in. Our WFB students are answering correctly 25% or less. In other short answer questions, our students had a high success rate in answering Numbers and Operations in Base Ten domain with the Fractions domain being the most challenging.
5	The 5th grade Forward assessment indicates strength in the domain of Numbers - Base Ten where students demonstrate an understanding of place value and decimals. There are also noted strengths in work with multiplication of fractions and in the use of expressions to solve problems with algebraic structure. Opportunities for growth may most often be found in the domain of Measurement and Data. Here students were not successful in applying the formula for volume or in converting among different units of measurement. These same understandings presented as growth opportunities when working with short answer questions. Depth of Knowledge Level 3 questions were only met with a 46% success rate. These are problems that put math in context and ask students to act on the provided information. When working to answer problems that utilize tech support our students were successful just over 50% of the time.
6	The 6th grade Forward assessment indicates strength in the domain of Numbers Systems where students demonstrate an understanding M&D of fractions and extend their understanding to include all rational numbers. Opportunities for growth may most often be found in the domain of Statistics and Probability. This is an additional cluster based on the Achieve the Core's focus standards where students are less successful in demonstrating their understanding with statistical variability and distribution. Statistics and Probability and Ratios and Proportional Relationship (a major cluster) understandings presented as growth opportunities when working with short answer questions. Depth of Knowledge Level 3 questions with technology enhancement were met with a 75% success rate which is a relative strength. These are problems that put math in context and ask students to act on the provided information. When working to answer problems that utilize tech support our students were successful just over 40% of the time in the area of Number Systems, which appears to be in contrast to the short answer questions.
7	The 7th grade Forward assessment represents domains equally for the most part. The exception is in the format of multiple choice where Statistics and Probability and Expressions and Equations include the most questions. Ratios and Proportional Relationships, the largest concept in 7th grade, is represented with the second fewest questions, with the Number System having the least. Depth of Knowledge (DOK) questions fall primarily at level 2 (working with or applying skills or knowledge). The multiple choice format held Ratios and Proportional Relationships as a strength, while

	Expressions and Equations an area of growth. In general, short answer, technology enhanced, and DOK level 2 are areas to target.
8	Similar to 7th grade, 8th grade Forward assessment represents domains equally for the most part. Geometry was an area where our students scored lower except in multiple choice. This is not a major domain in 8th grade, but it may demonstrate our inability to get to those portions of the text. Depth of Knowledge (DOK) questions fall primarily at levels 2 (working with or applying skills or knowledge) and 3. The multiple choice format held Numbers and Operations of Fractions as a strength, while Numbers and Operations of Base Ten an area of growth. In general, short answer, technology enhanced and short answers, with a DOK levels 2 and 3 are areas to target.

H. Wisconsin Forward Test Examples

Review of the Wisconsin Forward Test Examples

Grade	Observations of the Wisconsin Forward Test Examples
3	• There are not real world problems. • Formatting is challenging and can be intimidating to kids. • Several standards are assessed in one questions. • Some items are opposite (fraction shading) in Math Expressions than on the test question. • Doable if you had the full school year.
4	• There are two concepts in one question but only assessed by one standard. • Multiple step test questions are very prominent. • Some questions appear to be testing the reading than the mathematics'. • Not typical phrasing in some questions. • How can the computer generated question really assess the "advanced" category on the Performance Level Descriptors.
5	• Language heavy in assessment as far as vocabulary and phrasing is concerned. • Many of the first few questions asked come from material not taught until later in the year. • Many steps in even simply stated problems. • Vocabulary needs to be **conceptual** - ie #7 is asking for area, but area is not even used in the prompt. • Fractions - proficiency with two step problems is needed to be proficient or secure. • Measurement and Data is visible in sample test, but not strong in Math Expressions. • Rubric for Proficient or Advanced is much more rigorous than where we may be "at" with our current curriculum and instruction. • Wondering about the tools provided in technology - and student ease or success in using the tools.
6	• There are two concepts in one question but only assessed by one standard.

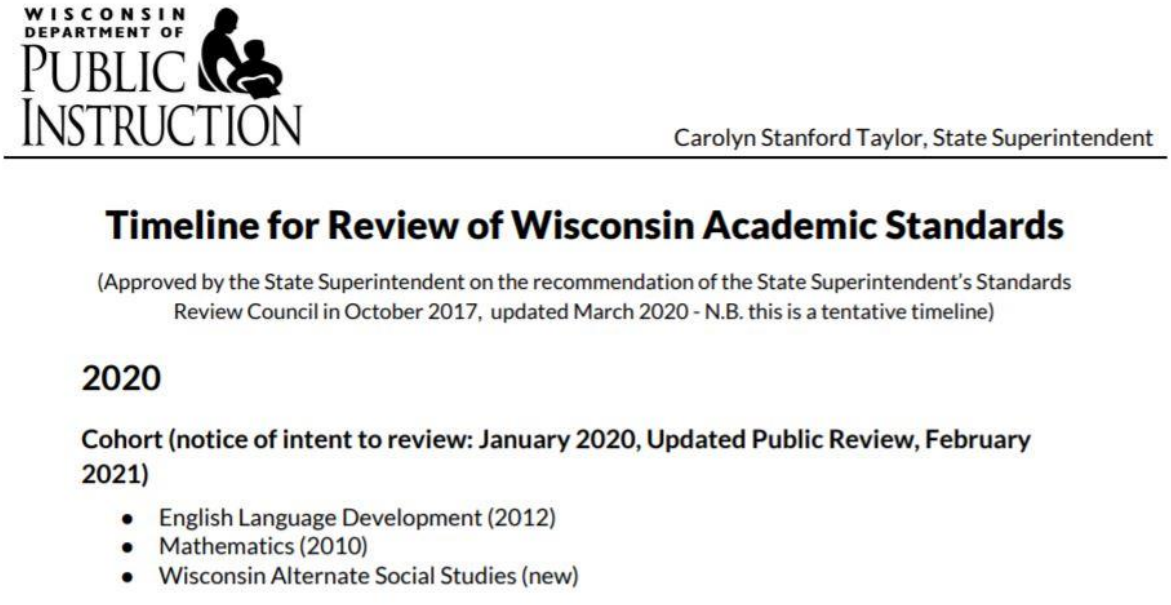
	• Language heavy in assessment as far as vocabulary and phrasing is concerned. • Many of the first few questions asked come from material not taught until later in the year. • Many steps in even simply stated problems. • Multiple step test questions are very prominent. • Rubric for Proficient or Advanced is much more rigorous than where we may be "at" with our current curriculum and instruction. • Wondering about the tools provided in technology - and student ease or success in using the tools.
7	• Rubric for Proficient or Advanced is much more rigorous than where we may be "at" with our current curriculum and instruction. • Wondering about the tools provided in technology - and student ease or success in using the tools. • Language heavy in assessment as far as vocabulary and phrasing is concerned. • Many of the first few questions asked come from material not taught until later in the year. • Many steps in even simply stated problems.
8	• Several standards are assessed in one questions. • Many of the first few questions asked come from material not taught until later in the year. • Many steps in even simply stated problems. • Wondering about the tools provided in technology - and student ease or success in using the tools. • Rubric for Proficient or Advanced is much more rigorous than where we may be "at" with our current curriculum and instruction. • Language heavy in assessment as far as vocabulary and phrasing is concerned.

VI. Evidence-Based & Equity Research Review

The following highlights the current research around the adolescent brain, National Council Teachers of Mathematics (NCTM), social- emotional learning, Wisconsin's Model of Academic Standards documents, and the federal changes in the Every Student Succeeds Act (ESSA). The following are the key components of the research and new standards relating to math:

Mathematics Standards Update

The State of Wisconsin issued a **Notice of Intent to Review Academic Standards** on January 28, 2020. This is the first step in the Wisconsin Academic Standards Review and Revision Process. Public input was accepted until February 28, 2020. The State Superintendent has made a decision to move mathematics to the revision process. The total **anticipated timeline** for the Wisconsin Department of Public Instruction (DPI) process is 9 months. Due to COVID-19, the DPI has updated and revised their standards review time, including mathematics. In Fall 2020, DPI's revised timeline indicated the following information:



WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION

Carolyn Stanford Taylor, State Superintendent

Timeline for Review of Wisconsin Academic Standards

(Approved by the State Superintendent on the recommendation of the State Superintendent's Standards Review Council in October 2017, updated March 2020 - N.B. this is a tentative timeline)

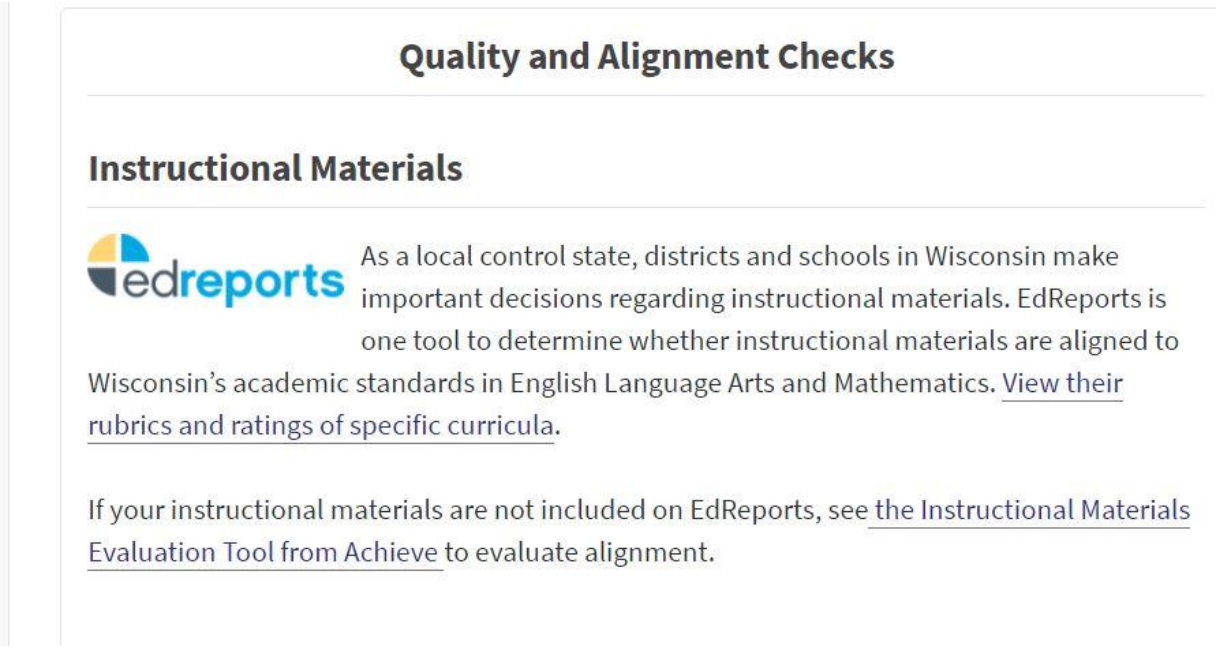
2020

Cohort (notice of intent to review: January 2020, Updated Public Review, February 2021)

- English Language Development (2012)
- Mathematics (2010)
- Wisconsin Alternate Social Studies (new)

Retrieved from https://dpi.wi.gov/standards on 12.14.20

The DPI additionally communicated the following information on the mathematical standards process along with instructional material selection. "The writing committee has developed a draft of the new standards. The first draft was released on January 26, 2021 for a public review and provided to the education committees of the legislature. After the 30 day comment period ends, the State Superintendent's Academic Standards Review Council will provide further review. The State Superintendent then determines adoption of the standards." The State formally adopted the standards on May 17, 2021.



Retrieved from https://dpi.wi.gov/standards on 4.14.21

Laws and Statutes Related to Mathematics Instruction in Wisconsin

Law	Explanation
Graduation Requirements 118.33	At least three credits (6 WFB credits) of mathematics including state and local government are required for public high school graduation. The school board shall award a pupil up to one mathematics credit for successfully completing in the high school grades a course in computer sciences that the department has determined qualifies as computer sciences according to criteria established by the department. The school board shall award a pupil up to one mathematics credit for successfully completing in the high school grades a career and technical education course that the school board determines satisfies a mathematics requirement, but may not award any

	credit for that course if the school board awards any credit for that same course under subd. 1. d.
Wisconsin Education Standards 121.02 (1)(k)	State education standard (k) requires districts to have a written, sequential curriculum plan for mathematics, which includes objectives, course content, resources, a program evaluation method, and allocation of instructional time.
Curriculum 120.12(14)	Requires school boards to determine the school course of study.
Regular Instruction 121.02(1)(L) 253.15(5)	Requires school districts to: (1) In elementary grades, provide regular instruction in reading, language arts, social studies, mathematics, science, health, physical education, art, and music. (2) In grades 5-8, provide regular instruction in language arts, social studies, mathematics, science, health, physical education, art, and music. The school board must also provide pupils with an introduction to career exploration and planning. (3) In grades 9-12, provide access to an educational program that enables pupils each year to study English, social studies, mathematics, science, vocational education, foreign language, physical education, art, and music. "Access" means an opportunity to study through school district course offerings, independent study, CESAs or cooperative arrangements between school boards and post-secondary institutions.

Current Research Debrief

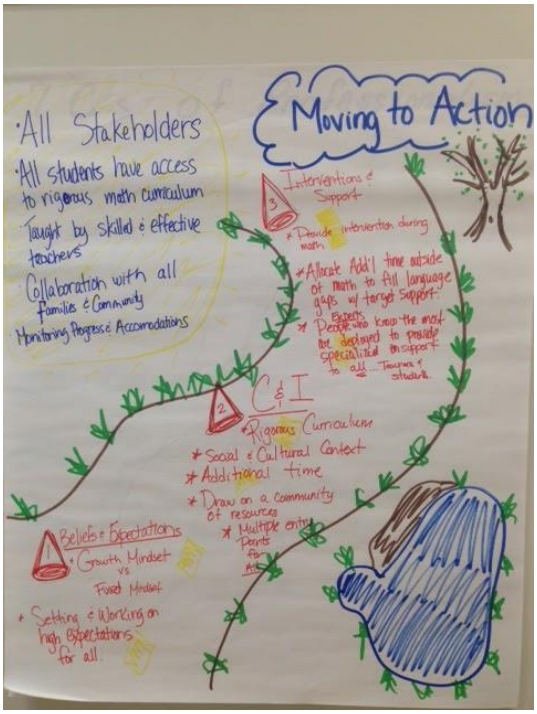
Article	Notes
Algebra Success	• Curriculum and interventions do not demonstrate having a positive impact on student achievement. • Effective instruction and pedagogy does...teaching strategies improve achievement results. • Little research on sequencing of classes or integrated classes, but the teaching strategies. • Teaching strategies; conceptual knowledge, active instruction, metacognition, self-efficacy, having peer models, acquiring information, how they study it and how they express the information.
Best Practices in Course Sequence and Integrated Mathematics	•Algebra and geometry support students over two years, instead of the block. •Students forget math content in both approaches. •Algebra for ALL policy, can be good or bad. You are disadvantaged

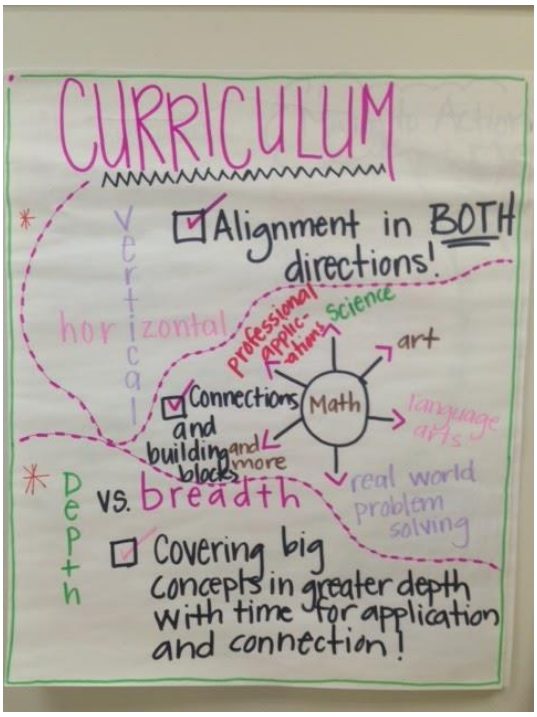
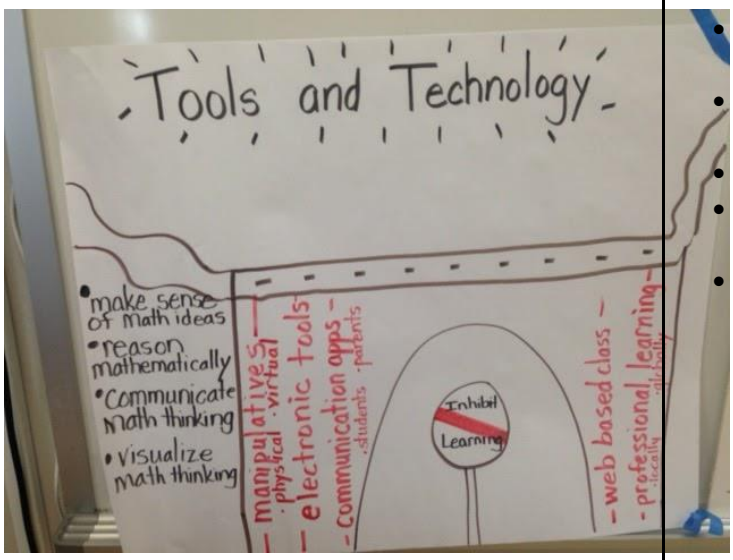
	students that are not prepared with the students who are prepared. Teachers tend to focus on those that are struggling instead of those. •Algebra should be a consideration for 9th grade, except for a few students.
Math Intervention	•Looks at a couple of different interventions and the effect size, which varied per intervention. •This seems like more of an advertisement and that results are inconclusive and that this not much out there. •If you give intervention the kids.
Middle School	•National and International Comparisons. •Concrete versus Abstract Concepts Assessment. •US does better on the concrete based assessment. •The equity measures that if students have algebra.
Acceleration	**6-12 Learning** •How do you identify giftedness in mathematics? •Cultural bias of assessments. •How do you do acceleration and different models? Full grade level acceleration. Enrichment charts for the offerings (for example...exploratory courses). **Grades K-5 Learning** Advance Learning Programming • Resources dedicated. • 3 Characteristics of Giftedness. o Pace of learning. o Depth of understanding. o Level of interest. • Districts should provide multiple acceleration formats or tiers of advancement: o In class. o Pull out enrichments activities. o Do both before full grade level acceleration. • Achievement vs. Ability Tests (Universal Testing) o Do both to determine giftedness or acceleration. o Informal and formal assessments. • Acceleration Options: o Pre-assessments. o Provide varied assessment options to demonstrate learning. o Ask 'why' and 'what if' questions. o Math contests. o Math mentors.
Catalyzing Change in the Elementary Math Classroom	• Instruction in elementary affects high school. • Many instructional/math practices are already more evident in elementary than high school.

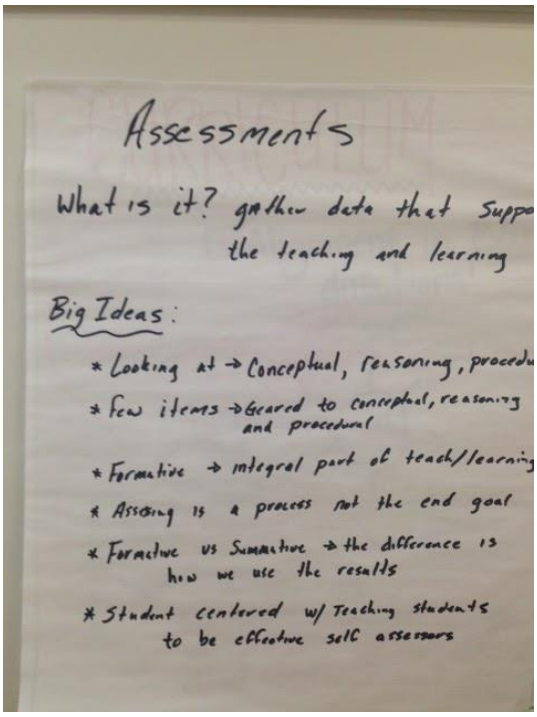
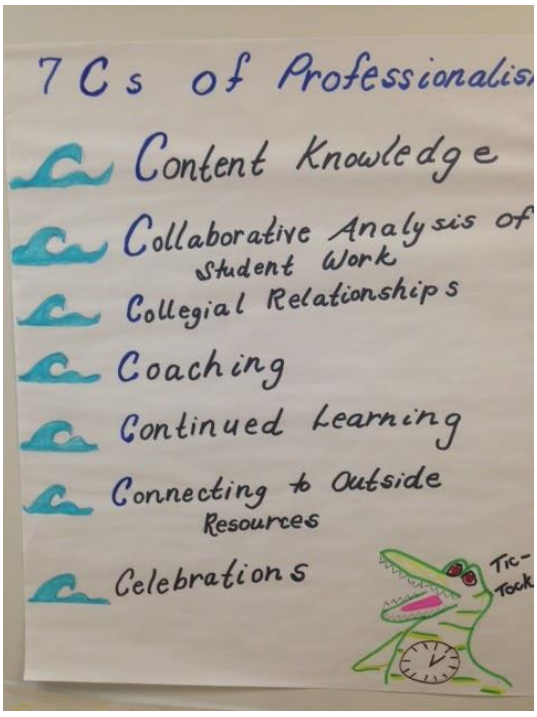
	• Tracking can result in both inequitable instructional opportunities and fixed mindsets. • Asking "what does it mean to be smart in mathematics?" and look for responses that describe math practices and growth mindsets. (If you don't see many/any, work on it!) • Recognizing students who are brave enough to share mistakes, confusions, questions. • Encouraging agency "that you can act and act strategically to achieve aims. • Low threshold-high ceiling problems/rich problems. • Language in unit assessments that doesn't match instruction or student language. • Careful, precise language in feedback. • Not necessarily having teachers periodically switch grade levels (SO many curricular areas!) Instead, greater cross grade-level discussions. • Discussed equity and brought up cultures, but not much detail. Lots of sound bites around equity, but not enough substance.

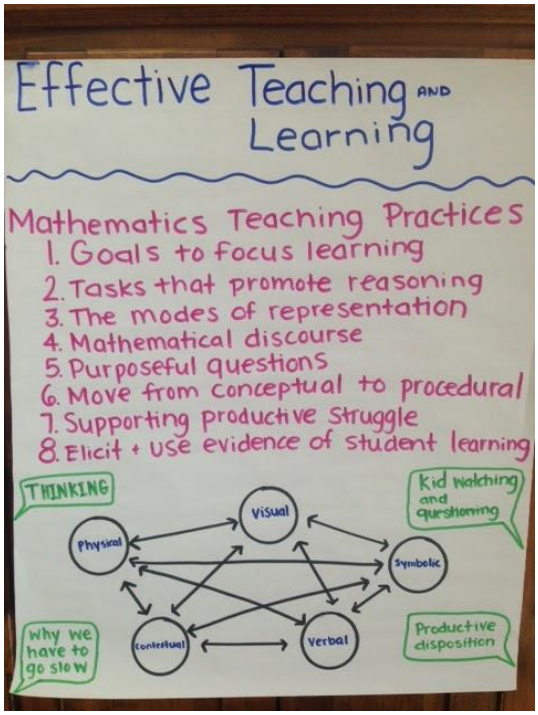
Mathematics in the Learning Cycle	• The brain does incredible things - and learning happens.
	• The brain functions with a cycle similar to how we should teach - how we live our lives.
	  o Sensory input or experiences.
	  o Integrate/assimilate/connect to prior knowledge.
	  o Reflect on what was learned.
	  o Put a plan in place - act on new learning.
	• Knowledge is constructed from the experience.
	• Use of models - student created when possible - to interpret math in the real world.
	• Visual representations that come from pictures or manipulatives.
	• Value in conferring with students as connections are being made.

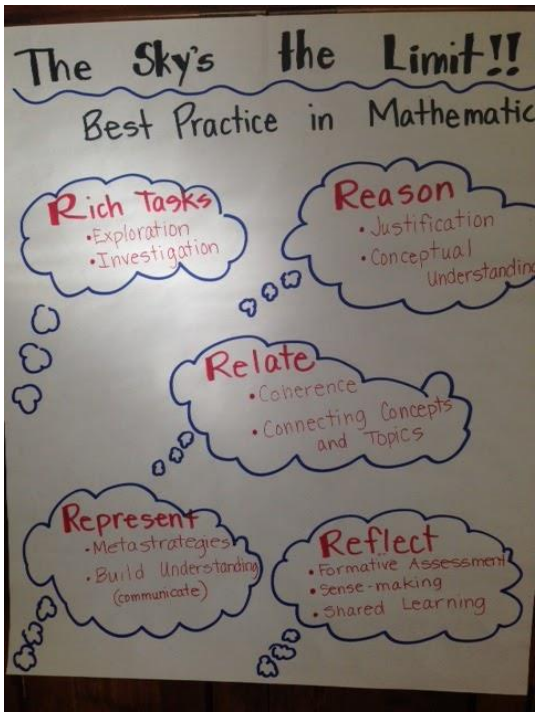
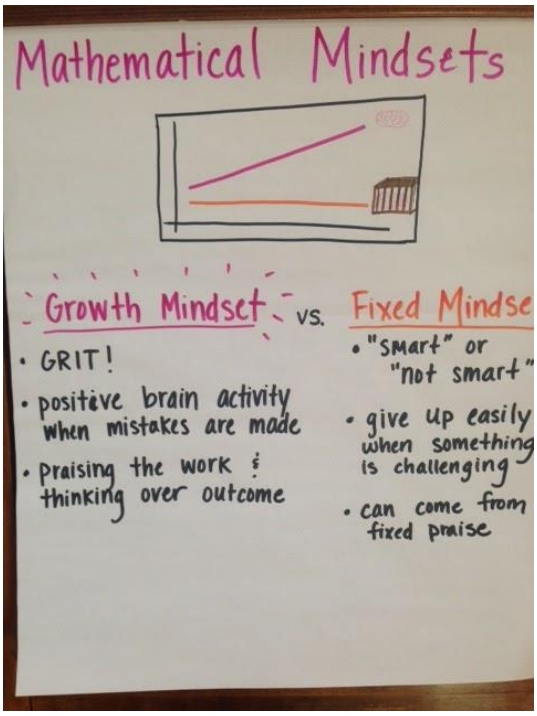
Zull Chapters	• Program we select should align with the cycles or steps. • Ensure that the instruction we provide matches the steps in the reading. • Concrete to Abstract. • Learning has evolved more than teaching children, experiences are not enough. • Curriculum - how understanding our understanding of the role of a learner and the steps of learning impacts our decision making - what curricular framework aligns to that understanding of a learner. • Are we doing this learning cycle in anything currently? ELA – mini-lesson; Science - FOSS Structure; Fosnot Math Context for Learning; 3 Act Math Lessons.

Principles to Actions: Ensuring Mathematical Success for All		
NCTM Guiding Principle	Elementary	6-12
Teaching and Learning	Mathematics Teaching Practices • Establish math goals to focus learning. • Implement tasks that promote reasoning and problem solving. • Use and connect math representations. • Facilitate meaningful math discourse. • Pose purposeful questions. • Build procedural fluency from conceptual understanding. • Support productive struggle. • Elicit and use evidence of student thinking.	
Access and Equity		• Consider opportunity gap vs achievement gap. • High Expectations. • Quality curriculum and instruction. • Time to Learn. • Differentiated Processes. • Resources (human and material). • Broad range of strategies and approaches. • Mathematics ability is a function of opportunity, experience and effort.

Curriculum		• A program to help students meet the standards, a "means". • Requires both a horizontal and vertical perspective. • Structure units around broad themes. • Requires continuous revision and monitoring-evolve. • Select resources that support (vs make) your curriculum. • Students should be able to make connections algebraically, geometrically, numerically...using different lenses.
Tools and Technology		• Should not replace teaching, but rather enhance understanding. • Should be interactive and used for exploration. • New skills while preserving old skills. • Can assist students in visualizing and understanding math concepts. • Should not be used for fun or as a reward.

Assessment		• A mean to achieve productive teaching and learning for all rather than final means. • Give high quality feeback • LESS summative, MORE formative! • With variety examples: Sample interviews, observations, daily exit slips, journal writing • More task, less test!
Professionalism		•"Collaborative/collective responsibility for EVERY student. •-Math Content. •-Math Instructional Tools. •-Knowledge of Students as Learners. •-Continuous improvement/life long learners. •Obstacles: Isolation, time, ineffective mindset. •Overcoming Obstacles. •Collaboration on instruction (learning-implementing-reflective) Coaching: within classrooms/ departments/school wide. •Time: planning instruction, reflecting on effectiveness, work to improve. •Action- cultural, resists change.

Additional Articles and Books		
Visible Learning		Copyrighted appropriately the graphic. Student awareness: What, why and how. They need to know what the learning likes. Direct vs. Dialogic- one is not better than the other, you need both. Think! Choosing the right approach at the right time to ensure learning Direct. • Talk to teacher. • Occasional group work. • Discipline progression. • Watch and do. • Immediate feedback. • Predetermined pathway. • Teacher tells errors. • Given representations and definitions. Dialogic • Talk to each other. • Always group work. • Discipline and development progression. • Exploration. • Productive.

Best Practices Book- Math Chapter		NCTM vs CCSSM **NCTM** • Connections. • Problem Solving. • Reasoning and Proof. • Communication. **CCSSM** • Structure. • Make sense and persevere. • Create models. • Tools. • Reason abstractly and quantitatively. • Construct/critique arguments. • Repetition recognition. • Precision. Qualities of Best Practices • All math is connected. • Math is for all. • Engage in math (mult. modes). • Build number sense and fluency. • Algebra throughout K-12 • Authentic/meaningful context. • Variety of meaningful assessment.
Mathematical Mindset		

Current Equity Research

Resource	Learning
Principles to Actions: Ensuring Mathematical Success for All	•Consider opportunity gap vs achievement gap. •High Expectations. •Quality curriculum and instruction. •Time to Learn. •Differentiated Processes. •Resources (human and material). •Broad range of strategies and approaches. •Mathematics ability is a function of opportunity, experience and effort.
Catalyzing Change in High School, Middle School and Elementary	•Practices like tracking, ability grouping, and even the sequencing of mathematics classes can put children of color at a disadvantage. •DeAnn Huinker, professor of mathematics education in UWM's School of Education, led the team that prepared the book focusing on elementary mathematics education. NCTM is the official author. •All of the books try to call out inequitable structures that exist in schools and school systems, said Huinker. At the high school level, for example, the book recommendations call for "de-tracking" mathematics and offering a single clear pathway.
Webpage- How Mathematics Plays a Role in Social Justice and Racial Equity	• Marginalized students tend to be in tracks not as prestigious or that are targeted only for college-bound students •"Students of color and marginalized students often are not challenged because of a perception that they are not as academically able", says Huinker. As a result, an achievement gap is formed that is difficult to overcome. "It's not because the students aren't able, but because they haven't been given the opportunities to achieve at higher levels." •Broaden the purposes of learning mathematics so students (1) develop deep mathematical understanding, (2) see how they can be empowered with math to understand, critique, and change the world, and (3) help children experience the wonder, joy, and beauty of mathematics. •Create equitable structures in mathematics. At the early childhood and elementary mathematics levels, this mean dismantling ability grouping and tracking, which can force some children to the margins and give privilege to others. •Build a strong foundation of mathematical knowledge with greater attention to conceptual understanding, reasoning, and sense making. •One other issue at the elementary level, is over testing and basing students' placement and coursework on those tests, starting at the kindergarten level with readiness tests.
Strategies and Interventions to Support Students with Mathematical	Metacognitive Strategies • Math difficulties or learning disabilities • Strategies for Problem Solving o RIDE

Disabilities	- FAST DRAW - TINS - Strategies to Support Vocabulary Development - Pre-teach vocabulary. - Mnemonic Techniques. - Key Word Approach. - Strategies to Assist with Teaching Algebraic Concepts. - CRA and CSA - Concrete. - Being explicit in instruction with teacher modeling. - Teaching procedures with a strong conceptual understanding of how they work. Teach algorithm as rule, but do work before hand so they understand why the rule is what it is. - When children have conceptual understanding of operations (i.e. addition, subtraction) and need to recall facts from memory, particularly if they have difficulties with memory, then drill and practice will promote recall. - Transfer needs to be explicit so children can learn what might look like a novel problem is not, it is something they have or will see. Math Interventionist Notes: - Math deficits are usually aligned to other learning disabilities (executive functioning, or domain general competencies, working memory). - We should have the same number in math than in reading (is it because we are "picking an area," are there more in OHI or 504. - Learning the basic facts (processing speed) will not deal with the concern with word problems (comprehension, or language disability). - Kids learning with fractions is not easily understood. - Of all of the whole number were uniquely related to fraction concepts (246)! These are predictive, not casual. - Attentive behavior in fourth grade predicted the understanding in fifth grade. - Explicit teaching ...instead of multiple strategies. - Page 271 table- shouldn't we be teaching this for ALL kids. - Page 265- Students without disabilities with students with identified disabilities: Cognitive efficiency or conceptual understanding. - Provide students with special education needs practice in intervention. - Page 268- Student Ownership and on task behavior… (pirate math) Is this like demystification from revealing minds…..?
Assessing Bias in Standards and Curricular Materials Tool	•All resources were reviewed from this adapted resources. The rubric used were reflect students' cultural repertoires and view them as worthy of sustaining, invisibility and cosmetic bias sections.

VII. Curriculum Resources Reviewed

Overview of Eureka/ Engage NY Math (K-8)	
Program Components	•Overview of lesson are provided for planning, including content and practice standards, scaffold, assessment summary. •Free on-line resources available for Eureka Math and developed by grants. •Eureka math professional resources are available for free on the Eureka Math Webinar Library. •Common vocabulary, math tools and math representations. •Suggested lesson structure (approximately 60-minute lesson) includes: •Fluency practice. •Application problem. •Concept development. •Student debrief.
Positive Aspects	•Aligned to Wisconsin DRAFT State Standards and Common Core. •Highly ranked on EdReports. •Printed and online version of Engage NY curriculum with enhancements- K-12 program. •Includes professional learning. •Has support materials for ELL, Students with Disabilities, and intervention. •Can be used to support some learning from our last review; number talks, authentic tasks and problem solving and talk moves. •Robust on-line platform. •Aligns to District's Mission, Beliefs and Goals
Considerations	•Selecting from the wealth of materials can be challenging and requires careful planning. •Emphasis on timed fluency is in conflict with some of our current research. •The explicitly teaching of strategies can be in conflict with Addvantage Math Recovery. •Has some aspects of culturally responsive practices. •Tasks and problem solving problems are more culturally generic, when we are looking for culturally authentic. •Engage NY is already an "older" curriculum on the market.
Assessing Bias in Standards and Curricular Materials Tool	• WFB Teacher IMET Ratings •Tool Rating- 8/18 points

Overview of Bridges Math (K-5)	
Program Components	•Overview of lesson are provided for planning, including content and practice standards, scaffold, assessment summary. •Bridges blends direct instruction, structured investigation, and open exploration. •Free on-line resources available. •Developed by a non-profit organization. •K-5 grade program only.
Positive Aspects	•Aligned to Wisconsin DRAFT State Standards and Common Core. •Highly ranked on EdReports. •Only program that has a 4K curriculum. •Includes professional learning. •Robust assessments- Includes a wide variety of age-appropriate assessments at each grade level, ranging from interviews, observation tips, and short performance tasks for the youngest students to unit pre- and post-assessments, mid-unit checkpoints, and more extensive performance tasks for Grades 2 and up.
Considerations	•Free on-line resources available for Bridges. •Bridges is already an "older" curriculum on the market. •Number Corner is a skill-building program that revolves around the classroom calendar, providing daily practice as well as continual encounters with broader mathematical concepts in 15–20 minutes of engaging instruction. This is outside of the core program and seen a supplement to get to fluency. •Has Bridges intervention for a MTSS framework- separate resource. •ELL is addressed but minimally. •Aligns to District's Mission, Beliefs and Goals
Assessing Bias in Standards and Curricular Materials Tool	•WFB Teacher IMET Ratings •Tool Rating- 8/18 points

Overview of Carnegie Learning Math Solution Traditional (9-12)	
Program Components	•Designed to keep students engaged in the material through reading, writing, talking, listening, and reflecting. •Mathematical coherence, mathematical habits of mind, multiple representations, and transfer that your students need to experience ongoing growth in mathematics. •Common vocabulary, math tools and math representations. •Carnegie curriculum combines traditional textbook and workbook materials with self-paced individualized instruction via automated tutoring software.
Positive Aspects	•Aligned to Wisconsin DRAFT State Standards and Common Core. •Highly ranked on EdReports for High School Curriculum- K-12 Program. •Write-in consumable textbooks facilitate active learning to get your students to collaborate and engage with others, think critically. •MATHia, part of the program, is an intelligent, 1-to-1 math software, doesn't just tell students when they're wrong — it's like having a coach by your side, providing real-time feedback and examples to show students why they got a problem wrong, and how to get it right.
Considerations	•Materials had very little applications and modeling problems that used algebra skills. •Materials seemed a step down in rigor, especially the student handbook •Lacks conceptual understanding and is not cohesive •Lacks number of problems to building fluency •Little multi-step contextual problems •Does not have support materials for ELL students and other special populations •No tiered assessment system, activities or assignments. They only make suggestions in the teacher materials- lots more work for our special education staff. •Weak assessments
Assessing Bias in Standards and Curricular Materials Tool	• WFB IMET Ratings •Tool Rating- 7/18 points

Overview of Illustrative Math (K-12)	
Program Components	•Overview of lesson are provided for planning, including content and practice standards, scaffold, assessment summary. •Learning goals, standards, materials, and background information for teachers (lesson narratives) are available. •Elementary in beta testing, set to release in 2021-2022 school year. •Middle School and High School programs currently available and developed with grants. •Does have online platform- still in development but looks robust. •Suggested lesson structure (approximately 60 minute elementary 45 minutes secondary lesson). •Warm Up (number talk, notice and wonder, which one doesn't belong). •Activity 1 and Activity 2 (aligns to WI LAUNCH- task statement, launch/activity, student response, synthesis and discussion) which includes a activity and lesson synthesis. •Cool Downs and Center Activities (beyond the 60 minutes). Center activities are not required.
Positive Aspects	•Aligned to Wisconsin DRAFT State Standards and Common Core. •Highly ranked on EdReports for the Middle School and High School Curriculum- K-12 Program. •Culturally responsive lesson structure. •Newer resources- found tasks that are culturally authentic and/or culturally generic. •Highly Trained Professional Development- Math Institute of Wisconsin (only WI trainers). •Can be used to support some learning from our last review; number talks, authentic tasks and problem solving and talk moves. •Robust center instruction. •Aligns to District's Mission, Beliefs and Goals •Includes scaffolds and support for English Language Learners (ELL) explicitly in each lesson: •Based on work of UL/SCALE at Stanford University (Jeff Zwiers). •Scaffolds with language development.
Considerations	•Elementary- Only limited lessons and centers are available for review currently. •Elementary- Online platform in development. MS and HS are robust and easy to use. •Some assessments are observational and may take more time than the traditional assessments.
Assessing Bias in Standards and Curricular Materials Tool	• WFB Teacher IMET Ratings •Tool Rating-13/18 points

VIII. Elementary Program Recommendations

The following recommendations regarding the elementary educational program were developed by the elementary teachers on the Committee and/or WFB Administration:

1. Implement Illustrative Mathematics K-5. Illustrative was the most highly rated resource by our teachers as well as EdReports. The Math Curriculum Committee will begin either full or portion of implementation during the 2021-2022 school year. Full elementary implementation will begin in the 2022-2023 school year.

2. Four-Year-Old Kindergarten needs to have a more clearly defined curriculum and resource materials, which will be easily integrated within their instructional center structure. This should be more researched and defined during the 2021-2022 school year.

3. Begin implementing *Addvantage Math Recovery Training and Intervention* as determined in the District Math Plan.

4. Provide in-depth professional learning for Illustrative Math through our partnership with the Math Institute of Wisconsin. Math Committee members will receive the training in the summer of 2021 and the remaining staff during the summer of 2022 or during the 2022-2023 school year.

5. Implement Zearn Math as a special education and intervention support resource starting in 2022-2023. Zearn Math is grounded in teacher practice, education research, and brain science.. Zearn Math has been top-rated by EdReports and by state Departments of Education across the country, and meets the Every Student Succeeds Act's (ESSA) criteria for "evidence-based" programs.

6. Students' identified as accelerated in mathematics will learn in a hybrid environment, with the school's math coach overseeing the instruction and support.

7. Update Elementary Report Card standards indicators during the 2021-2022 school year for implementation during 2022-2023.

8. Reconvene the Elementary School Day committee during the 2021-2022 school year to revise instructional minutes to the new core program requirements and social-emotional learning time.

9.Ensure that elementary math coaches has Math Institute of Wisconsin's following trainings: math coaches beginning and advanced, Cognitive Coaches, and Actions for Equitable Math Instruction for All.

IX. Middle School Program Recommendations

The following recommendations regarding the middle school educational program were developed by the middle school teachers on the Committee and/or WFB Administration:

1. Implement Illustrative Mathematics 6-8, purchasing both the accelerated and common core grade level materials to provide flexibility in implementation. Illustrative was the most highly rated resource by our teachers as well as EdReports. Based on feedback from the Middle School Math Department, full implementation will begin in the 2021-2022 school year.

2. Begin implementing *Addvantage Math Recovery Training and Intervention* as determined in the District Math Plan.

3. Provide in-depth professional learning for Illustrative Math through our partnership with the Math Institute of Wisconsin. All middle school math teachers will receive the training in the summer of 2021 and continued throughout the school year on Department dates.

4. Implement Zearn Math as a special education and intervention support resource starting in 2022-2023. Zearn Math is grounded in teacher practice, education research, and brain science. Zearn Math has been top-rated by EdReports and by state Departments of Education across the country, and meets the Every Student Succeeds Act's (ESSA) criteria for "evidence-based" programs

5. Utilize an algebra readiness assessment to determine appropriate 8th grade placement in either 8th grade math or HS algebra. Assessments will be piloted in the 2020-2021 and 2021-2022 school years to help determine tool and criteria for placement.

6. Hire a part-time math interventionist utilizing Title 1 funds.

7. Update Middle School math section of the 6-7th grade report card with standard based indicators during the 2021-2022 school year for implementation in 2022-2023.

8. Ensure that MS Math collaboration coach has Math Institute of Wisconsin's following trainings: math coaches beginning and advanced, Cognitive Coaches, and Actions for Equitable Math Instruction for All.

X. High School Program Recommendations

The following recommendations regarding the high school educational program were developed by the high school math teachers on the Committee and/or WFB Administration:

1. Implement Illustrative Math (at it would be the first time for a seamless K-12 math program). Implement the new core on the following timeline:
    a. Algebra and Geometry for the 2021-2022 school year
    b. Algebra 2 for the 2022-2023 school year.

2. De-track mathematics from removing Pre-Algebra as a course offering no later than the 2023-2024 school year. For students to be prepared, we need to implement a stronger math intervention and support programs in the middle school and implement Illustrative Math's Algebra Support Resource in the double block algebra class to support student needs.

3. Provide in-depth professional learning through our partnership with the Math Institute of Wisconsin. All high school math teachers will receive the training in the summer of 2021 and continued throughout the 2021-2022 and 2022-2023 school years.

4. Investigate an updated scope and sequence for mathematics programming for continued de-tracking that allows for more student choice and selection <u>after the new core implementation</u>. The traditional approach has been algebra, geometry, algebra/trigonometry, and calculus in sequence. In some schools this progression has changed. Students take the same courses in their beginning high school years, but can branch into higher-level and other courses on a variety of mathematical topics.

5. Review other math courses based on the above potential noted scope and sequence changes, or alignment revisions to the updated core (algebra, geometry, algebra 2) beginning the 2022-2023 school year. This includes Advanced Algebra/Trig, Advanced Geometry, Pre-Calculus, Statistics, Advanced Pre-Calculus.

6. Ensure that HS Math collaboration coach and Department Chair has Math Institute of Wisconsin's following trainings: math coaches beginning and advanced, Cognitive Coaches, and Actions for Equitable Math Instruction for All

XI. Additional PK-12 Program Recommendations

The coherence in materials and instruction is well documented: most mathematics programs (textbooks and instruction) do not support deep, integrated student learning because they lack coherence (Kesidou & Roseman, 2002; National Research Council, 2007).

Below is a list of PK-12 program recommendations to ensure the coherence within our Whitefish Bay PK-12 Mathematics Experience.

1) Ensure curricular coherence of unit themes, skills and concepts throughout PK-12 program.
   a) Align and develop PK-12 curriculum using the Understanding by Design curriculum model.
   b) Publish an updated PK-5 and 6-12 course guides and content overview for parents.
   c) Utilize *DPI Mathematics Standards,* as a starting point in the PK-12 alignment to exceed state expectations and to develop our student-friendly learning targets.

2) Ensure that all teaching staff will continue to receive quality professional development in areas of curriculum planning, design, and assessing language. Specifically, all curriculum writers are required to take our Assessment Literacy Course during the 2021-2022 and 2022-2023 school years.

3) Train a staff member to be a Math Recovery Champion to facilitate all District professional math learning by the end of 2021.

4) Update the Instructional Resource Coaches (IRCs) job description to focus on mathematics and equitable multi-tiered systems of support.

5) Continue to update and implement math intervention resources within our Equitable Multi-Tier System of Support (MTSS) process.

6) Update the K-12 Mathematics Guarantees during the 2021-2022 school year to implement systemic walk-throughs during the 2022-2023.

7) Develop a parent/guardian communication plan and parent/guardian information nights on the new instructional materials. Specifically, develop fall Parent Information Night (PIN) talking points for all implementing teachers.

Implementation and Professional Development

Once approved, these program renewal and design features will begin to be implemented this summer when possible or at the start of the 2021-2022 school year. Key areas for professional development are described in the recommendations listed above. Professional development opportunities for curriculum implementation will occur through summer training, staff development days, collaboration days, after school sessions and summer curriculum and assessment design time. In a context of continuous improvement, these staff development opportunities are a critical piece toward effective implementation.

XII. Appendix

Resource List/ Learning that Guided our Work- Appendix 1

K-12 Mathematics Guarantees- Appendix 2

Whitefish Bay School District Focus Plan- Appendix 3

Appendix 1
Learning that Guided our Work

A variety of additional resources including articles, web-sites, and curricular resource materials were used through this committee process.

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Appendix 2

Whitefish Bay School District: K – 12 Guarantees in Mathematics Instruction

March 2013

Each teacher demonstrates varying areas of expertise, interests, and instructional styles. Along with valuing that uniqueness, we believe a guaranteed and viable curriculum, through teaching from the adopted curriculum documents (including Common Core State Standards) helps to ensure consistent success for our students. Further, we believe every student deserves instruction through research-proven practices.

The following "guarantees" outline the consistent instructional practices employed during Mathematics Instruction. The subsequent pages in this document provide details of preferred student and teacher actions and behaviors.

Proven Practices from Research:

Guarantee 1:Teachers will consistently teach to the adopted curriculum documents to meet Common Core State Standards.

Guarantee 2:Students will participate in daily math talk.

Guarantee 3:Students will engage in instruction in multiple settings.

Guarantee 4:Teachers will establish a community where students are surrounded by math.

Guarantee 5:Teachers will use formative and summative assessments to inform instruction.

Math Practices Imbedded in Math Common Core State Standards:

Guarantee 6:Students will make sense of problems and persevere in solving them.

Guarantee 7:Students will reason abstractly and quantitatively.

Guarantee 8:Students will construct viable arguments and critique the reasoning of others.

Guarantee 9:Students will model with mathematics, including the use of visuals, math drawings, etc.

Guarantee 10:Students will use the appropriate tools strategically

Guarantee 11:Students will attend to precision.

Guarantee 12:Students will look for and make use of structure.

Guarantee 13:Students will look for and express regularity in repeated reasoning

Guarantee 14:Students will make mathematical connections.

Guarantees & Mathematical Practices – The Details (Look-Fors)

WFB Guarantees & Mathematics Practices		Students	Teachers
	1. Teachers will consistently teach to adopted curriculum documents to meet Common Core State Standards.		□Use the skills and content denoted in the curriculum documents to drive the instruction to ensure a viable and consistent curriculum across the various teachers of the same course. □Implement a variety of resources for instruction with the adopted math program/textbook being the foundational tool. □Teach the adopted curricular program with fidelity.
	2. Students will participate in daily math talk.	□Engage in collaborative articulation of math thinking, reasoning and problem solving amongst students. □Engage in written expression of math thinking, as well. □Math talk is a key strategy for helping the brain to process and remember new learning.	
	3. Students will engage in instruction in multiple settings.	□Participate in multiple models of instruction to meet varying learning needs: •Whole group instruction •Small group instruction •Individual/personalized instruction, as needed	
	4. Teachers will establish a community where students are surrounded by math.	□Experience real-life, relevant math tasks. □Use a variety of math tools as relevant and appropriate to solve problems such as charts, counters, measuring tools, computers, calculators, etc. □Attempt perplexing, novel problems throughout lessons/assignments.	□Provide room peripherals and to0ls for constant and meaningful math exposure such as charts, graphic organizers, calendars, vocabulary and/or process posters, etc. □Use and model mathematical thinking and vocabulary frequently and throughout the day and different subject areas as possible. □Provide modeling, think –alouds, guided problem solving, and purposeful math talk.
	5. Teachers will use formative and summative assessments to inform instruction.	□Engage in frequent informal and formative assessments with corresponding instruction to follow. □Receive frequent and specific feedback from teachers in various forms, such as verbal, grades, written comment, rubric scores, etc. □Assess their own work based on criteria, rubrics and/or exemplars.	□Formative and summative assessments will be used on a regular basis. □Varied informal assessments will be used on a daily basis, such as observations, discussions/listening to student responses, exit slips, work on slates, conferencing, etc.
	6. Students will make sense of problems and persevere in solving them.	□Understand the meaning of the problem and look for entry points to its solution. □Analyze information (givens, constraints, relationships, goals). □Make conjectures and plan a solution pathway. □Monitor and evaluate the progress and change course as necessary. □Check answers and ask, "Does this make sense?"	□Involve students in rich problem-based tasks that encourage them to persevere to reach a solution. □Provide students with perplexing problems. □Provide opportunities for students to solve problems that have multiple solutions. □Encourage students to represent their thinking while problem solving. □Expect and emphasize effort over achievement.
	7. Students will reason	□Make sense of quantities and relationships in problem	□Facilitate opportunities for students to discuss or use

	abstractly and quantitatively.	situations. Represent abstract situations symbolically and understand the meaning of quantities. Create a coherent representation of the problem at hand. Consider the units involved. Flexibly use properties of operations.	representations to make sense of quantities and their relationships. Encourage the flexible use of properties of operations, objects, and solution strategies when solving problems. Provide opportunities for students to decontextualize (abstract a situation) and/or contextualize (identify referents for symbols involved) the mathematics they are learning.

	Guarantees and Math Practices	**Students**	**Teachers**
	8. Students will construct viable arguments and critique the reasoning of others.	Use definitions and previously established causes and effects (results) in constructing arguments. Make conjectures and use counterexamples to build a logical progression of statements to explore and support ideas. Communicate and defend mathematical reasoning using objects, drawings, diagrams, the written word, and/or actions. Provide opportunities to write about the thinking and reasoning process. Listen to or read the arguments of others. Decide if the arguments of others make sense and ask probing questions to clarify or improve the arguments.	Provide and orchestrate opportunities for students to listen to the solution strategies of others, discuss alternative solutions, and defend their ideas. Ask higher-order questions that encourage students to defend their ideas. Provide prompts that encourage students to think critically about the mathematics they are learning.
	9. Students will model with mathematics.	Apply prior knowledge to solve real-world problems. Identify important quantities and map their relationships using such tools as diagrams, two-way tables, graphs, flow charts, and/or formulas. Use assumptions and approximations to make a problem simpler. Check to see if an answer makes sense within the context of a situation and change a model when necessary.	Use mathematical models appropriate for the focus of the lesson. Encourage student use of developmentally and content-appropriate mathematical models (e.g. variables, equations, coordinate grids). Remind students that a mathematical model used to represent a problem's solution is a work in progress, and may be revised as needed.
	10. Students will use appropriate tools strategically.	Make sound decisions about the use of specific tools (examples might include calculator, concrete models, digital technologies, pencil/paper, ruler, compass, and protractor). Use technological tools to visualize the results of assumptions, explore consequences, and compare predications with data. Identify relevant external math resources (digital content on a website) and use them to pose or solve problems. Use technological tools to explore and deepen understanding of concepts.	Use appropriate physical and/or digital tools to represent, explore, and deepen student understanding. Help students make sound decisions concerning the use of specific tools appropriate for the grade-level and content focus of the lesson. Provide access to materials, models, tools, and/or technology-based resources that assist students in making conjectures necessary for solving problems.
	11. Students will attend to precision.	Communicate precisely using clear definitions. State the meaning of symbols, carefully specify units of	Emphasize the importance of precise communication by encouraging students to focus on clarity of the definitions, notation, and

		measure, and provide accurate labels. Calculate accurately and efficiently, expressing numerical answers with a degree of precision. Provide carefully formulated explanations. Label accurately when measuring and graphing. Provide instruction and practice promoting computational fluency/automaticity.	vocabulary to convey their reasoning. Encourage accuracy and efficiency in computation and problem-based solutions, expressing numerical answers, data, and/or measurements with a degree of precision appropriate for the context of the problem.
	Guarantees & Mathematics Practices	**Students**	**Teachers**
	12. Students will look for and make use of structure.	Look for patterns or structure, recognizing that quantities can be represented in different ways. Recognize the significance in concepts and models and use the patterns or structure for solving related problems. View complicated quantities both as single objects or compositions of several objects and use operations to make sense of problems.	Engage students in discussions emphasizing relationships between particular topics within a content domain or across content domains. Recognize that the quantitative relationships modeled by operations and their properties remain important regardless of the operational focus of a lesson. Provide activities in which students demonstrate their flexibility in representing mathematics in a number of ways, e.g. 76= (7x10) +6; discussing types of quadrilaterals, and so on.
	13. Students will look for and express regularity in repeated reasoning.	Notice repeated calculations and look for general methods and shortcuts. Continually evaluate the reasonableness of intermediate results (comparing estimates), while attending to details, and make generalizations based on findings.	Engage students in discussion related to repeated reasoning that may occur in a problem's solution. Draw attention to the prerequisite steps necessary to consider when solving a problem. Urge students to continually evaluate the reasonableness of their results.
	14. Students will make mathematical connections.	Connect prior knowledge to similar situations and extend to novel situations. Relate mathematics to other subjects, real-world situations, and their own interests and experiences.	Help students realize that high forms of problem solving involve applying the skills to a novel situation successfully; provide formative and summative ways of doing so. Engage students in authentic, relevant situations wherein math applications are observed and used.

Appendix 3

Whitefish Bay SCHOOL DISTRICT

FOCUS PLAN

OUR VISION

The School District of Whitefish Bay, in partnership with families and community, is student-centered with a tradition of educational excellence. We will build upon this tradition by:

- Empowering students with the knowledge, skills, and character necessary to thrive in a changing, global society.
- Respecting the diversity of our students and engaging them as individual learners in an innovative learning community.
- Addressing the needs of the whole child in a caring, inclusive environment.

OUR GOALS & KEY STRATEGIES

Academic Achievement & Engaging 21st Century Learning

Every student will meet or exceed comprehensive learning standards to promote future success within our global society.

1. Develop exemplary, standards-based curriculum and assessment.
2. Develop and implement data-driven, differentiated instruction across all grade levels and subject areas.
3. Develop and implement timely, comprehensive support systems to ensure success for every student.
4. Ensure access to reliable, secure and sufficiently robust technology infrastructure that facilitates transformational educational practice.

Supportive Environment & Whole Child Development

Every student will experience a caring, inclusive learning environment that supports the development of the whole child with balanced attention to physical, social, emotional, and intellectual well-being.

1. Conduct a strengths and needs analysis, including the development of a student feedback process to inform the continuous improvement of a caring, inclusive and culturally responsive environment.
2. Provide professional development for all staff members about nurturing the whole child.

CUMBERLAND ELEMENTARY | RICHARDS ELEMENTARY | WHITEFISH BAY MIDDLE SCHOOL | WHITEFISH BAY HIGH SCHOOL | LYDELL COMMUNITY CENTER

An Exceptional Place to Learn