



Math Task Force Report

January 19, 2022

Contact Information:

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Executive Summary:

The Math Task Force Report was developed to provide regular feedback from a range of representative perspectives on the teaching of mathematics in the Pelham School District. This report reviews our current curriculum, assessment, instruction and professional development efforts in math. It identifies potential goals for measurable improvement and it outlines proposed action items through 2024. We have determined the following:

- Our current curriculum map covers the key state standards for math concepts.
- We offer a variety of assessments across grade levels including diagnostic assessments, benchmark assessments and state-mandated assessments.
- Our core instructional program and textbooks are reasonably selected and adopted. We offer several interventions for students who struggle.
- Our professional development efforts appear insufficient. Most immediately we need to provide professional development for our elementary level teachers. Additionally, we have found we could do more to help teachers interpret student data to adjust instruction.

We are proposing two goals in math:

- Improve our performance on the math portion of the New Hampshire State Assessment System to be in the top 5 among our 12 peer districts.
- Increase by 5% per year the number of students at Pelham High School whose SAT score is at the College Board benchmark of “college and career ready,” a score of 530 out of 800.

We recommend these action items:

- Beginning in spring of 2022, use of the tools in SASS to allow students to practice using the assessment and provide specific feedback to the teachers.
- Beginning in the summer of 2022, increase professional development for teachers on instructional strategies to teach mathematics.
- Starting with the 2022-23 School Year, review the current math program at Pelham Elementary for the FY2024 budget.
- Starting with the 2023-24 School Year, adjust Accelerated Math in grade 6 to allow for a high school level Algebra I in grade 8.
- Starting with the 2023-24 School Year, create a math coach position for Pelham Elementary mirroring the math coach position at PMS.

Pelham School District Math Task Force Structure and Function

Purpose:

To provide regular feedback from a range of representative perspectives on the teaching of mathematics in the Pelham School District.

Commitment

- Tentative Meeting Dates:
 - Wednesday October 6, 2021
 - Wednesday October 20, 2021
 - Wednesday November 17, 2021
 - Wednesday December 1, 2021
 - Wednesday January 4, 2021
 - Meetings will be entirely remote to allow greater participation.
- Allow additional time per week to collect information
- The Math Three-Year goal will be presented to the School Board at the January 19, 2022 Board Meeting.

Membership

- Chip McGee, Superintendent
- Sarah Marandos, Assistant Superintendent
- Dawn Mead, PHS Principal
- Kimberly Dexter, PHS Dean of Math
- Jessica Makara, PHS Math Teacher
- Karena Carten, PMS Math Coach, Department Head
- Eileen Kelly, PMS Grade 8 Math Teacher
- Beth Philcrantz, PES Grade 5 Teacher
- Wendy Henderson, PES Grade 1 Teacher

Charge:

While it is difficult to acknowledge, it is a helpful starting point to recognize that the trend in math has been for fewer Pelham students meeting the standard over the past four years. This is a three year goal with the plan to be for Pelham to be consistently above the state percent proficient and above on NH-SAS and the SAT by 2024. Working with our professional staff, the administration will provide a roadmap of our current efforts in improving math instruction to the School Board by January 2022. It will also include interim goals for this year, next year and 2023-24.

Process:

The task force met five times. The groups started by collecting information about the current state of curriculum, assessment, instruction, and professional development in math throughout the District. Subsequently, the group examined data relative to student performance in mathematics over time. Finally, the task force developed and reviewed a set of draft goals.

Curriculum:

The Math Task Force created a [Scope and Sequence document](#) that identifies the general different topics and skills that are taught across the grade levels.

This summary information suggests that at a broad level, the Pelham School District curriculum identifies the knowledge and skills we expect students to know by the end of each term each year. The scope and sequence also aligns generally with the grade level expectations enumerated in the state curriculum frameworks.

Assessment:

The Math Task Force identified the common assessments that students take at each grade level. The assessments identified here are those used to help improve overall performance in the district and those required for accountability at the state level. This does not include the grade level tests and quizzes used to help adjust instruction (formative assessments) or to track student progress and give grades (summative assessments).

- Kindergarten
 - Assessing Math Concepts (AMC) - This in-person formative assessment is given in Kindergarten to assess basic skills. A total of nine math concepts can be assessed: counting objects, changing numbers, more/less trains, number arrangements, combination trains, hiding assessment, ten frames, grouping tens, and two-digit addition and subtraction.
- Grade 1
 - i-Ready - A computer based diagnostic assessment given three times per year. Students are scored in Number and Operations, Algebra & Algebraic Thinking, Measurement and Data and Geometry. Students that are currently part of our SAT (Student Assistance Team) process are also growth-monitored using i-Ready.
- Grade 2
 - i-Ready - A computer based diagnostic assessment given three times per year. Students are scored in Number and Operations, Algebra & Algebraic Thinking, Measurement and Data and Geometry. Students that are currently part of our SAT (Student Assistance Team) process are also growth-monitored using i-Ready.
- Grade 3
 - i-Ready - A computer based diagnostic assessment given three times per year. Students are scored in Number and Operations, Algebra & Algebraic Thinking, Measurement and Data and Geometry. Students that are currently part of our SAT (Student Assistance Team) process are also growth-monitored using i-Ready.
 - NH State Assessment System - This is the state assessment for students, typically administered in May. Students are scored Level 4 - Proficient with Distinction, Level 3 - Proficient, Level 2 - Below Proficient, or Level 1 - Substantially Below Proficient.
- Grade 4

- i-Ready - A computer based diagnostic assessment given three times per year. Students are scored in Number and Operations, Algebra & Algebraic Thinking, Measurement and Data and Geometry. Students that are currently part of our SAT (Student Assistance Team) process are also growth-monitored using i-Ready.
- NH State Assessment System - This is the state assessment for students, typically administered in May. Students are scored Level 4 - Proficient with Distinction, Level 3 - Proficient, Level 2 - Below Proficient, or Level 1 - Substantially Below Proficient.
- Grade 5
 - i-Ready - A computer based diagnostic assessment given three times per year. Students are scored in Number and Operations, Algebra & Algebraic Thinking, Measurement and Data and Geometry. Students that are currently part of our SAT (Student Assistance Team) process are also growth-monitored using i-Ready.
 - NH State Assessment System - This is the state assessment for students, typically administered in May. Students are scored Level 4 - Proficient with Distinction, Level 3 - Proficient, Level 2 - Below Proficient, or Level 1 - Substantially Below Proficient.
- Grade 6
 - i-Ready - A computer based diagnostic assessment given three times per year. Students are scored in Number and Operations, Algebra & Algebraic Thinking, Measurement and Data and Geometry.
 - NH State Assessment System - This is the state assessment for students, typically administered in May. Students are scored Level 4 - Proficient with Distinction, Level 3 - Proficient, Level 2 - Below Proficient, or Level 1 - Substantially Below Proficient.
 - Orleans- Hannah: This is a prognosis test which assesses for algebra readiness. This assessment is used to place students in accelerated math.
- Grade 7
 - i-Ready - A computer based diagnostic assessment given three times per year. Students are scored in Number and Operations, Algebra & Algebraic Thinking, Measurement and Data and Geometry.
 - NH State Assessment System - This is the state assessment for students, typically administered in May. Students are scored Level 4 - Proficient with Distinction, Level 3 - Proficient, Level 2 - Below Proficient, or Level 1 - Substantially Below Proficient.
- Grade 8
 - i-Ready - A computer based diagnostic assessment given three times per year. Students are scored in Number and Operations, Algebra & Algebraic Thinking, Measurement and Data and Geometry.
 - NH State Assessment System - This is the state assessment for students, typically administered in May. Students are scored Level 4 - Proficient with

Distinction, Level 3 - Proficient, Level 2 - Below Proficient, or Level 1 - Substantially Below Proficient.

- Grade 9
 - i-Ready - Given to students in Foundations of Math, Pre-Algebra and Algebra, this diagnostic helps evaluate progress at the beginning and end of the semester.
 - PSAT 8/9-The SAT suite of assessments are designed to help measure student readiness for college and career, monitor student progress and growth over time, identify areas of strength and areas of focus in curriculum and instruction, vertically align curriculum, and focus interventions for students who need to work on skills.
- Grade 10:
 - PSAT/NMSQT: The SAT suite of assessments are designed to help measure student readiness for college and career, monitor student progress and growth over time, identify areas of strength and areas of focus in curriculum and instruction., vertically align curriculum, and focus interventions for students who need to work on skills.
- Grade 11
 - PSAT-The SAT suite of assessments are designed to help measure student readiness for college and career, monitor student progress and growth over time, identify areas of strength and areas of focus in curriculum and instruction., vertically align curriculum, and focus interventions for students who need to work on skills. When taken in 11th grade, it can also qualify students to become National Merit Scholars and earn additional scholarship opportunities.
 - SAT - This is the state assessment required for all juniors and is taken in March during the school day. It is also the standardized assessment used in many college admissions processes.

The assessments used in Pelham align with the state standards and our curriculum. They are administered regularly. The assessments appear sufficient to measure student progress and diagnose instructional gaps.

Instruction/Texts and Materials:

The District uses a variety of instructional materials to help teachers. These are the tools teachers use to aid students gain the necessary knowledge and skills.

- Kindergarten
 - Core Program: local program developed by teachers
 - Interventions: center-based remediation
- Grade 1
 - Core Program: *My Math* by McGraw-Hill textbook and consumables
 - Interventions:
 - i-Ready Tool Kit - provides instructional resources for students based on their specific scores on the diagnostic

- Growth Monitoring-teachers use i-Ready to growth monitor students with shorter tests
 - What I Need (WIN) Block - flexible grouping for student review and reteaching.
- Grade 2
 - Core Program: *My Math* by McGraw-Hill textbook and consumables
 - Interventions:
 - i-Ready Tool Kit - provides instructional resources for students based on their specific scores on the diagnostic
 - Growth Monitoring-teachers use i-Ready to growth monitor students with shorter tests
 - What I Need (WIN) Block - flexible grouping for student review and reteaching.
- Grade 3
 - Core Program: *My Math* by McGraw-Hill textbook and consumables
 - Interventions:
 - i-Ready Tool Kit - provides instructional resources for students based on their specific scores on the diagnostic
 - Growth Monitoring-teachers use i-Ready to growth monitor students with shorter tests
 - What I Need (WIN) Block - flexible grouping for student review and reteaching.
- Grade 4
 - Core Program: *My Math* by McGraw-Hill textbook and consumables
 - Interventions:
 - i-Ready Tool Kit - provides instructional resources for students based on their specific scores on the diagnostic
 - Growth Monitoring-teachers use i-Ready to growth monitor students with shorter tests
 - What I Need (WIN) Block - flexible grouping for student review and reteaching.
 - ALEKS-this is an online resource that students can use for remediation and acceleration.
- Grade 5
 - Core Program: *My Math* by McGraw-Hill textbook and consumables
 - Interventions:
 - i-Ready Tool Kit - provides instructional resources for students based on their specific scores on the diagnostic
 - Growth Monitoring-teachers use i-Ready to growth monitor students with shorter tests
 - What I Need (WIN) Block - flexible grouping for student review and reteaching.
 - ALEKS-this is an online resource that students can use for remediation and acceleration.

- Grade 6
 - Core Program: Glencoe consumable workbook
 - Interventions:
 - What I Need (WIN) Block - flexible grouping for student review and reteaching.
 - Mathletes - a trimester long intensive foundational math class based on students who struggled as a result of the pandemic.
 - NEW: IXL online subscription
 - ALEKS-this is an online resource that students can use for remediation and acceleration
- Grade 7
 - Core Program: Glencoe Common Core, textbook and consumable study guide
 - Grade 7 Accelerated: Glencoe textbook, consumable study guide
 - Interventions:
 - What I Need (WIN) Block - flexible grouping for student review and reteaching.
 - Mathletes - a trimester long intensive foundational math class based on students who struggled as a result of the pandemic.
 - NEW: IXL online subscription
- Grade 8
 - Core Program: Glencoe Common Core, textbook and consumable study guide
 - Grade 8 Accelerated: Glencoe Algebra 1 2018 plus online support
 - Interventions:
 - What I Need (WIN) Block - flexible grouping for student review and reteaching.
 - Mathletes - a trimester long intensive foundational math class based on students who struggled as a result of the pandemic.
 - NEW: IXL online subscription
- Algebra 1
 - Core Program: Glencoe 2018 textbook: plus online support
 - Interventions:
 - Math Lab- students can attend during advisory to receive additional support
 - Tutoring is available after school Wednesday and Thursday
 - SAT Monday Math Problem: During Advisory students have a weekly math problem to solve.
- Geometry
 - Core Program: Glencoe 2018 textbook: plus online support
 - Interventions:
 - Interventions: Math Lab- students can attend during advisory to receive additional support
 - Tutoring is available after school Wednesday and Thursday
 - SAT Monday Math Problem: During Advisory students have a weekly math problem to solve.

- Algebra 2
 - Core Program: Glencoe 2018 textbook: plus online support
 - Interventions:
 - Math Lab- students can attend during advisory to receive additional support
 - Tutoring is available after school Wednesday and Thursday
 - SAT Monday Math Problem: During Advisory students have a weekly math problem to solve.

Generally, we have the tools and information needed to help students progress in math. Even so, we identified several grade level gaps. For example in Kindergarten, we do not have a core program. In the primary grades (K - 2) we do not have a WIN block. This is by design since such a structure would not work given students' age. However, we do not have an alternative structure for students who need additional practice in math. While we have a "mathletes" program at PMS, we do not have that staffing structure at PES or PHS. These gaps need to be addressed in our plan for improvement.

Professional Development:

Professional development is the necessary training and support to help teachers put together the curriculum, assessment and instruction in mathematics. Teachers need their own skills and knowledge to be able to teach math successfully. The textbook companies provide initial training on the use of their materials and our teachers explore professional development opportunities on their own. Our own staff has from time to time presented workshops for colleagues on instructional strategies for mathematics. At PMS in particular, we have a math coach who spends approximately 50% of her time supporting math teachers. This is the first year we have been able to use the position for that purpose throughout the year. While these efforts are worthwhile and necessary, they appear to be insufficient.

Goals for Student Performance

In order to measure improvement in mathematics teaching and learning, it is important to measure student outcomes. Measures such as professional development training hours or staffing level improvements measure the inputs not the outputs. The output, improved student learning, is the critical indicator of success.

Potential Metric: NH SAS and Peer Districts

One way of understanding Pelham's performance in mathematics is through a relative comparison to peer districts. The peers below were selected for their relative proximity, size, and demographics. Comparison helps show that despite the decrease in overall percent proficient and above from 2019 to 2021 for Pelham (48% to 42%), the district actually increased in its performance relative to peers (9th to 6th).

Percent Students Proficient and Above NH SAS All Grades - Peer Districts

District	2018	2019	2021
Auburn	59	63	46
Candia	58	54	45
Derry Cooperative	42	48	33
Hampstead	62	57	34
Hooksett	53	55	55
Hudson	48	45	39
Litchfield	54	54	39
Londonderry	47	50	42
Pelham	43 (9th)	46 (9th)	42 (6th)
Salem	53	51	47
Timberlane Regional	48	46	32
Windham	72	74	64
State	48	48	38

*Note: SAS was not required in 2020 due to COVID

**Note: The ranking method used includes ties

While this is an improvement (from 9th to 6th) in a single year, it was an odd year with the pandemic. One potential goal moving forward would be to improve our performance over time relative to our peers to be in the top 5 overall every year.

Potential Metric: PHS Algebra I Credit Rate

Another measure of success in mathematics would be the number of students successfully completing Algebra I annually at PHS. Below are the results for the last four years. It is delightful to be able to report that we had 141 passes in Algebra last year compared to 147 ninth graders. However, this is not an effective measure moving forward. This is because it has been widely variable over time. Initial analysis suggests that the pandemic and the changes from a A/B Schedule to a 4 by 4 Block Schedule may have been factors. Additionally, the high rate in the last year makes it difficult to improve.

PHS Algebra I Credit Rate 2017-18 to 2020-21

Data	2017-18	2018-19	2019-20	2020-21
All Earned Algebra I Credits	117	127	93	141
9th Grade Students	175	140	136	147
Percent	67%	91%	68%	96%

Potential Metric PHS SAT Math Performance

A third measure of success in mathematics would be the number of students who meet the SAT College and Career Readiness Benchmark for Mathematics (a score of 530 or better on the math portion of the SAT). This exam is the state assessment for math at the high school level. It is administered to almost all of our students, typically in the spring of their Junior year. According to ETS, the publisher of the SAT, the SAT College and Career Readiness Benchmark indicates a 75% likelihood of achieving at least a C in first-semester, credit-bearing college courses in related subjects and course work. The SAT benchmarks are designed to reflect whether or not a student has a high likelihood of being successful in subject-specific first-semester courses. Additionally, it is a third party measure of student performance. It appears to be a strong candidate to be our measure of success.

PHS SAT Math Performance 2017-18 to 2020-2021

Data	2017-18	2018-19	2019-20	2020-21
SAT Math 530 or Higher	43	58	39	51
Total Student Tested	128	158	149	123
Percent	34%	37%	26%	41%

It is hard to know exactly where to set goals for 2023 and 2024. The task force recommends targeting an increase of 5 percentage points with a target of 46% in 2023 and 51% in 2024. Although ambitious, the task force thinks this sort of goal could pull the high school and middle school together in a combined effort.

Recommendations/Timeline:

Based on our work, the task force recommends the following actions:

Action Item	Timeframe	Budget Implications
Consistent use of the tools in SASS to allow students to practice using the tool and provide specific feedback to the teachers.	Beginning in spring of 2022	None
Increase professional development for teachers on instructional strategies to teach mathematics. The highest priority is for our elementary teachers.	Beginning in the summer of 2022	To be reallocated for 2022-23 with additional funds to be proposed in FY24 Budget
A review of the current math program at Pelham Elementary for the FY2024 budget. The adoption of a formal math program for Kindergarten when Pelham Elementary offers full-day Kindergarten	Starting with the 2022-23 School Year	To be proposed in FY24 Budget
Adjustments will be made to Accelerated Math in grade 6 to allow for a high school level Algebra I in grade 8	Starting with the 2023-2024 School Year	None
Create a math coach position for Pelham Elementary mirroring the math coach position at PMS.	Starting with the 2023-24 School Year	To be proposed in FY24 Budget

The task force is grateful to the Pelham School Board for convening us to investigate such an important task for the District. We hope this report serves as a springboard for continued improvement of our math program.