North Shore Central School District

Report on Student Achievement

Fine and Performing Arts, Mathematics, Science and STEM

Dr. Carol Smyth – Director of Elementary Mathematics and STEM

Ms. Amy DiMeola – Director of Secondary Mathematics and Instructional Technology

Mr. Steven Menchel – Director of Secondary Science

Dr. Kerri Titone – Teacher Leader for AP and IB

Dr. Chris Zublionis – Assistant Superintendent for Instruction

North Shore Central School District

Report on Student Achievement

Fine and Performing Arts, Mathematics, Science, and STEM

Table of Contents

(Click Each Heading Below to be Redirected to That Section of the Report)

K-12 Standardized Test Achievement – North Shore Schools Click For Table of Contents

Performance Over Time

New York State Math Assessment – Grades 3 to 7

Cohorts of students are indicated by a common color. Cohorts perform at a level similar to or higher than the previous year as proficiency and mastery rates in mathematics rise for each cohort of students as they move from grade 3 to grade 7.

		2013	2014	2015	2016	2017	2018	2019
Proficiency Rates %								
Math 3		66	78	68	81	83	86	89
Math 4		69	74	75	81	90	93	90
Math 5		61	79	79	82	82	88	92
Math 6		62	68	67	66	80	88	87
Math 7		57	61	60	75	72	80	92
Mastery Rates %								
Math 3		29	34	26	46	46	50	53
Math 4		29	43	37	45	52	69	71
Math 5		28	37	40	44	45	59	71
Math 6		29	30	31	39	53	57	59
Math 7		10	17	18	22	21	37	60

Mathematics Regents Examinations – Middle School and High School

While proficiency rates in Mathematics examinations has remained near 100% or moved towards that level, there is still room for growth in the area of mastery. Nevertheless, mastery rates have grown considerably higher from 2014 to 2019.

	2014	2015	2016	2017	2018	2019
Proficiency Rates %						
Algebra	100	100	99	100	99	100
Geometry	88	91	92	98	98	98
Algebra 2			99	99	99	100
Mastery Rates %						
Algebra	17	21	53	66	42	53
Geometry		19	17	29	45	51
Algebra 2			44	45	50	56

K-12 Standardized Test Achievement – North Shore Schools

Performance Over Time

Science Assessments and Regents Examinations

Similarly, proficiency and mastery rates in Science assessment performance have grown considerably higher from 2013 to 2019.

	2013	2014	2015	2016	2017	2018	2019
Proficiency Rates %							
Grade 4	100	98	98	99	98	100	**99**
Living Environment	99	100	98	97.7	99.6	98	**99.5**
Physical Setting/Earth Science	89	91	94	92	91	98	**95**
Physical Setting/Chemistry	82	87	91	94	97	89	**96**
Physical Setting/Physics	79	91	96	92	84	82	**94**
Mastery Rates %							
Grade 4	84	87	75	73	78	87	**80**
Living Environment	66	67	65	59	65	72	**68**
Physical Setting/Earth Science	63	55	56	59	62	74	**70**
Physical Setting/Chemistry	29	34	32	46	44	37	**45**
Physical Setting/Physics	36	51	53	47	30	33	**62**

Grades 4-7 New York State Standardized Test Achievement Click For Table of Contents

Student Growth Over Time

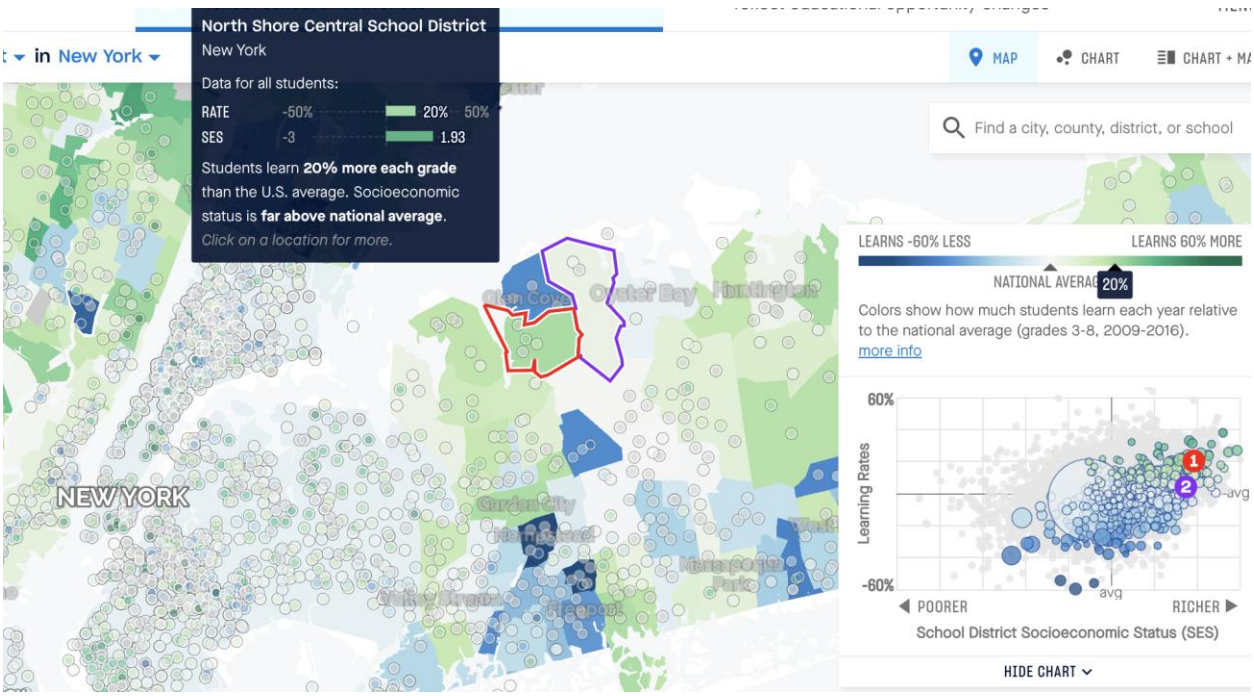
Students Who Showed Stronger Performance Compared to the Prior Year

	From 2016-2017	From 2017-2018	From 2018-2019
Grade 4	**33%**	**47%**	**37%**
Grade 5	**27%**	**32%**	**29%**
Grade 6	**28%**	**32%**	**19%**
Grade 7	**18%**	**16%**	**28%**

The chart above demonstrates that with consistency, students not only demonstrate proficiency on more challenging content compared to a previous school year, but they actually perform at a higher level with more complex content.

North Shore has the highest "learning rate" in Nassau County.

North Shore CSD demonstrates the highest year to year learning growth in Nassau County (along with Garden City). Our learning rate of 20% as documented by the nationwide Stanford Education Opportunity project (https://edopportunity.org/), is also higher than any of our comparison districts, some of which measure higher in overall wealth. The learning rate is based on changes in average test scores from each year and grade to the next year and grade (e.g. changes from 2015 3rd-grade scores to 2016 4th-grade scores). The learning rates are calculated using standardized math and English Language Arts (ELA) tests taken by public school students in grades 3 through 8 between 2009 and 2016.



K-12 New York State Standardized Test Achievement

Click For Table of Contents

Comparison to Similar Districts

New York State Assessments

Elementary Mathematics

	North Shore	New York State	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates %														
Math 3	89	55	84	85	86	87	85	68	80	89	68	83	85	1
Math 4	90	50	78	85	90	89	83	69	79	86	78	90	71	1
Math 5	92	46	72	77	88	85	85	67	79	87	60	82	71	1
Mastery Rates %														
Math 3	53	24	48	52	61	55	59	27	47	55	29	36	49	4
Math 4	71	26	43	56	77	60	65	35	53	68	47	69	34	2
Math 5	71	24	37	45	70	61	60	34	55	63	29	61	37	1

Elementary Science

	North Shore	New York State	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates %														
Science 4	99		99	97	98	100	94	96	92	97	98	100	99	2
Mastery Rates %														
Science 4	80		75	80	88	81	74	69	58	78	73	88	76	3

Middle School Mathematics

	North Shore	New York State	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates %														
Math 6	87	47	86	85	91	88	80	77	81	89	70	75	64	4
Math 7	92	43	88	80	89	87	84	81	81	89	73	77	73	1
Mastery Rates %														
Math 6	59	23	46	60	71	59	62	44	50	65	37	55	25	5
Math 7	60	21	72	43	65	56	59	52	50	66	36	40	27	4

K-12 New York State Standardized Test Achievement

Comparison to Similar Districts

Mathematics Regents Examinations

Algebra I (North Shore Middle School)

	North Shore	New York State	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates														
Algebra 1	100	71	100	99	99	98	98	93	97	96	86	91	90	1
Mastery Rates														
Algebra 1	53	16	65	73	77	64	63	45	65	51	25	50	37	7

Geometry

	North Shore	New York State	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates														
Geometry	98	70	98	99	98	94	98	89	92	92	80	88	86	1
Mastery Rates														
Geometry	51	22	57	70	78	51	60	38	46	43	31	46	31	4

Algebra 2

	North Shore	New York State	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates														
Algebra 2	100	83	100	100	98	100	98	96	98	94	94	91	91	1
Mastery Rates														
Algebra 2	56	22	54	65	73	59	57	41	46	43	32	36	19	5

K-12 New York State Standardized Test Achievement

Comparison to Similar Districts

Science Regents Examinations

Living Environment (North Shore Middle School)

	North Shore	New York State	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates														
Living Environment	99.5	73	99	98	99	99	98	92	98	98	93	90	98	1
Mastery Rates														
Living Environment	68.3	30	88	75	88	76	76	55	79	62	60	56	61	5

Physical Setting/Earth Science

	North Shore	New York State	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates														
Earth Science	95	69	97	97	95	97	92	93	88	97	82	87	86	2
Mastery Rates														
Earth Science	70	32	78	74	79	73	68	67	46	79	48	46	49	5

Physical Setting/Chemistry

	North Shore	Nassau County	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates														
Chemistry	96	73	99	96	97	97	95	94	94	95	81	81	78	3
Mastery Rates														
Chemistry	45	22	44	50	59	46	55	49	39	44	38	32	19	6

Physical Setting/Physics

	North Shore	New York State	Garden City	Manhasset	Jericho	Syosset	Great Neck	Port Washington	Roslyn	East Williston	Oyster Bay	Locust Valley	Rockville Centre	District Rank Out Of Comparison Districts
Proficiency Rates														
Physics	94	82	98	89	98	94	95	97	67	93	85	88	85	4
Mastery Rates														
Physics	62	43	78	57	83	56	64	75	17	21	44	59	34	5

Advanced Placement and International Baccalaureate Performance Click For Table of Contents

Advanced Placement Performance

North Shore students perform earn more scores of 3,4 and 5 than students in other schools within our region. This pattern has grown from 2013 to 2019.

		2013		2014		2015		2018		2019	
		School#	Region	School#	Region	School#	Region	School#	Region	School#	Region
Score	1	*34*	57.6	*42*	58.7	*46*	69.3	*22*	66.6	*28*	67.6
	2	*118*	129.6	*115*	132.0	*114*	150.5	*79*	177.6	*92*	180.2
	3	*196*	198.7	*210*	205.9	*197*	217.9	*130*	243.5	*168*	246.1
	4	*136*	169.2	*157*	163.1	*171*	173.2	*141*	198.9	*126*	193.6
	5	*69*	111.5	*85*	104.4	*109*	107.7	*50*	135.8	*76*	131.4
# Schools Surveyed		53		54		55		53		55	
Total Tests Taken*		*553*		*609*		*637*		*422*		*490*	
Participation Index (Enrollment Tested**)		*2.54*	2.31	*2.71*	2.32	*2.75*	2.52	*1.99*	2.79	*2.25*	2.84
Total Scoring 3,4,5		*401*	479.4	*452*	473.4	*477*	498.8	*321*	578.2	*370*	571.1
Quality Index (% Test Takers 3,4,5)		*72.5%*	71.9%	*74.2%*	71.3%	*74.9%*	69.4%	*76.1%*	70.3%	*75.5%*	69.7%
Quality / Participation (Enrollment 3,4,5**)		*1.84*	1.66	*2.01*	1.66	*2.06*	1.75	*1.51*	1.96	*1.70*	1.98

Mathematics

AP – Mean Score

	2015	*2016*	*2017*	*2018*	*2019*
Calculus AB	*3.55*	*4.47*	*1.69*	*2.96*	*3.13* *NYS Average (2.96)*
Calculus BC	*4.70*	*4.40*	*3.36*	*4.05*	*4.71* *NYS Average (3.91)*
Statistics	*2.89*	*2.70*	*2.06*	*3.18*	*3.21* *NYS Average (2.85)*

IB – Mean Score

	2017	*2018*	*2019*
Math Studies SL	*6.13* *World Average (4.3)*	*6.09* *World Average (4.21)*	*6.04* *World Average (4.16)*
Mathematics SL	*5.33* *World Average (4.38)*	*4.88* *World Average (4.26)*	*5.00* *World Average (4.18)*

Individual Math Exam Data

May 2019 AP Exam Result Summary

EXAM: **Calculus AB- exam required with enrollment in AP Calculus AB**
DATE: **May 2019**

Total number of students taking the exam: 32

Total number at level 3,4,5: 20 Percent at level 3,4,5: 60.61%

Total number at level 4,5: 12 Percent at level 4,5: 36.36%

Level	Number of students	% (Percent)
1	1	3.13%
2	11	34.38%
3	8	25.00%
4	7	21.88%
5	5	15.63%

NSHS Mean: 3.13

NYS Mean: 2.95

May 2019 AP Exam Result Summary

EXAM: **Calculus BC- exam required with enrollment in AP Calculus BC**
DATE: **May 2019**

Total number of students taking the exam: 14

Total number at level 3,4,5: 14 Percent at level 3,4,5: 100%

Total number at level 4,5: 13 Percent at level 4,5: 92.86%

Level	Number of students	% (Percent)
1	0	0.00%
2	0	0.00%
3	1	7.14%
4	14	100%
5	13	92.86%

NSHS Mean: 4.71

NYS Mean: 3.91

May 2019 AP Exam Result Summary

EXAM: **Statistics- exam required with enrollment in AP Statistics**
DATE: **May 2019**

Total number of students taking the exam: 29

Total number at level 3,4,5: 23 Percent at level 3,4,5: 79.31%

Total number at level 4,5: 11 Percent at level 4,5: 37.93%

Level	Number of students	% (Percent)
1	1	3.45%
2	5	17.24%
3	12	41.38%
4	9	31.03%
5	2	6.90%

NSHS Mean: 3.21

NYS Mean: 2.85

May 2019 IB Exam Result Summary

EXAM: **Math SL** **DATE: May 2019**
Total number of students taking the exam: 28

Total number at level 4,5,6,7: 25 Percent at level 4,5,6,7: 89.29%
Total number at level 6,7: 10 Percent at level 6,7: 35.71%

Level	Number of students	% (Percent)
1	0	0.00%
2	1	3.57%
3	2	7.14%
4	6	21.43%
5	9	32.14%
6	7	25.00%
7	3	10.71%

NSHS Mean: 5.00

Global Mean: 4.18

May 2019 IB Exam Result Summary

EXAM: **Math Studies SL** **DATE: May 2019**
Total number of students taking the exam: 26

Total number at level 4,5,6,7: 26 Percent at level 4,5,6,7: 100%
Total number at level 6,7: 20 Percent at level 6,7: 76.92%

Level	Number of students	% (Percent)
1	0	0.00%
2	0	0.00%
3	0	0.00%
4	0	0.00%
5	6	23.08%
6	13	50.00%
7	7	26.92%

NSHS Mean: 5.00

Global Mean: 4.18

Mathematics AP and IB Exams Analysis:

North Shore student performance on both AP and IB examinations in Mathematics continues to stay well above the regional average (world average in the case of IB) and increase over time on

most examinations. As is the pattern with Regents examinations, a goal is to increase the percentage of students who attain mastery levels on these examinations.

Science

AP – Mean Score

	2015	*2016*	*2017*	*2018*	*2019*
Biology	***3.55***	***3.08***	***3.48***	***3.61***	***3.24*** ***NYS Average (3.00)***
Chemistry	***3.56***	***2.67***	***3.75***	***3.18***	***3.36*** ***NYS Average (2.99)***
Physics 1	***3.06***	***3.13***	***2.5***	***3.68***	***4.15*** ***NYS Average (2.89)***
Physics C	***4.1***	***3.83***	***3.18***	***4.00***	***4.29*** ***NYS Average (3.81)***

IB – Mean Score

	2017	*2018*	*2019*
Biology HL	***4.23*** ***World Average (4.32)***	***4.50*** ***World Average (4.35)***	***4.94*** ***World Average (4.34)***
Chemistry SL	***4.71*** ***World Average (3.96)***	***4.00*** ***World Average (3.99)***	***3.77*** ***World Average (4.00)***
Physics HL	***3.55*** ***World Average (4.65)***	***4.06*** ***World Average (4.65)***	***4.69*** ***World Average (4.65)***

Individual Science Exam Data

May 2019 AP Exam Result Summary

EXAM: **Biology- exam required with enrollment in IB/AP Biology HL I**
DATE: **May 2019**

Total number of students taking the exam: 88

Total number at level 3,4,5: 72 Percent at level 3,4,5: 81.82%

Total number at level 4,5: 33 Percent at level 4,5: 37.5%

Level	Number of students	% (Percent)
1	1	1.14%
2	15	17.05%
3	39	44.32%
4	28	31.82%
5	5	5.68%

NSHS Mean: 3.24

NYS Mean: 3.0

May 2019 AP Exam Result Summary

EXAM: **Chemistry- exam required with enrollment in IB/AP Chemistry SL**
DATE: **May 2019**

Total number of students taking the exam: 14

Total number at level 3,4,5: 12 Percent at level 3,4,5: 85.71%

Total number at level 4,5: 6 Percent at level 4,5: 42.86%

Level	Number of students	% (Percent)
1	1	7.14%
2	1	7.14%
3	6	42.86%
4	4	28.57%
5	2	14.29%

NSHS Mean: 3.36

NYS Mean: 2.99

May 2019 AP Exam Result Summary

EXAM: **Physics I- exam not required, students in this session were enrolled in IB Physics HL 1 and opted to take this exam**
DATE: **May 2019**

Total number of students taking the exam: 13

Total number at level 3,4,5: 13 Percent at level 3,4,5: 100%

Total number at level 4,5: 10 Percent at level 4,5: 76.92%

Level	Number of students	% (Percent)
1	0	0.00%
2	0	0.00%
3	3	23.08%
4	5	38.46%
5	5	38.46%

NSHS Mean: 4.15

NYS Mean: 2.89

May 2019 AP Exam Result Summary

EXAM: **Physics C- exam not required, students in this session were enrolled in IB Physics HL 1 and/or IB Physics HL 2 and opted to take this exam**
DATE: **May 2019**

Total number of students taking the exam: 7

Total number at level 3,4,5: 7 Percent at level 3,4,5: 100%

Total number at level 4,5: 6 Percent at level 4,5: 85.71%

Level	Number of students	% (Percent)
1	0	0.00%
2	0	0.00%
3	1	14.29%
4	3	42.86%
5	3	42.86%

NSHS Mean: 4.29

NYS Mean: 3.81

May 2019 IB Exam Result Summary

EXAM: **Biology** **DATE: May 2019**
Total number of students taking the exam: 33

Total number at level 4,5,6,7: 33 Percent at level 4,5,6,7: 100%
Total number at level 6,7: 6 Percent at level 6,7: 18.18%

Level	Number of students	% (Percent)
1	0	0.00%
2	0	0.00%
3	0	0.00%
4	9	27.27%
5	18	54.55%
6	5	15.15%
7	1	3.03%

NSHS Mean: 4.94

Global Mean: 4.33

May 2019 IB Exam Result Summary

EXAM: **Chemistry** **DATE: May 2019**
Total number of students taking the exam: 13

Total number at level 4,5,6,7: 7 Percent at level 4,5,6,7: 53.85%
Total number at level 6,7: 1 Percent at level 6,7: 7.69%

Level	Number of students	% (Percent)
1	1	7.69%
2	1	7.69%
3	4	30.77%
4	3	23.08%
5	3	23.08%
6	0	0.00%
7	1	7.69%

NSHS Mean: 3.77

Global Mean: 4.00

May 2019 IB Exam Result Summary

EXAM: **Physics HL** **DATE: May 2019**
Total number of students taking the exam: 13

Total number at level 4,5,6,7: 10 Percent at level 4,5,6,7: 76.92%
Total number at level 6,7: 3 Percent at level 6,7: 23.08%

Level	Number of students	% (Percent)
1	0	0.00%
2	0	0.00%
3	3	23.08%
4	1	7.69%
5	6	46.15%
6	3	23.08%
7	0	0.00%

NSHS Mean: 4.69

Global Mean: 4.64

Science AP and IB Exams Analysis:

Biology continues to be our strongest performing AP exam by most metrics used.
Physics is a standout for the 100% quality index in 2019. Also, our quality index (levels 3,4,5) on all exams continues to outpace the region.

Chemistry is a one year SL class that also prepares students to take the AP exam. Students must come from Honors Chemistry in grade 10 in order to be fully prepared (prerequisite). Chemistry students must also complete the IA (internal assessment) and the group 4 project which could negatively impact AP performance because it "eats up" class-time.

Since our Chemistry and Physics AP teachers also teach regents sections, they are well versed in NGSS practices that serve to help instruction at all levels. This is not the case in Biology where exposure to NGSS only takes place at Professional Development. We have observed that AP Biology teachers still pull from NGSS strategies and try and incorporate them when possible. The NGSS is designed to take a shorter but deeper dive into science topics. Many AP classes have far too much content to properly utilize these practices. Our teachers do a good job of deciding what works best for their students.

AP/IB Biology HL-1 students modeling secondary and tertiary structures of proteins

Opt-Out Percentages/Participation Rates – 2019 Snapshot

Participation rates in all assessments, including elementary Mathematics and Science that some students "opt out" of taking, have increased since 2013. Students who do not participate represent a typical distribution of students (in terms of academic performance at North Shore) and therefore we do not believe that 100% participation in elementary assessments would lead to drastically lower proficiency rates. Common assessments and the new universal screening tools such as the Renaissance STAR assessments will help us to provide a more quantitative comparison of this assertion in the future.

Assessment/Examination	Participation Number
Grade 3 Mathematics	152/210
Grade 4 Mathematics	145/196
Grade 5 Mathematics	121/182
Grade 6 Mathematics	112/197
Grade 7 Mathematics	89/199
Algebra 1	182
Geometry	179
Algebra 2	218
Grade 4 Science	163/193
Living Environment	208
Earth Science	179
Chemistry	230
Physics	65

Gender and Performance - Longitudinal View: 2017 to 2019

The data in the three - year analysis below shows no pattern in differential performance between male and female students.

Grade 3 Math

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	87.4	89.2	51.7	53.8
2018	85.1	87.9	58.1	40.9
2017	80.8	83.8	47.1	44.2

Grade 4 Math

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	92.2	88.2	71.4	70.6
2018	91.8	94.4	68.5	70.4
2017	75.9	81.4	51.7	51.4

Grade 5 Math

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	91.8	91.8	68.5	75.5
2018	89.5	84.6	64.6	53.9
2017	74.6	86.9	36.5	52.5

Grade 6 Math

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	85.7	87.5	60.7	57.1
2018	87	87.9	53.7	60.3
2017	81.8	78.0	50.9	52.5

Grade 7 Math

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	87.2	97.6	51.1	69.0
2018	73.7	85.2	40.4	34.4
2017	75.4	67.9	23.1	18.9

Algebra

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	100	100	52.1	53.4
2018	98.8	100	36.6	46.6
2017	100	100	70.3	61.5

Geometry

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	98.8	97.8	48.2	53.9
2018	99.2	96.9	47.2	42.5
2017	91.1	92.5	25.6	32.7

Algebra 2

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	100	100	61.2	50.5
2018	97.7	100	47.1	52.9
2017	100	98.9	27.8	52.2

Grade 4 Science

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	100	98.7	76.7	83.1
2018	100	100	86.7	88.1
2017	97.3	97.6	78.4	77.6

Living Environment

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	99.1	100	72	64.4
2018	100	100	50	42.9
2017	100	88.9	16.7	33.3

Earth Science

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	95.5	94.3	67	70.5
2018	97.5	97.3	74.6	70.9
2017	90.3	91.6	57	65.4

Chemistry

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	95.5	96.4	45	44.1
2018	88.6	89.2	33	41.2
2017	97.9	96	37.9	49

Physics

	Male Proficiency%	Female Proficiency%	Male Mastery%	Female Mastery%
2019	95	92	67.5	52
2018	79.6	84	24.4	42
2017	83.9	84	35.5	22

Disability Status – Longitudinal View: 2017 to 2019

The data in the three - year analysis below shows that in almost all cases, proficiency and mastery rates for students with disabilities increased from 2017 to 2019. This is still an area where continued progress is necessary and will be attended to through supervision, professional development and curriculum writing.

Grade 3 Math

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	64.3	90.6	35.7	54.3
2018	54.5	89.1	36.4	51.2
2017	50	87.5	12.5	51

Grade 4 Math

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	66.7	91.9	44.4	72.8
2018	82.4	94.5	35.3	74.5
2017	36.4	82.9	18.2	54.7

Grade 5 Math

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	75	94.3	50	74.5
2018	28.6	93.7	14.3	63.8
2017	42.9	85.9	0	50

Grade 6 Math

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	16.7	95	8.3	65
2018	53.8	91.9	7.7	63.6
2017	45.5	83.5	9.1	56.3

Grade 7 Math

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	54.5	97.4	9.1	66.7
2018	33.3	84.9	8.3	40.6
2017	18.2	77.6	0	23.4

Algebra

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	100	100	17.4	57.9
2018	100	99.3	11.8	45.1
2017	100	100	30	69.8

Geometry

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	100	100	20.5	55.4
2018	91.4	99.1	14.3	49.8
2017	71.4	95.3	0	34.3

Algebra 2

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	100	100	8.3	58.4
2018	91.7	100	12.5	55.8
2017	93.8	100	18.8	48.1

Grade 4 Science

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	100	99.3	47.1	83.6
2018	100	100	68.4	90.2
2017	87.5	98.6	43.8	81.8

Living Environment

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	97.3	100	32.4	76
2018	95	98.7	40	79.9
2017	100	99.5	29.7	71.3

Earth Science

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	81.8	97.9	33.3	76.9
2018	87.5	99.5	35	80.7
2017	75.8	94	9.1	71.9

Chemistry

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	82.6	97.5	8.7	48.7
2018	72	91.5	4	42.4
2017	86.2	98.8	17.2	48.2

Physics

	Disabled Proficiency%	Non-Disabled Proficiency%	Disabled Mastery%	Non-Disabled Mastery %
2019	100	93.4	0	65.6
2018	90	80.9	40	32.6
2017	83.3	84	33.3	29.2

Race, Ethnicity and Socio-Economic Status – 2019 Snapshot Detail

An analysis of the 2019 New York State assessments and Regents examinations shows some patterns of difference in performance proficiency and mastery for ELL eligible students and students who are categorized as coming from a low-income family. This pattern warrants further investigation as to why these differences exist. The performance of ELL eligible students is benefitting within North Shore internal assessments and examinations because of the strong ELL co-teaching and support program that has been established by our administrative team in consultation with Ana Aguiar.

Grade 3 Math 2019

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
Asian	14	9.2%	620.1	1	7.1%	0	0.0%	3	21.4%	10	71.4%	13	92.9%
Hispanic or Latino	22	14.5%	610.5	1	4.5%	4	18.2%	8	36.4%	9	40.9%	17	77.3%
Multiracial	8	5.3%	610.0	0	0.0%	1	12.5%	4	50.0%	3	37.5%	7	87.5%
White	108	71.1%	614.7	1	0.9%	10	9.3%	39	36.1%	58	53.7%	97	89.8%
Not Low Income	137	90.1%	615.0	2	1.5%	12	8.8%	46	33.6%	77	56.2%	123	89.8%
Poverty - From Low Income Family	15	9.9%	608.8	1	6.7%	3	20.0%	8	53.3%	3	20.0%	11	73.3%
ELL Eligible	2	1.3%	629.0	0	0.0%	0	0.0%	1	50.0%	1	50.0%	2	100.0%
Not ELL Eligible	150	98.7%	614.2	3	2.0%	15	10.0%	53	35.3%	79	52.7%	132	88.0%
Total	152	100.0%	614.4	3	2.0%	15	9.9%	54	35.5%	80	52.6%	134	88.2%

Grade 4 Math 2019

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
Asian	5	3.4%	630.0	0	0.0%	0	0.0%	0	0.0%	5	100.0%	5	100.0%
Hispanic or Latino	20	13.8%	612.3	1	5.0%	1	5.0%	6	30.0%	12	60.0%	18	90.0%
Multiracial	3	2.1%	627.7	0	0.0%	0	0.0%	0	0.0%	3	100.0%	3	100.0%
White	117	80.7%	619.1	0	0.0%	12	10.3%	22	18.8%	83	70.9%	105	89.7%
Not Low Income	132	91.0%	619.0	1	0.8%	12	9.1%	24	18.2%	95	72.0%	119	90.2%
Poverty - From Low Income Family	13	9.0%	615.8	0	0.0%	1	7.7%	4	30.8%	8	61.5%	12	92.3%
ELL Eligible	6	4.1%	601.0	1	16.7%	1	16.7%	3	50.0%	1	16.7%	4	66.7%
Not ELL Eligible	139	95.9%	619.4	0	0.0%	12	8.6%	25	18.0%	102	73.4%	127	91.4%
Total	145	100.0%	618.7	1	0.7%	13	9.0%	28	19.3%	103	71.0%	131	90.3%

Grade 5 Math 2019

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
Asian	13	10.7%	625.0	0	0.0%	0	0.0%	2	15.4%	11	84.6%	13	100.0%
Hispanic or Latino	11	9.0%	615.0	1	9.1%	2	18.2%	3	27.3%	5	45.5%	8	72.7%
Multiracial	6	4.9%	624.7	0	0.0%	0	0.0%	1	16.7%	5	83.3%	6	100.0%
White	92	75.4%	622.3	2	2.2%	5	5.4%	19	20.7%	66	71.7%	85	92.4%
Not Low Income	113	92.6%	622.2	3	2.7%	6	5.3%	24	21.2%	80	70.8%	104	92.0%
Poverty - From Low Income Family	9	7.4%	620.0	0	0.0%	1	11.1%	1	11.1%	7	77.8%	8	88.9%
ELL Eligible	1	0.8%	619.0	0	0.0%	0	0.0%	0	0.0%	1	100.0%	1	100.0%
Not ELL Eligible	121	99.2%	622.1	3	2.5%	7	5.8%	25	20.7%	86	71.1%	111	91.7%
Total	122	100.0%	622.0	3	2.5%	7	5.7%	25	20.5%	87	71.3%	112	91.8%

Grade 6 Math 2019

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
Asian	9	8.0%	624.4	0	0.0%	0	0.0%	2	22.2%	7	77.8%	9	100.0%
Black or African American	1	0.9%	610.0	0	0.0%	0	0.0%	1	100.0%	0	0.0%	1	100.0%
Hispanic or Latino	15	13.4%	618.1	2	13.3%	2	13.3%	1	6.7%	10	66.7%	11	73.3%
Multiracial	5	4.5%	616.4	0	0.0%	1	20.0%	1	20.0%	3	60.0%	4	80.0%
White	82	73.2%	617.2	3	3.7%	7	8.5%	26	31.7%	46	56.1%	72	87.8%
Not Low Income	98	87.5%	619.1	3	3.1%	7	7.1%	26	26.5%	62	63.3%	88	89.8%
Poverty - From Low Income Family	14	12.5%	608.5	2	14.3%	3	21.4%	5	35.7%	4	28.6%	9	64.3%
Not ELL Eligible	112	100.0%	617.8	5	4.5%	10	8.9%	31	27.7%	66	58.9%	97	86.6%
Total	112	100.0%	617.8	5	4.5%	10	8.9%	31	27.7%	66	58.9%	97	86.6%

Grade 7 Math 2019

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
Asian	9	10.1%	621.4	0	0.0%	0	0.0%	3	33.3%	6	66.7%	9	100.0%
Hispanic or Latino	6	6.7%	616.0	1	16.7%	1	16.7%	0	0.0%	4	66.7%	4	66.7%
Multiracial	3	3.4%	625.3	0	0.0%	0	0.0%	1	33.3%	2	66.7%	3	100.0%
White	71	79.8%	619.4	1	1.4%	4	5.6%	25	35.2%	41	57.7%	66	93.0%
Not Low Income	83	93.3%	619.7	2	2.4%	5	6.0%	26	31.3%	50	60.2%	76	91.6%
Poverty - From Low Income Family	6	6.7%	617.8	0	0.0%	0	0.0%	3	50.0%	3	50.0%	6	100.0%
ELL Eligible	1	1.1%	608.0	0	0.0%	0	0.0%	1	100.0%	0	0.0%	1	100.0%
Not ELL Eligible	88	98.9%	619.7	2	2.3%	5	5.7%	28	31.8%	53	60.2%	81	92.0%
Total	89	100.0%	619.6	2	2.2%	5	5.6%	29	32.6%	53	59.6%	82	92.1%

Algebra 1

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	Level 5 Count	% at Level 5	L3 + L4 + L5	% at L3 + L4 + L5
American Indian or Alaska Native	1	0.5%	88.0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	1	100.0%
Asian	12	6.6%	85.8	0	0.0%	0	0.0%	1	8.3%	4	33.3%	7	58.3%	12	100.0%
Black or African American	2	1.1%	83.0	0	0.0%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	2	100.0%
Hispanic or Latino	13	7.1%	84.1	0	0.0%	0	0.0%	2	15.4%	6	46.2%	5	38.5%	13	100.0%
Multiracial	6	3.3%	83.8	0	0.0%	0	0.0%	3	50.0%	0	0.0%	3	50.0%	6	100.0%
Native Hawaiian/Other Pacific Islander	1	0.5%	81.0	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	1	100.0%
White	147	80.8%	85.3	0	0.0%	0	0.0%	18	12.2%	50	34.0%	79	53.7%	147	100.0%
Not Low Income	160	87.9%	85.5	0	0.0%	0	0.0%	18	11.2%	52	32.5%	90	56.2%	160	100.0%
Poverty - From Low Income Family	22	12.1%	82.7	0	0.0%	0	0.0%	6	27.3%	10	45.5%	6	27.3%	22	100.0%
ELL Eligible	1	0.5%	78.0	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	1	100.0%
Not ELL Eligible	181	99.5%	85.2	0	0.0%	0	0.0%	23	12.7%	62	34.3%	96	53.0%	181	100.0%
Total	182	100.0%	85.2	0	0.0%	0	0.0%	24	13.2%	62	34.1%	96	52.7%	182	100.0%

Geometry

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	Level 5 Count	% at Level 5	L3 + L4 + L5	% at L3 + L4 + L5
American Indian or Alaska Native	1	0.6%	73.0	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	1	100.0%
Asian	12	6.9%	87.5	0	0.0%	0	0.0%	3	25.0%	1	8.3%	8	66.7%	12	100.0%
Black or African American	1	0.6%	80.0	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	1	100.0%
Hispanic or Latino	12	6.9%	81.4	0	0.0%	0	0.0%	6	50.0%	3	25.0%	3	25.0%	12	100.0%
Multiracial	7	4.0%	88.7	0	0.0%	0	0.0%	1	14.3%	1	14.3%	5	71.4%	7	100.0%
White	141	81.0%	85.0	0	0.0%	3	2.1%	36	25.5%	29	20.6%	73	51.8%	138	97.9%
Not Low Income	155	89.1%	85.2	0	0.0%	3	1.9%	39	25.2%	33	21.3%	80	51.6%	152	98.1%
Poverty - From Low Income Family	19	10.9%	83.5	0	0.0%	0	0.0%	8	42.1%	2	10.5%	9	47.4%	19	100.0%
Not ELL Eligible	174	100.0%	85.0	0	0.0%	3	1.7%	47	27.0%	35	20.1%	89	51.1%	171	98.3%
Total	174	100.0%	85.0	0	0.0%	3	1.7%	47	27.0%	35	20.1%	89	51.1%	171	98.3%

Algebra 2

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	Level 5 Count	% at Level 5	L3 + L4 + L5	% at L3 + L4 + L5
American Indian or Alaska Native	1	0.5%	91.0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	1	100.0%
Asian	7	3.3%	87.7	0	0.0%	0	0.0%	0	0.0%	4	57.1%	3	42.9%	7	100.0%
Black or African American	2	0.9%	80.0	0	0.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	2	100.0%
Hispanic or Latino	20	9.3%	84.6	0	0.0%	0	0.0%	4	20.0%	8	40.0%	8	40.0%	20	100.0%
Multiracial	4	1.9%	90.0	0	0.0%	0	0.0%	0	0.0%	1	25.0%	3	75.0%	4	100.0%
White	180	84.1%	87.3	0	0.0%	0	0.0%	7	3.9%	69	38.3%	104	57.8%	180	100.0%
Not Low Income	194	90.7%	87.4	0	0.0%	0	0.0%	9	4.6%	71	36.6%	114	58.8%	194	100.0%
Poverty - From Low Income Family	20	9.3%	83.6	0	0.0%	0	0.0%	2	10.0%	13	65.0%	5	25.0%	20	100.0%
Not ELL Eligible	214	100.0%	87.1	0	0.0%	0	0.0%	11	5.1%	84	39.3%	119	55.6%	214	100.0%
Total	214	100.0%	87.1	0	0.0%	0	0.0%	11	5.1%	84	39.3%	119	55.6%	214	100.0%

Grade 4 Science

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
Asian	7	4.3%	91.7	0	0.0%	0	0.0%	2	28.6%	5	71.4%	7	100.0%
Hispanic or Latino	21	12.9%	86.2	0	0.0%	1	4.8%	5	23.8%	15	71.4%	20	95.2%
Multiracial	3	1.8%	97.0	0	0.0%	0	0.0%	0	0.0%	3	100.0%	3	100.0%
White	132	81.0%	89.7	0	0.0%	0	0.0%	25	18.9%	107	81.1%	132	100.0%
Not Low Income	149	91.4%	89.7	0	0.0%	1	0.7%	27	18.1%	121	81.2%	148	99.3%
Poverty - From Low Income Family	14	8.6%	86.9	0	0.0%	0	0.0%	5	35.7%	9	64.3%	14	100.0%
ELL Eligible	6	3.7%	77.3	0	0.0%	1	16.7%	3	50.0%	2	33.3%	5	83.3%
Not ELL Eligible	157	96.3%	89.9	0	0.0%	0	0.0%	29	18.5%	128	81.5%	157	100.0%
Total	163	100.0%	89.4	0	0.0%	1	0.6%	32	19.6%	130	79.8%	162	99.4%

Living Environment

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
American Indian or Alaska Native	1	0.5%	96.0	0	0.0%	0	0.0%	0	0.0%	1	100.0%	1	100.0%
Asian	11	5.3%	90.5	0	0.0%	0	0.0%	2	18.2%	9	81.8%	11	100.0%
Black or African American	2	1.0%	93.0	0	0.0%	0	0.0%	0	0.0%	2	100.0%	2	100.0%
Hispanic or Latino	23	11.1%	80.9	0	0.0%	1	4.3%	12	52.2%	10	43.5%	22	95.7%
Multiracial	8	3.8%	87.1	0	0.0%	0	0.0%	4	50.0%	4	50.0%	8	100.0%
Native Hawaiian/Other Pacific Islander	1	0.5%	86.0	0	0.0%	0	0.0%	0	0.0%	1	100.0%	1	100.0%
White	162	77.9%	87.7	0	0.0%	0	0.0%	47	29.0%	115	71.0%	162	100.0%
Not Low Income	178	85.6%	87.8	0	0.0%	0	0.0%	52	29.2%	126	70.8%	178	100.0%
Poverty - From Low Income Family	30	14.4%	83.5	0	0.0%	1	3.3%	13	43.3%	16	53.3%	29	96.7%
ELL Eligible	4	1.9%	68.8	0	0.0%	0	0.0%	4	100.0%	0	0.0%	4	100.0%
Not ELL Eligible	204	98.1%	87.5	0	0.0%	1	0.5%	61	29.9%	142	69.6%	203	99.5%
Total	208	100.0%	87.1	0	0.0%	1	0.5%	65	31.2%	142	68.3%	207	99.5%

Earth Science

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
American Indian or Alaska Native	1	0.6%	62.0	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%
Asian	12	6.8%	88.1	0	0.0%	0	0.0%	3	25.0%	9	75.0%	12	100.0%
Black or African American	1	0.6%	80.0	0	0.0%	0	0.0%	1	100.0%	0	0.0%	1	100.0%
Hispanic or Latino	14	8.0%	74.9	1	7.1%	4	28.6%	5	35.7%	4	28.6%	9	64.3%
Multiracial	7	4.0%	88.1	0	0.0%	1	14.3%	1	14.3%	5	71.4%	6	85.7%
White	141	80.1%	88.5	2	1.4%	0	0.0%	36	25.5%	103	73.0%	139	98.6%
Not Low Income	154	87.5%	88.2	2	1.3%	3	1.9%	38	24.7%	111	72.1%	149	96.8%
Poverty - From Low Income Family	22	12.5%	80.6	1	4.5%	3	13.6%	8	36.4%	10	45.5%	18	81.8%
Not ELL Eligible	176	100.0%	87.2	3	1.7%	6	3.4%	46	26.1%	121	68.8%	167	94.9%
Total	176	100.0%	87.2	3	1.7%	6	3.4%	46	26.1%	121	68.8%	167	94.9%

Chemistry

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
American Indian or Alaska Native	1	0.5%	86.0	0	0.0%	0	0.0%	0	0.0%	1	100.0%	1	100.0%
Asian	8	3.6%	86.2	0	0.0%	1	12.5%	1	12.5%	6	75.0%	7	87.5%
Black or African American	1	0.5%	85.0	0	0.0%	0	0.0%	0	0.0%	1	100.0%	1	100.0%
Hispanic or Latino	20	9.0%	76.6	0	0.0%	2	10.0%	14	70.0%	4	20.0%	18	90.0%
Multiracial	5	2.3%	81.6	0	0.0%	1	20.0%	2	40.0%	2	40.0%	4	80.0%
White	187	84.2%	82.5	1	0.5%	4	2.1%	97	51.9%	85	45.5%	182	97.3%
Not Low Income	201	90.5%	82.7	1	0.5%	5	2.5%	103	51.2%	92	45.8%	195	97.0%
Poverty - From Low Income Family	21	9.5%	76.3	0	0.0%	3	14.3%	11	52.4%	7	33.3%	18	85.7%
Not ELL Eligible	222	100.0%	82.1	1	0.5%	8	3.6%	114	51.4%	99	44.6%	213	95.9%
Total	222	100.0%	82.1	1	0.5%	8	3.6%	114	51.4%	99	44.6%	213	95.9%

Physics

	Total Students	% of Total	Final Numeric Score	Level 1 Count	% at Level 1	Level 2 Count	% at Level 2	Level 3 Count	% at Level 3	Level 4 Count	% at Level 4	L3 + L4	% at L3 + L4
Asian	6	9.2%	83.8	0	0.0%	1	16.7%	2	33.3%	3	50.0%	5	83.3%
Hispanic or Latino	5	7.7%	84.4	0	0.0%	0	0.0%	2	40.0%	3	60.0%	5	100.0%
Multiracial	2	3.1%	89.0	0	0.0%	0	0.0%	0	0.0%	2	100.0%	2	100.0%
White	52	80.0%	86.0	1	1.9%	2	3.8%	17	32.7%	32	61.5%	49	94.2%
Not Low Income	57	87.7%	85.8	1	1.8%	3	5.3%	17	29.8%	36	63.2%	53	93.0%
Poverty - From Low Income Family	8	12.3%	85.6	0	0.0%	0	0.0%	4	50.0%	4	50.0%	8	100.0%
Not ELL Eligible	65	100.0%	85.8	1	1.5%	3	4.6%	21	32.3%	40	61.5%	61	93.8%
Total	65	100.0%	85.8	1	1.5%	3	4.6%	21	32.3%	40	61.5%	61	93.8%

Analysis of Third Grade Math Performance ~ District
Performance by Domain

Domain	Standard/Key Idea	Question #	District%	Region%	District Gap
Geometry	CCSS.Math.Content.3.G.A.2	13-MC	86.18%	77.03%	9.15%
		Average	**86.18%**	**77.03%**	**9.15%**
Measurement and Data	CCSS.Math.Content.3.MD.A.1	36-CR	79.93%	63.77%	16.17%
	CCSS.Math.Content.3.MD.A.2	12-MC	93.42%	87.01%	6.41%
	CCSS.Math.Content.3.MD.B.3	19-MC	78.29%	71.86%	6.43%
	CCSS.Math.Content.3.MD.B.3	29-MC	84.87%	77.99%	6.88%
	CCSS.Math.Content.3.MD.C.5b	28-MC	97.37%	95.14%	2.23%
	CCSS.Math.Content.3.MD.C.6	38-CR	70.07%	51.01%	19.05%
	CCSS.Math.Content.3.MD.C.7a	24-MC	80.92%	72.54%	8.38%
	CCSS.Math.Content.3.MD.C.7c	15-MC	74.34%	61.91%	12.44%
	CCSS.Math.Content.3.MD.C.7d	31-MC	64.47%	39.37%	25.10%
		Average	**80.47%**	**69.60%**	**10.87%**
Numbers and Operations Base Ten	CCSS.Math.Content.3.NBT.A.1	22-MC	51.97%	50.93%	1.05%
	CCSS.Math.Content.3.NBT.A.3	37-CR	78.29%	57.65%	20.64%
		Average	**65.13%**	**54.29%**	**10.84%**
Numbers and Operations Fractions	CCSS.Math.Content.3.NF.A.1	39-CR	85.53%	69.33%	16.20%
	CCSS.Math.Content.3.NF.A.3a	08-MC	71.71%	68.42%	3.29%
	CCSS.Math.Content.3.NF.A.3a	10-MC	86.18%	74.84%	11.35%
	CCSS.Math.Content.3.NF.A.3b	26-MC	94.74%	89.88%	4.86%
	CCSS.Math.Content.3.NF.A.3c	18-MC	31.58%	37.72%	-6.15%
	CCSS.Math.Content.3.NF.A.3d	35-CR	60.86%	48.40%	12.45%
		Average	**71.77%**	**64.77%**	**7.00%**
Operations and Algebraic Thinking	CCSS.Math.Content.3.OA.A.1	01-MC	97.37%	94.71%	2.65%
	CCSS.Math.Content.3.OA.A.2	03-MC	92.11%	87.42%	4.69%
	CCSS.Math.Content.3.OA.A.2	30-MC	87.50%	76.90%	10.60%
	CCSS.Math.Content.3.OA.A.3	06-MC	84.21%	79.51%	4.70%
	CCSS.Math.Content.3.OA.A.3	27-MC	94.08%	85.22%	8.85%
	CCSS.Math.Content.3.OA.A.3	40-CR	86.40%	75.97%	10.43%
	CCSS.Math.Content.3.OA.A.4	21-MC	82.89%	78.48%	4.42%
	CCSS.Math.Content.3.OA.A.4	25-MC	98.68%	94.82%	3.87%
	CCSS.Math.Content.3.OA.B.5	16-MC	63.16%	56.80%	6.35%
	CCSS.Math.Content.3.OA.B.5	32-MC	90.13%	78.45%	11.68%
	CCSS.Math.Content.3.OA.B.6	34-CR	85.53%	69.73%	15.80%
	CCSS.Math.Content.3.OA.D.8	05-MC	70.39%	65.39%	5.01%
	CCSS.Math.Content.3.OA.D.8	07-MC	64.47%	42.82%	21.66%
	CCSS.Math.Content.3.OA.D.8	33-MC	65.13%	54.61%	10.52%
	CCSS.Math.Content.3.OA.D.9	02-MC	90.13%	86.36%	3.77%
	CCSS.Math.Content.3.OA.D.9	23-MC	71.05%	67.29%	3.76%
		Average	**82.70%**	**74.66%**	**8.05%**

Strengths ~ Third Grade Math - District

Overall

On 12 of the 27 multiple choice items for which data are available, over 85% of North Shore students responded correctly to the item. On 3 of the 7 constructed response items, North Shore students, on average, received over 85% of the points available.

Across all items, the average percentage of North Shore students who responded correctly to an item was 79.2%. This was 9.0% higher than the average percentage of students in the region who responded correctly to an item.

On 33 of the 34 items for which data are available, North Shore students outperformed the students in the region by percentages ranging from 1.1% to 25.1%.

Curriculum Standards

An analysis of performance by domain suggests that Geometry, Measurement and Data, Numbers and Operations – Base Ten, and Operations and Algebraic Thinking are areas of particular strength. The average performance of North Shore students on the items within the Geometry domain was 86.2%. The average gaps between the performance of North Shore students and the students in the region for the domains of Geometry, Measurement and Data, Numbers and Operations – Base Ten, and Operations and Algebraic Thinking were 9.2%, 10.9%, 10.9%, and 8.1%, respectively.

Geometry

Students demonstrated their understanding of the domain of Geometry on one multiple choice items.

On the single multiple choice items in this domain, more than 86.2% of the North Shore students answered the item correctly. On the item, North Shore students outperformed students in the region by 9.2%.

Measurement and Data

Students demonstrated their understanding of the domain of Measurement and Data on seven multiple choice items and two constructed response items.

On two of the seven multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. On all items within the domain, North Shore students outperformed students in the region, with associated percentages ranging from 2.2% to 25.1%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included 4 of the 9 items related to the following Standards:

- CC.3.MD.1 which requires students to tell and write time to the nearest minute and measure time intervals in minutes as well as to solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
- CC.3.MD.6 which requires students to measure areas by counting unit squares (square cm, square m, square in, square ft., and improvised units.
- CC.3.MD.7c which requires students to use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a x b and a x c and to use area models to represent the distributive property in mathematical reasoning.
- CC.3.MD.7d which requires students to recognize area as additive and to find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

Numbers and Operations in Base Ten

Students demonstrated their understanding of the domain of Numbers and Operations in Base Ten on one multiple choice item and one constructed response item.

On both of the items, North Shore students outperformed students in the region, with percentages ranging of 1.1% and 20.6%.

An area of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included an item related to the following Standard:

• CC.3.NBT.3 which requires students to multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Number and Operations - Fractions

Students demonstrated their understanding of the domain of Numbers and Operations - Fractions on four multiple choice items and two constructed response items.

On two multiple choice items and one constructed response item in this domain, more than 85% of the North Shore students answered the item correctly. On five of the six items, North Shore students outperformed students in the region, as indicated by percentages ranging from 3.3% to 16.2%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included three items related to the following Standards:

- CC.3.NF.1 which requires students which requires students to understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.
- CC.3.NF.3a which requires students to explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. Specifically, students must understand two fractions as equivalent (equal) if they are the same size or the same point on a number line.
- CC.3.NF.3d which requires students to compare two fractions with the same numerator or the same denominator by reasoning about their size, to recognize that comparisons are valid only when the two fractions refer to the same whole, and to record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Operations and Algebraic Thinking

Students demonstrated their understanding of the domain of Operations and Algebraic Thinking on fourteen multiple choice items and two constructed response items.

On seven of the fourteen multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. On both constructed response items, North Shore students, on average, received over 85% of the available points. On all 15 items, North Shore students outperformed students in the region by percentages ranging from 2.7% to 21.7%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included six items related to the following Standards:

• CC.3.OA.2 which requires students to interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.

- CC.3.OA.3 which requires students to use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- CC.3.OA.5 which requires students to apply properties of operations as strategies to multiply and divide.
- CC.3.OA.6 which requires students to understand division as an unknown-factor problem.
- CC.3.OA.8 which requires students to solve two- step word problems using the four operations, represent these problems using equations with a letter standing for the unknown quantity, and assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Item Type

On average, North Shore students responded correctly to 79.5% of the multiple choice items for which data are available, exceeding the performance of the region by 7.2%.

Moreover, on average, North Shore students received 78.1% of the available points on constructed response items, exceeding the performance of the region by 15.8%, suggesting the strength of the students in responding to complex problems, showing their work, and explaining their thinking.

Areas of Focus ~ Third Grade Math - District
Curriculum Standards

Measurement and Data

On two items within this domain, the gap between the performance of North Shore students and the performance of the students in the region was less than 10% while the percentage of students responding correctly to the item was less than 85%.

Item	Standard	Percentage Correct	Performance Gap
19-MC Not Released	3.MD.B.3	78.29%	6.43%
24-MC Not Released	3.MD.C.7a	80.92%	8.38%

This suggests the need to review and reinforce understanding of and proficiency with the associated Standards:

- CC.3.MD.3 which requires students to draw a scaled picture graph and a scaled bar graph to represent a data set with several categories and to solve one- and two-step "how many ore" and "how many less" problems using information presented in scaled bar graphs.
- CC.3.MD.7a which requires students to find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

Numbers and Operations – Base Ten

On one of the items within this domain, the gap between the performance of North Shore students and the performance of the students in the region was less than 10% while the percentage of students responding correctly to the item was less than 85%.

Item	Standard	Percentage Correct	Performance Gap
22-MC A number is rounded to the nearest hundred. The result is 500. Which number could **not** be the number before it was rounded to the nearest hundred? **A** 458 **B** 463 **C** 547 **D** 559	3.NBT.A.1	51.97%	1.05%

Following is an overview of the way in which our students responded to item 22:

Item	Blank		Response 1		Response 2		Response 3		Response 4	
22	#	%	#	%	#	%	#	%	#	%
	0	0	13	9%	13	9%	47	31%	79	52%

This suggests the need to review and reinforce understanding of and proficiency with rounding, as required by the associated Standard:

- CC.3.NBT.1 which requires students to use place value understanding to round whole numbers to the nearest 10 or 100.

Numbers and Operations – Fractions

On two of the items within this domain, the gap between the performance of North Shore students and the performance of the students in the region was less than 10% while the percentage of students responding correctly to the item was less than 85%.

Item	Standard	Percentage Correct	Performance Gap
8-MC Which two fractions should be plotted at the same location on a number line? A $\frac{3}{4}$ and $\frac{4}{8}$ B $\frac{1}{4}$ and $\frac{2}{8}$ C $\frac{2}{4}$ and $\frac{4}{6}$ D $\frac{1}{2}$ and $\frac{2}{6}$	3.NF.3a	71.71%	3.29%
18-MC Not Released	3.NF.3c	31.58%	-6.15%

Following is an overview of the way in which our students responded to item 8:

Item	Blank		Response 1		Response 2		Response 3		Response 4	
8	#	%	#	%	#	%	#	%	#	%
	0	0	10	7%	109	72%	24	16%	9	6%

Notably, there was confusion related to equivalent fractions.
Overall, the data suggests the need to continue to focus on developing all students' understanding of and facility with fractions, particularly related to the following Standards:

- CC.3.NF.3a which requires students to understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line and to generate simple equivalent fractions as well as to explain why the fractions are equivalent, e.g., by using a visual fraction model.
- CC.3.NF.3c which requires students to express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

Operations and Algebraic Thinking.

On five of the items within this domain, the gap between the performance of North Shore students and the performance of the students in the region was less than 10% while the percentage of students responding correctly to the item was less than 85%.

Item	Standard	Percentage Correct	Performance Gap
6-MC Jess scored 18 points during her last basketball game. Each basket she made was worth 2 points. How many baskets did she make? **A** 20 **B** 16 **C** 9 **D** 8	3.OA.A.3	84.21%	4.70%
21-MC Which equation is true when the missing number is the number 7? **A** $7 \times \_?\_ = 42$ **B** $7 \times \_?\_ = 49$ **C** $8 \times \_?\_ = 40$ **D** $8 \times \_?\_ = 48$	3.OA.A.4	82.89%	4.42%
16-MC Which expression is equivalent to $(5 + 2) \times 8$? **A** $(8 \times 5) + (8 \times 2)$ **B** $(5 \times 8) + (5 \times 2)$ **C** $8 \times (5 \times 2)$ **D** $(5 \times 8) \times 2$	3.OA.B.5	63.16%	6.35%

5-MC Not Released	3.OA.D.8	70.39%	5.01%
23-MC Which statement is true? **A** The product of 5×2 is even because both of the factors are even. **B** The product of 4×4 is odd because both of the factors are even. **C** The product of 2×7 is even because both of the factors are odd. **D** The product of 5×3 is odd because both of the factors are odd.	3.OA.D.9	71.05%	3.76%

Following is an overview of the way in which our students responded to item 6:

Item	Blank		Response 1		Response 2		Response 3		Response 4	
6	#	%	#	%	#	%	#	%	#	%
	0	0	14	9%	4	3%	128	84%	6	4%

Following is an overview of the way in which our students responded to item 21:

Item	Blank		Response 1		Response 2		Response 3		Response 4	
21	#	%	#	%	#	%	#	%	#	%
	0	0	14	9%	126	83%	5	3%	7	5%

Following is an overview of the way in which our students responded to item 16:

Item	Blank		Response 1		Response 2		Response 3		Response 4	
16	#	%	#	%	#	%	#	%	#	%
	0	0	96	63%	21	14%	20	13%	15	10%

Following is an overview of the way in which our students responded to item 23:

Item	Blank		Response 1		Response 2		Response 3		Response 4	
23	#	%	#	%	#	%	#	%	#	%
	0	0	21	14%	17	11%	6	4%	108	71%

Analysis of Fourth Grade Math Performance ~ District

Performance by Domain

Domain	Standard/Key Idea	Question #	District %	Region %	District Gap
Geometry	CCSS.Math.Content.4.G.A.2	41-CR	78.62%	63.44%	15.18%
	CCSS.Math.Content.4.G.A.3	28-MC	72.41%	65.64%	6.77%
		Average	**75.52%**	**64.54%**	**10.98%**
Measurement and Data	CCSS.Math.Content.3.MD.B.4	38-MC	81.38%	65.72%	15.66%
	CCSS.Math.Content.4.MD.A.3	21-MC	73.10%	55.81%	17.29%
	CCSS.Math.Content.4.MD.A.3	44-CR	84.83%	68.02%	16.81%
	CCSS.Math.Content.4.MD.B.4	22-MC	74.48%	53.84%	20.64%
	CCSS.Math.Content.4.MD.C.5a	29-MC	48.97%	51.08%	-2.11%
	CCSS.Math.Content.4.MD.C.5b	34-MC	90.34%	72.58%	17.77%
	CCSS.Math.Content.4.MD.C.6	36-MC	79.31%	68.83%	10.48%
	CCSS.Math.Content.4.MD.C.7	09-MC	95.86%	83.43%	12.43%
		Average	**78.53%**	**64.91%**	**13.62%**
Numbers and Operations - Base Ten	CCSS.Math.Content.4.NBT.A.1	24-MC	68.28%	45.77%	22.51%
	CCSS.Math.Content.4.NBT.A.1	43-CR	76.21%	61.86%	14.35%
	CCSS.Math.Content.4.NBT.A.2	40-CR	87.24%	63.66%	23.58%
	CCSS.Math.Content.4.NBT.A.3	20-MC	87.59%	72.66%	14.93%
	CCSS.Math.Content.4.NBT.B.5	15-MC	96.55%	80.52%	16.03%
	CCSS.Math.Content.4.NBT.B.5	45-CR	69.20%	49.97%	19.22%
	CCSS.Math.Content.4.NBT.B.6	16-MC	91.72%	79.40%	12.33%
	CCSS.Math.Content.4.NBT.B.6	33-MC	91.72%	80.69%	11.04%
		Average	**83.56%**	**66.82%**	**16.75%**
Numbers and Operations - Fractions	CCSS.Math.Content.4.NF.A.1	08-MC	83.45%	71.65%	11.80%
	CCSS.Math.Content.4.NF.A.1	37-MC	93.79%	84.24%	9.55%
	CCSS.Math.Content.4.NF.A.2	03-MC	83.45%	80.06%	3.39%
	CCSS.Math.Content.4.NF.A.2	11-MC	88.97%	69.58%	19.39%
	CCSS.Math.Content.4.NF.B.3a	27-MC	89.66%	77.22%	12.43%
	CCSS.Math.Content.4.NF.B.3c	13-MC	81.38%	62.80%	18.58%
	CCSS.Math.Content.4.NF.B.3d	42-CR	80.00%	67.52%	12.48%
	CCSS.Math.Content.4.NF.B.4a	31-MC	93.10%	86.81%	6.29%
	CCSS.Math.Content.4.NF.B.4b	39-CR	94.48%	80.99%	13.50%
	CCSS.Math.Content.4.NF.B.4c	01-MC	94.48%	85.20%	9.29%
		Average	**88.28%**	**76.61%**	**11.67%**
Operations and Algebraic Thinking	CCSS.Math.Content.4.OA.A.1	19-MC	97.24%	89.96%	7.29%
	CCSS.Math.Content.4.OA.A.1	30-MC	82.07%	71.48%	10.59%
	CCSS.Math.Content.4.OA.A.1	35-MC	79.31%	65.88%	13.43%
	CCSS.Math.Content.4.OA.A.2	04-MC	90.34%	67.46%	22.88%
	CCSS.Math.Content.4.OA.A.2	32-MC	97.93%	95.55%	2.38%
	CCSS.Math.Content.4.OA.A.3	06-MC	93.10%	85.46%	7.65%
	CCSS.Math.Content.4.OA.A.3	17-MC	90.34%	76.60%	13.75%
	CCSS.Math.Content.4.OA.B.4	02-MC	98.62%	91.19%	7.43%
	CCSS.Math.Content.4.OA.C.5	26-MC	73.79%	59.26%	14.54%
		Average	**89.10%**	**77.94%**	**11.16%**

Strengths ~ Fourth Grade Math ~ District

Overall

On 17 of the 30 multiple choice items for which data are available, over 85% of North Shore students responded correctly to the item. On 2 of the 7 constructed response items, the percentage of available points received by the North Shore students, on average, exceeded 85%.

Across all items, the average percentage of North Shore students who responded correctly to an item was 84.7%. This was 13.0% higher than the average percentage of students in the region who responded correctly to an item.

On 36 of the 37 items, North Shore students outperformed the students in the region by percentages ranging from 2.4% to 23.6%, as indicated by the district gaps.

Curriculum Standards

An analysis of performance by domain suggests that all of the domains, specifically Geometry, Measurement and Data, Numbers and Operations – Base Ten, Numbers and Operations – Fractions, and Operations and Algebraic Thinking are areas of particular strength, with the average gaps between the performance of North Shore students and the students in the region at 11.0%, 13.6%, 16.8%, 11.7%, and 11.2%, respectively.

Geometry

Students demonstrated their understanding of the domain of Geometry on one multiple choice item and one constructed response item.

On the constructed response item in the domain, North Shore students outperformed students in the region by 15.2%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal 10%, included one item related to the following Standard:

• CC.4.G.2 which requires students to classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size as well as to recognize right triangles and to identify right triangles.

Measurement and Data

Student demonstrated their understanding of the concepts and facility with the skills of the domain of Measurement and Data through their performance on seven multiple choice items and one constructed response item.

On two of the seven multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. On six of the seven items within the domain, North Shore students outperformed students in the region by percentages ranging from 10.5% to 20.6%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included 7 items related to the following Standards:

- CC.3.MD.4 which requires students to solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

- CC.4.MD.3 which requires students to apply the area and perimeter formulas for rectangles in real world and mathematical problems.
- CC.4.MD.4 which requires student to make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) and to solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*
- CC.4.MD.5b which requires students to understand that an angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.
- CC.4.MD.6 which requires students to multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
- CC.4.MD.7 which requires students to recognize angle measure as additive; when an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts; and solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

The inclusion of a third grade Standard relates to the assessment of third grade Standards introduced after the administration of the third grade math assessment in 2018.

Numbers and Operations - Base Ten

Students demonstrated their understanding of the domain of Numbers and Operations in Base Ten on five multiple choice items and three constructed response items.

On 4 of the 5 items multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. On one of the constructed response items, North Shore students obtained, on average, more than 85% of the available points.

On all eight items in the domain, North Shore students outperformed students in the region by percentages ranging from 11.0% to 23.6%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included eight items related to the following Standards:

- CC.4.NBT.1 which requires students to recognize that in a multi- digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*
- CC.4.NBT.2 which requires students to read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form as well as to compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
- CC.4.NBT.3 which requires students to use place value understanding to round multi-digit whole numbers to any place.
- CC.4.NBT.5 which requires students to multiply a whole number of up to four digits by a one- digit whole number, and multiply two two- digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- CC.4.NBT.6 which requires students to rind whole- number quotients and remainders with up to four- digit dividends and one- digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division and to illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Number and Operations - Fractions

Students demonstrated their understanding of the domain of Numbers and Operations – Fractions on eight multiple choice items and two constructed response items.

On 5 of the 8 multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. On 1 of the 2 constructed response items in this domain, North Shore students received, on average, more than 85% of the available points.

On all of the items in the domain, North Shore students outperformed students in the region by percentages ranging from 3.4% to 19.4%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included 6 items related to the following Standards:

- CC.4.NF.1 which requires students to explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size and to use this principle to recognize and generate equivalent fractions.
- CC.4.NF.2 which requires students to compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1⁄2, to recognize that comparisons are valid only when the two fractions refer to the same whole, and to record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
- CC.4.NF.3a which requires students to understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- CC.4.NF.3c which requires students to add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
- CC.4.NF.3d which requires students to solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
- CC.4.NF.4b which requires students to understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number.

Operations and Algebraic Thinking

Students demonstrated their understanding of the domain of Operations and Algebraic Thinking on nine multiple choice items.

On six of the nine multiple choice items, more than 85% of the North Shore students answered the item correctly.

On all of the items in the domain, North Shore students outperformed students in the region by percentages ranging from 2.4% to 22.9%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included five items related to the following Standards:

- CC.4.OA.1 which requires students to interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5 as well as to represent verbal statements of multiplicative comparisons as multiplication equations.
- CC.4.OA.2 which requires students to multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
- CC.4.OA.3 which requires students to solve multistep word problems posed with whole numbers and having whole- number answers using the four operations, including problems in which remainders must be interpreted, represent these problems using equations with a letter standing for the unknown quantity, and

assess the reasonableness of answers using mental computation and estimation strategies including rounding.

- CC.4.OA.5 which requires students to generate a number or shape pattern that follows a given rule and to identify apparent features of the pattern that were not explicit in the rule itself.

Item Type

On average, North Shore students responded correctly to 85.4% of the multiple choice items for which data are available, exceeding the performance of the region by 12.2%.

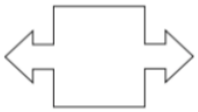
On average, North Shore students received 81.5% of the available points on constructed response items, exceeding the performance of the region by 16.5%, suggesting the strength of the students in responding to complex problems, showing their work, and explaining their thinking.

Areas of Focus ~ Fourth Grade Math ~ District

Curriculum Standards

Geometry

The average performance on the items in this domain was 75.5% and the average performance of North Shore students exceeded the performance of students in the region of 11.0%. On one of the two items within the domain the gap between the performance of North Shore students and the performance of the students in the region was less than 10% while the percentage of students responding correctly to the item was less than 85%.

Item	Standard	Percentage Correct	Performance Gap
28-MC What is the greatest number of lines of symmetry that can be drawn on the figure shown below?  A 0 B 1 C 2 D 4	4.G.3	72.41%	6.77%

Following is an overview of the way in which North Shore students responded to item 28:

Item	Blank		Response 1		Response 2		Response 3		Response 4	
28	#	%	#	%	#	%	#	%	#	%
	0	0	2	1%	3	2%	105	72%	35	24%

This suggests the need to ensure that all students have a solid understanding of and proficiency with symmetry.

- CC.4.G.3 which requires students to recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts and to identify line-symmetric figures and draw lines of symmetry.

Measurement and Data

The average performance on the items in this domain was 78.5% and the average performance of North Shore students exceeded the performance of students in the region of 13.6%. However, on one item within the domain the gap between the performance of North Shore students and the performance of the students in the region was less than 10% while the percentage of students responding correctly to the item was less than 85%.

Item	Standard	Percentage Correct	Performance Gap
29-MC What is the measure, in degrees, of an angle that is equivalent to $\frac{1}{360}$ of a circle? **A** 1 **B** 90 **C** 180 **D** 360	4.MD.5a	48.97%	-2.11%

Following is an overview of the way in which North Shore students responded to item 29:

Item	Blank		Response 1		Response 2		Response 3		Response 4	
29	#	%	#	%	#	%	#	%	#	%
	0	0	71	49%	39	27%	15	10%	20	14%

This suggests the need to ensure that all students have a solid understanding of and proficiency with angle measure as it relates to fractions of a circular arc.

- CC.MD5a which requires students to understand that an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

Numbers and Operations – Fractions

The average performance on the items in this domain was 88.3% and the average performance of North Shore students exceeded the performance of students in the region of 11.7%. On one of the items within this domain, the gap between the performance of North Shore students and the performance of the students in the region was less than 10% while the percentage of students responding correctly to the item was less than 85%.

Item	Standard	Percentage Correct	Performance Gap
3-MC Which comparison is true? A $\frac{2}{3} = \frac{8}{12}$ B $\frac{4}{9} = \frac{8}{9}$ C $\frac{3}{4} > \frac{9}{10}$ D $\frac{2}{4} > \frac{2}{3}$	4.NF.2	83.45%	3.39%

Following is an overview of the way in which North Shore students responded to item 3:

Item	Blank		Response 1		Response 2		Response 3		Response 4	
3	#	%	#	%	#	%	#	%	#	%
	0	0	121	83%	5	3%	12	8%	7	5%

This suggests the need to review and reinforce understanding of and proficiency with fractions in all of our students, particularly with respect to the related Standard focused on the comparison of fractions.

- CC.4.NF.2 which requires students to compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as ½; recognize that comparisons are valid only when the two fractions refer to the same whole; and record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Analysis of Fifth Grade Math Performance ~ District

Performance by Domain

Domain	Standard/Key Idea	Item #	District%	Region%	District Gap
Geometry	CCSS.Math.Content.5.G.B.3	31-MC	91.80%	81.54%	10.26%
		Average	**91.80%**	**81.54%**	**10.26%**
Measurement and Data	CCSS.Math.Content.4.MD.A.1	33-MC	64.75%	47.56%	17.19%
	CCSS.Math.Content.4.MD.A.2	15-MC	82.79%	68.95%	13.83%
	CCSS.Math.Content.5.MD.A.1	12-MC	84.43%	57.76%	26.67%
	CCSS.Math.Content.5.MD.A.1	43-CR	86.48%	56.18%	30.29%
	CCSS.Math.Content.5.MD.B.2	29-MC	91.80%	67.96%	23.85%
	CCSS.Math.Content.5.MD.C.4	09-MC	95.08%	84.41%	10.67%
	CCSS.Math.Content.5.MD.C.5a	18-MC	79.51%	68.68%	10.83%
	CCSS.Math.Content.5.MD.C.5b	01-MC	99.18%	91.68%	7.50%
	CCSS.Math.Content.5.MD.C.5c	30-MC	95.08%	78.53%	16.55%
	CCSS.Math.Content.5.MD.C.5c	39-CR	60.25%	44.08%	16.17%
		Average	**83.93%**	**66.58%**	**17.35%**
Numbers and Operations - Base Ten	CCSS.Math.Content.5.NBT.A.1	41-CR	80.33%	61.59%	18.73%
	CCSS.Math.Content.5.NBT.A.3a	36-MC	87.70%	70.47%	17.24%
	CCSS.Math.Content.5.NBT.A.3b	06-MC	89.34%	73.74%	15.61%
	CCSS.Math.Content.5.NBT.A.4	19-MC	92.62%	81.70%	10.92%
	CCSS.Math.Content.5.NBT.B.6	16-MC	87.70%	75.45%	12.25%
	CCSS.Math.Content.5.NBT.B.6	28-MC	95.90%	84.27%	11.63%
	CCSS.Math.Content.5.NBT.B.7	27-MC	71.31%	45.67%	25.64%
	CCSS.Math.Content.5.NBT.B.7	35-MC	97.54%	81.11%	16.43%
	CCSS.Math.Content.5.NBT.B.7	45-CR	96.72%	84.76%	11.97%
		Average	**88.80%**	**73.19%**	**15.60%**
Numbers and Operations - Fractions	CCSS.Math.Content.4.NF.C.5	02-MC	93.44%	77.07%	16.37%
	CCSS.Math.Content.4.NF.C.6	04-MC	93.44%	75.60%	17.84%
	CCSS.Math.Content.5.NF.A.1	32-MC	96.72%	81.28%	15.44%
	CCSS.Math.Content.5.NF.A.1	34-MC	90.98%	82.21%	8.78%
	CCSS.Math.Content.5.NF.A.2	21-MC	77.87%	53.73%	24.14%
	CCSS.Math.Content.5.NF.A.2	40-CR	87.70%	63.89%	23.81%
	CCSS.Math.Content.5.NF.B.4a	38-MC	70.49%	54.80%	15.69%
	CCSS.Math.Content.5.NF.B.4b	13-MC	67.21%	44.21%	23.00%
	CCSS.Math.Content.5.NF.B.5a	24-MC	89.34%	69.47%	19.87%
	CCSS.Math.Content.5.NF.B.5b	44-CR	81.97%	57.67%	24.30%
	CCSS.Math.Content.5.NF.B.6	03-MC	69.67%	46.94%	22.74%
	CCSS.Math.Content.5.NF.B.6	23-MC	83.61%	57.21%	26.39%
	CCSS.Math.Content.5.NF.B.6	37-MC	90.16%	70.61%	19.55%
	CCSS.Math.Content.5.NF.B.7a	26-MC	87.70%	76.87%	10.84%
	CCSS.Math.Content.5.NF.B.7c	20-MC	75.41%	59.75%	15.66%
	CCSS.Math.Content.5.NF.B.7c	42-CR	81.15%	59.07%	22.08%
		Average	**83.56%**	**64.40%**	**19.16%**
Operations and Algebraic Thinking	CCSS.Math.Content.5.OA.A.1	10-MC	82.79%	66.55%	16.23%
	CCSS.Math.Content.5.OA.A.2	08-MC	90.16%	81.46%	8.71%
		Average	**86.48%**	**74.00%**	**12.47%**

Strengths ~ Fifth Grade Math ~ District

Overall

On 19 of the 31 multiple choice items for which data are available, over 85% of North Shore students responded correctly to the item. On 3 of the 7 constructed response items, North Shore students obtained over 85% of the available points.

Across all items, the average percentage of North Shore students who responded correctly to an item was 85.3%. This was 17.3% higher than the average percentage of students in the region who responded correctly to an item.

On all of the 38 items, North Shore students outperformed the students in the region by percentages ranging from 7.5% to 30.3%.

Curriculum Standards

An analysis of performance by domain suggests that all of the domains, specifically Geometry, Measurement and Data, Numbers and Operations – Base Ten, Numbers and Operations – Fractions, and Operations and Algebraic Thinking were all areas of strength, with the average gaps between the performance of North Shore students and the students in the region at 10.3%, 17.4%, 15.6%, 19.2%, and 12.5%, respectively.

Geometry

Students demonstrated their understanding of the domain of Geometry on a single multiple choice items.

On the item in the domain, the percentage of students responding correctly to the item was 91.8% and North Shore students outperformed students in the region by 10.3%

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included the item related to the following Standard:

• CC.5.G.3 which requires students to understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

Measurement and Data

Students demonstrated their understanding of the domain of Measurement and Data on 8 multiple choice items and 2 constructed response items.

On four of the eight multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. On one of the two constructed response items, North Shore students obtained more than 85% of the available points. On all ten items within the domain, North Shore students outperformed students in the region by percentages ranging from 7.5% to 30.3%.

Areas of relative strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included nine items related to the following Standards:

- CC.4.MD.1 which requires students to know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec; to express measurements in a larger unit in terms of a smaller unit within a single system of measurement; and to record measurement equivalents in a two-column table.
- CC.4.MD.2 which requires students to use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of

a smaller unit and to represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

- CC.5.MD.1 which requires students to convert among different- sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi- step, real world problems.
- CC.5.MD.2 which requires students to make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) and to use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.
- CC.5.MD.4 which requires students to measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft., and improvised units.
  CC.5.MD.5a which requires students to find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base as well as to represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication
- CC.5.MD.5c which requires student to recognize volume as additive and to find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

Numbers and Operations - Base Ten

Students demonstrated their understanding of the domain of Numbers and Operations in Base Ten on 7 multiple choice items and 2 constructed response items.

On 6 of the 7 items multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. One of the two constructed response items within the domain, students received on average over 85% of the available points.

On all 9 items in the domain, North Shore students outperformed students in the region by percentages ranging from 10.9% to 25.6%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included nine items related to the following Standards:

- CC.5.NBT.1 which requires student to recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- CC.5.NBT.3a which requires students to read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
- CC.5.NBT.3b which requires students to compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
- CC.5.NBT.4 which requires students to round decimals to any place.
- CC.5.NBT.6 which requires students to find whole-number quotients of whole numbers with up to four-

  digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division and to illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

- CC.5.NBT.7 which requires students to add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the

relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Number and Operations - Fractions

Students demonstrated their understanding of the domain of Numbers and Operations – Fractions on 13 multiple choice items and 3 constructed response items.

On 7 of the 13 multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. On one of the three constructed response items, North Shore students received, on average, more than 85% of available points.

On all of the items in the domain, North Shore students outperformed students in the region by percentages ranging from 8.8% to 26.4%.

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included 15 items related to the following Standards:

- CC.4.NF.C.5 which requires students to express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.
- CC.4.NF.C.6 which requires student to use decimal notation for fractions with denominators 10 or 100.
- CC.5.NF.1 which requires students to add and subtract fractions with unlike denominators (including

  mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)

- CC.5.NF.2 which requires students to solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem and to use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.
- CC.5.NF.4a which requires students to apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- CC.5.NF.4b which requires student to find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths and to multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- CC.5.NF.5a which requires student to interpret multiplication as scaling (resizing) by comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
- CC.5.NF.5b which requires student to interpret multiplication as scaling (resizing) by explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
- CC.5.NF.6 which requires students to solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- CC. 5. NF.B.7a which requires students to interpret division of a unit fraction by a non-zero whole number, and compute such quotients.
- CC.5.NF.7c which requires students to solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem; for example, how much chocolate will each person get if 3 people share 1/2 lb. of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?

Operations and Algebraic Thinking

Students demonstrated their understanding of the domain of Operations and Algebraic Thinking on two multiple choice items.

On one of the two multiple choice items, more than 85% of the North Shore students answered the item correctly.

On both of the items in the domain, North Shore students outperformed students in the region by percentages of 8.7% and 16.2%.

An area of relative strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal to 10%, included one items related to the following Standard:

• CC.5.OA.A.1 which requires students to use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

Item Type

On 19 of the 31 multiple choice items, more than 85 percent of the North Shore students responded correctly to the item. On average, 86.0% of the North Shore students responded correctly the multiple choice items, exceeding the performance of students in the region, on average, by 16.4%.

The average number of points obtained on all constructed response items was 82.1%, exceeding the performance of students in the region, on average, by 21.1%. This provides additional evidence of our students' ability to unpack and solve complex problems, to show their work, and to explain their thinking.

Areas of Focus ~ Fifth Grade Math ~ District

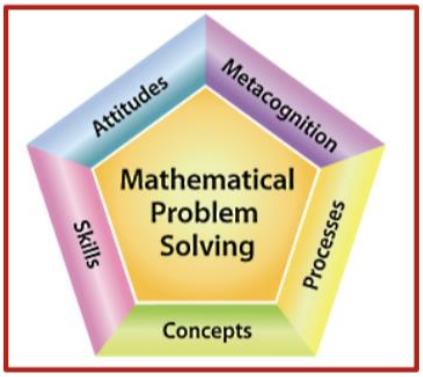
For no items was the gap between the performance of North Shore students and the performance of the students in the region less than 10% while the percentage of students responding correctly to the item was less than 85%.

Elementary Mathematics ~ Synthesis of Findings

Context

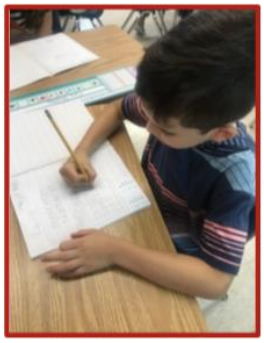
Across the elementary schools, we have moved from an approach to the teaching and learning of mathematics that was rooted in the development of procedural efficiency to an approach that has problem solving at its heart. Based upon the collaborative investigation by our Math Articulation Team of research-based approaches to math instruction, North Shore has developed, embraced, and continues to work to bring to life for all students a shared, district-wide philosophy of math learning.

The abilities to perform basic computations and follow procedures are not sufficient for students to be successful as mathematical thinkers who can solve complex, challenging, and novel problems, which are the types they will confront throughout their schooling and across their lives. The National Council of Teachers of Mathematics (2000) has stated that "problem solving is a fundamental part of mathematics - and everyday life. The ability to solve problems is both a goal of mathematics - and a tool within mathematics. As such, problem solving should be integrated into all mathematical learning situations." Our philosophy dictates that math instruction must engage all students as problem solvers in the construction of deep understanding of fundamental concepts, principles, and related skills; the cultivation of refined proficiency with the essential underlying skills of number sense, visualization, generalization, communication, and metacognition; and the development of sophisticated problem-solving abilities.



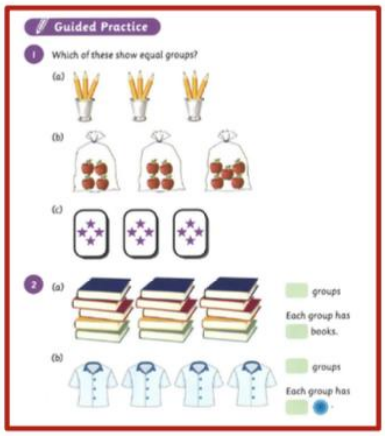
We have worked to make sense of how both our philosophy of math learning and the North Shore Shared Valued Outcomes can drive curriculum, instruction, and assessment in mathematics across classrooms. We have delineated the dispositions as well as specific skills of thinkers, problem solvers, collaborators, communicators, and committed individuals to be fostered within math learning at the elementary level. Furthermore, our work in continuing to improve our curriculum, instruction, and assessment aligns with and is informed by the Teaching and Learning pillar of our Strategic Plan "as together we will build a contemporary learning environment that inspires and reflects the natural delight and curiosity of our K-12 learners where student voice and ownership of learning are fostered and empowered through individual choice, active engagement, and purposeful challenge."

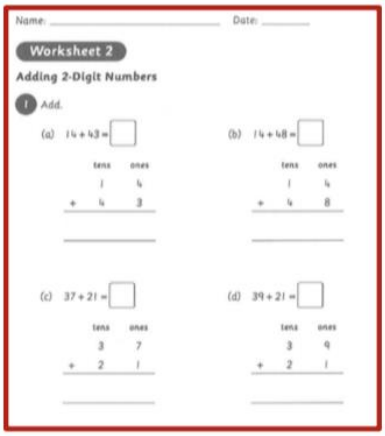
Knowing that our philosophy of math learning is comes to life when students solve problems, think deeply, share their ideas, and learn from one another, we adopted a research-based lesson structure to immerse students in the construction of their own understanding, the development of their proficiency with processes and skills, and the growth of positive attitudes about math and metacognitive thinking as they engage as mathematical thinkers and problem solvers. Following is an overview of the lesson structure with pictures of our students engaged in or samples of work from each segment.

Journal Writing	Students are required to make further sense of/synthesize their learning by engaging in journal writing about their experiences in the exploration and structured learning part of the lesson. Reflection and metacognition about learning experiences require students to begin developing and deepening their understanding.	Students engage in writing about their understandings through reflection and/or metacognition about their learning experiences based upon the prompts framed by the teacher.	Teacher selects meaningful prompts that will engage students in writing about their understanding of what they are learning in one or more of the following ways: • Descriptive • Evaluative • Creative • Investigative
  			
Reading and Reflection	Students read mathematical texts in order to reflect upon their work, further refine their understanding, think in a metacognitive way, and develop vocabulary and/or models of/for communicating mathematical ideas.	Students read mathematical texts and engage in discussion about their reading.	Teacher asks students to read mathematical texts to foster reflection, consideration and understanding of multiple methods, and mathematical communication.
   			

Segment of Lesson	Purpose	Students	Teacher
Exploration	Teachers allow students to explore in groups and make some kind of sense of the focus of the lesson. They build from their prior understandings and the ideas of their peers.	Students explore a problem in groups using materials and/or pictorial representations (depending of the phase of learning).	Teacher presents a meaningful problem. Teacher observes the students work in order to use their work to structure the learning.
  			
Structuring	Teachers help students develop and deepen their understanding of underlying concepts and principles by guiding students to make sense of the variety of approaches to the problem students demonstrated. The teacher is the students' role model in how one records mathematical ideas.	Students share their methods and consider the methods of other students. Students learn how to use the conventions of mathematics and communicate their ideas by observing how the teacher organizes (structures) the work.	Teacher elicits multiple methods from students, often moving toward (rather than picking) a target method for the lesson. Using student work, teacher models communication of thinking and organization of work.
			

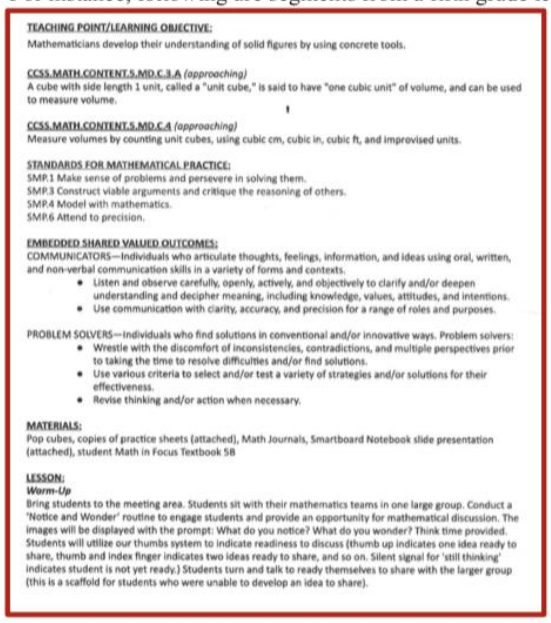
Practice • Guided • Independent	Students engage in guided and independent practice in order to further refine their understanding and develop their proficiency with associated skills.	Guided Practice: Students practice in groups, discussing the problems and documenting their thinking. Independent Practice: Students practice alone.	Teacher provides opportunities for guided and independent practice. Teacher can work with small groups. Teacher gathers formative assessment information.





We continue to strive to improve math learning for all students, particularly with respect to students' abilities to make sense of and solve complex, novel problems and the provision of appropriate support and challenge to all learners. The data from the State test scores provide one source of evidence about student performance among a diverse and growing assessment system which includes common assessments of student performance which follow each unit as well as cumulative assessments which occur at multiple points over the course of the year. In addition, other evidence includes the observation and discussion of the teaching and learning process, artifacts from the teaching and learning process, and anecdotal information from constituent groups.

For instance, following are segments from a fifth grade lesson plan incorporating the lesson structure.



TEACHING POINT/LEARNING OBJECTIVE:
Mathematicians develop their understanding of solid figures by using concrete tools.

CCSS.MATH.CONTENT.5.MD.C.3.A *(approaching)*
A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

CCSS.MATH.CONTENT.5.MD.C.4 *(approaching)*
Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

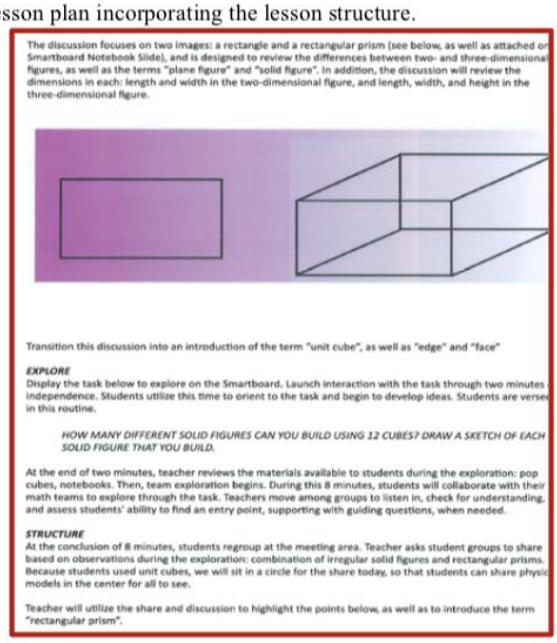
STANDARDS FOR MATHEMATICAL PRACTICE:
SMP.1 Make sense of problems and persevere in solving them.
SMP.3 Construct viable arguments and critique the reasoning of others.
SMP.4 Model with mathematics.
SMP.6 Attend to precision.

EMBEDDED SHARED VALUED OUTCOMES:
COMMUNICATORS—Individuals who articulate thoughts, feelings, information, and ideas using oral, written, and non-verbal communication skills in a variety of forms and contexts.
- Listen and observe carefully, openly, actively, and objectively to clarify and/or deepen understanding and decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication with clarity, accuracy, and precision for a range of roles and purposes.

PROBLEM SOLVERS—Individuals who find solutions in conventional and/or innovative ways. Problem solvers:
- Wrestle with the discomfort of inconsistencies, contradictions, and multiple perspectives prior to taking the time to resolve difficulties and/or find solutions.
- Use various criteria to select and/or test a variety of strategies and/or solutions for their effectiveness.
- Revise thinking and/or action when necessary.

MATERIALS:
Pop cubes, copies of practice sheets (attached), Math Journals, Smartboard Notebook slide presentation (attached), student Math in Focus Textbook 5B

LESSON:
Warm-Up
Bring students to the meeting area. Students sit with their mathematics teams in one large group. Conduct a 'Notice and Wonder' routine to engage students and provide an opportunity for mathematical discussion. The images will be displayed with the prompt: What do you notice? What do you wonder? Think time provided. Students will utilize our thumbs system to indicate readiness to discuss (thumb up indicates one idea ready to share, thumb and index finger indicates two ideas ready to share, and so on. Silent signal for 'still thinking' indicates student is not yet ready.) Students turn and talk to ready themselves to share with the larger group (this is a scaffold for students who were unable to develop an idea to share).



The discussion focuses on two images: a rectangle and a rectangular prism (see below, as well as attached on Smartboard Notebook Slide), and is designed to review the differences between two- and three-dimensional figures, as well as the terms "plane figure" and "solid figure". In addition, the discussion will review the dimensions in each: length and width in the two-dimensional figure, and length, width, and height in the three-dimensional figure.

Transition this discussion into an introduction of the term "unit cube", as well as "edge" and "face"

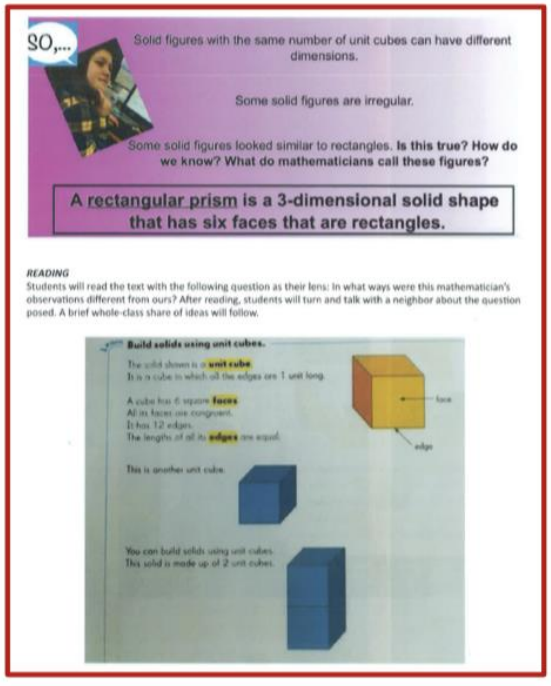
EXPLORE
Display the task below to explore on the Smartboard. Launch interaction with the task through two minutes independence. Students utilize this time to orient to the task and begin to develop ideas. Students are versed in this routine.

HOW MANY DIFFERENT SOLID FIGURES CAN YOU BUILD USING 12 CUBES? DRAW A SKETCH OF EACH SOLID FIGURE THAT YOU BUILD.

At the end of two minutes, teacher reviews the materials available to students during the exploration: pop cubes, notebooks. Then, team exploration begins. During this 8 minutes, students will collaborate with their math teams to explore through the task. Teachers move among groups to listen in, check for understanding, and assess students' ability to find an entry point, supporting with guiding questions, when needed.

STRUCTURE
At the conclusion of 8 minutes, students regroup at the meeting area. Teacher asks student groups to share based on observations during the exploration: combination of irregular solid figures and rectangular prisms. Because students used unit cubes, we will sit in a circle for the share today, so that students can share physic models in the center for all to see.

Teacher will utilize the share and discussion to highlight the points below, as well as to introduce the term "rectangular prism".



SO,...

Solid figures with the same number of unit cubes can have different dimensions.

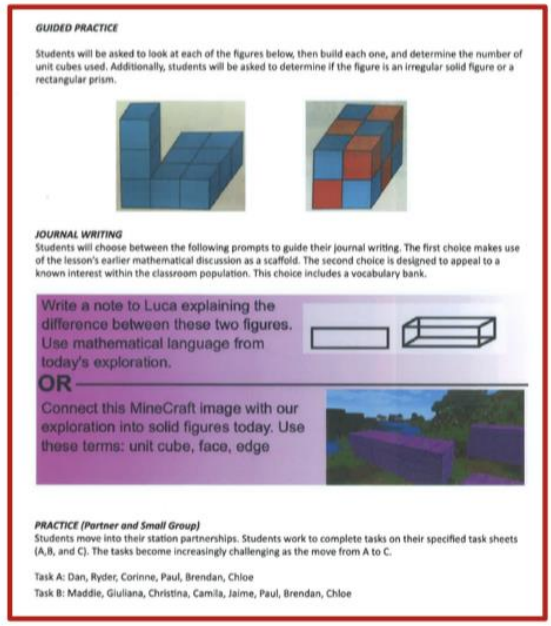
Some solid figures are irregular.

Some solid figures looked similar to rectangles. **Is this true? How do we know? What do mathematicians call these figures?**

A rectangular prism is a 3-dimensional solid shape that has six faces that are rectangles.

READING
Students will read the text with the following question as their lens: In what ways were this mathematician's observations different from ours? After reading, students will turn and talk with a neighbor about the question posed. A brief whole-class share of ideas will follow.

Build solids using unit cubes.
The solid shown is a **unit cube**.
It is a cube in which all the edges are 1 unit long.
A cube has 6 square **faces**.
All its faces are congruent.
It has 12 edges.
The lengths of all its **edges** are equal.
face
edge
This is another unit cube.
You can build solids using unit cubes.
This solid is made up of 2 unit cubes.



GUIDED PRACTICE

Students will be asked to look at each of the figures below, then build each one, and determine the number of unit cubes used. Additionally, students will be asked to determine if the figure is an irregular solid figure or a rectangular prism.

JOURNAL WRITING
Students will choose between the following prompts to guide their journal writing. The first choice makes use of the lesson's earlier mathematical discussion as a scaffold. The second choice is designed to appeal to a known interest within the classroom population. This choice includes a vocabulary bank.

Write a note to Luca explaining the difference between these two figures. Use mathematical language from today's exploration.

OR

Connect this MineCraft image with our exploration into solid figures today. Use these terms: unit cube, face, edge

PRACTICE (Partner and Small Group)
Students move into their station partnerships. Students work to complete tasks on their specified task sheets (A,B, and C). The tasks become increasingly challenging as the move from A to C.

Task A: Dan, Ryder, Corinne, Paul, Brendan, Chloe
Task B: Maddie, Giuliana, Christina, Camila, Jaime, Paul, Brendan, Chloe

Elementary Mathematics ~ Synthesis of Findings
Areas of Relative Strength

Overall Growth and Performance

As a result of this ongoing work with our philosophy and lesson structure, the elementary school students are not only growing as mathematical thinkers and problem solvers, but also developing very positive attitudes about mathematics and themselves as mathematicians. This growth is evident in the review of assessment data and in observations of students as they engage in math learning.

As discussed in a previous section of this report, the performance of students who chose not to take the State tests was not notably different from the performance of the students who did take the State tests on uniform local assessments. Therefore, it is fair to say that the careful analysis of data from State tests yields valuable information.

The overall performance of the students who took the Grades 3-5 Common Core Math Tests was strong. The percentages of students who achieved proficiency (i.e., received a score of 3 or 4) range from 89% to 92% and the percentages of students who achieved mastery (i.e., received a score of 4) range from 53% to 71%. Furthermore, longitudinal analyses suggest fairly steady increases in both proficiency and mastery rates since the implementation of the CCLS.

Math								
Grade	**Total**	**Tested**	**1**	**2**	**3**	**4**	**3 and 4**	**Opt-Out**
	206	151	2	15	54	80	134	55
Third		73%	1%	10%	36%	53%	89%	27%
	194	145	1	13	28	103	131	49
Fourth		75%	1%	9%	19%	71%	90%	25%
	179	122	3	7	25	87	112	57
Fifth		68%	2%	6%	20%	71%	92%	32%
Science								
	192	163	0	1	32	130	162	29
Fourth		85%	0%	1%	20%	80%	99%	15%

This data, in conjunction with qualitative and quantitative data from our own internal assessments, suggests strong student achievement, the type of learning required by our philosophy of math learning, as well as the transfer and application of learning across the years. Our work related to the transition to the CCLS, the adoption of Singapore Math, and the embrace and enactment of our philosophy of math learning is having significant positive impacts on our students' math learning.

We regularly engage the elementary teachers in rich, high quality professional development in the teaching and learning of math. For instance, we have had incredible and impactful opportunities to learn with world-renowned experts in math pedagogy, Dr. Yeap Ban Har and Greg Tang. In addition, we collaboratively explore the principles of math learning and share best practices during grade-level professional development days. Over the past few years, we have brought all teachers of math in the district together for a series of learning experiences to develop a shared understanding of our philosophy of math learning. These learning opportunities, which are regularly acclaimed by our teachers for their value and impact, have enhanced the already high quality of instruction provided by our teachers and significantly impacted the learning and performance of our students as suggested by a range of indicators.

Performance of Certain Sub-Groups

The Equity for All Learners pillar of our Strategic Plan states that, "given that a culture of connection and a sense of belonging are foundations for a healthy school community, we will build a safe environment that emphasizes acceptance, equity, inclusivity, cultural competency, and a respectful, open exchange of ideas for all learners." One of the action steps associated with this pillar is to close the achievement gaps for all sub-groups across all domains of student growth and development. Analyses of the performance of sub-groups on the State assessments suggested that there were no significant differences between the performances of males and females. Though past analyses have indicated some gender-based patterns with respect to the performance of particular cohorts, those do not appear in the current data. We continue our efforts to ensure gender equity in our STEM programs.

Performance within Particular Domains

The Common Core Standards of Mathematical Content are organized into specific domains, or categories, which delineate the progression of learning within those categories across years of schooling. The domains assessed on the Grades 3-5 Common Core Math tests are Operations and Algebraic Thinking, Numbers and Operations in Base Ten, Numbers and Operations – Fractions, Measurement and Data, and Geometry.

As indicated by the State assessment data as well as our own internal data, our transition to the Common Core coupled with the implementation of our philosophy of math learning and our transition to Singapore Math have supported the development of our students across domains, with particularly significant growth within the domains of Operations and Algebraic Thinking, Numbers and Operations in Base Ten, and Measurement and Data.

The table below includes the performance of North Shore students on the items within these domains.

Domain	Percentage or Gap	Third	Fourth	Fifth
Numbers and Operations – Base Ten	**Average Percentage of Points Received**	65.13%	83.56%	88.80%
	Average Gap	10.84%	16.75%	15.60%
Operations and Algebraic Thinking	**Average Percentage of Points Received**	82.70%	89.10%	86.48%
	Average Gap	8.05%	11.16%	12.47%
Measurement and Data	**Average Percentage of Points Received**	80.47%	78.53%	83.93%
	Average Gap	10.78%	13.62%	17.35%

At the elementary level, the Operations and Algebraic Thinking Domain focuses on the development of conceptual understanding of and procedural fluency with the use of numbers to add, subtract, multiply, and divide. Numbers emerge as tools students can use to identify and represent quantities, relationships, and patterns. Starting with understanding how to take apart and put together numbers within 10 and understanding relationships between parts and wholes, students build upon these skills to multiply and divide within 100, add and subtract decimals, and multiply and divide decimals to the hundredths place. Students apply these skills to find missing parts, solve problems with multiple steps, evaluate numerical expressions, determine patterns, and represent data. Within the Numbers and Operations in Base Ten Domain, students develop their understanding of and facility with place value. Over time, students construct understanding of the use and function of numbers, place value with whole numbers, and eventually place value with multi-digit numbers and decimals. Within the Measurement and Data Domain, students explore measurement and data by measuring objects and quantities as a means of collecting data. Students

develop the central understanding that numbers may be used as a means of classification based on quantity. Then, students begin to perform other operations, such as addition and subtraction, using the gathered data. Thus, the Measurement and Data domain requires students to apply their learning about numbers and operations.

Our transition to Singapore Math, dedication to our shared philosophy of math learning, and associated professional development have focused on the development of our students' conceptual understanding and facility with numbers and operations and their ability to apply that learning in situations like those called for in the use of data and measurement. The data reviewed and reflected upon for this report provide additional evidence of our students' strength in these areas.

Elementary Mathematics ~ Synthesis of Findings

Areas of Progress

Problem Solving

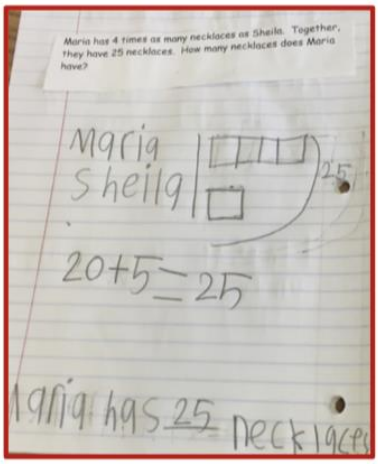
As discussed above, the growth of our students as problem solvers as they are immersed in authentic problem solving is central to our philosophy of math learning. We have devoted time and attention to the design and implementation of anchor tasks through which students can engage in the social co-construction of understanding within the collaborative exploration of rich mathematical tasks and the consideration of multiple approaches. In fact, we have adopted a research-based lesson structure to compel students to construct their own understanding as they engage as mathematical thinkers and problem solvers. Within this lesson structure, students explore and thoughtfully consider varied approaches to meaningful problems, structure their learning, journal their thinking, read and reflect, and practice. As a result of this work, our students have grown as problem solvers.

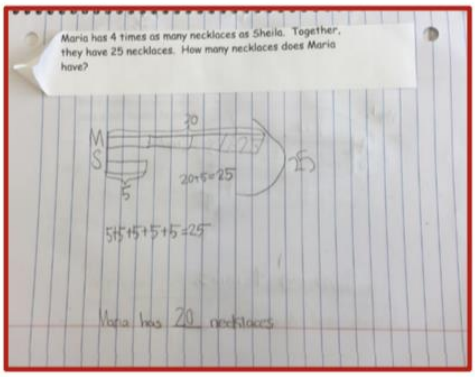
Additionally, our teachers have worked with our students to foster their perseverance in the face of unfamiliar types of problems and to help them to embrace the value of productive struggle in their learning. Teachers regularly incorporate complex, novel problems in their instruction and such problems are a part of our common assessments. These efforts have helped our students to feel more comfortable making sense of and persevering in solving such problems. Furthermore, our teachers continue to work to help students communicate their mathematical work and thinking in an understandable manner on paper. For instance, teachers ask students to consider the audience for their mathematical work and to ensure that the readers of their work can understand and follow their thinking. These efforts have helped students to organize their thinking as they present their work on problems.

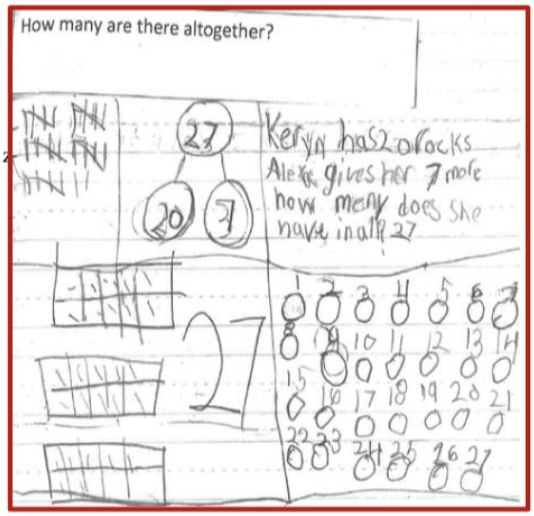
One indication of their developing proficiency is the students' work on the State assessments, particularly their work with respect to the constructed response items. As shown in the table below, the average gaps between the performance of North Shore students and the performance of the students in the region on the constructed response items are significant. Our own local assessment data also indicates our students' improvement with respect to problem solving.

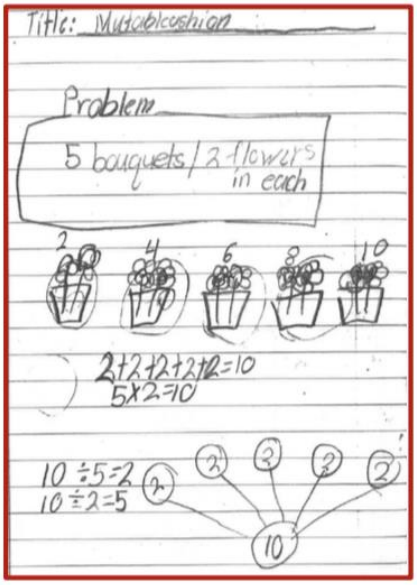
	Third Grade	Fourth Grade	Fifth Grade
Average Percentage of Points Received on Constructed Response Items	78.09%	81.51%	82.08%
Average Gap between the Performance of North Shore Students and the Performance Students in the Region	15.82%	16.45%	21.05%

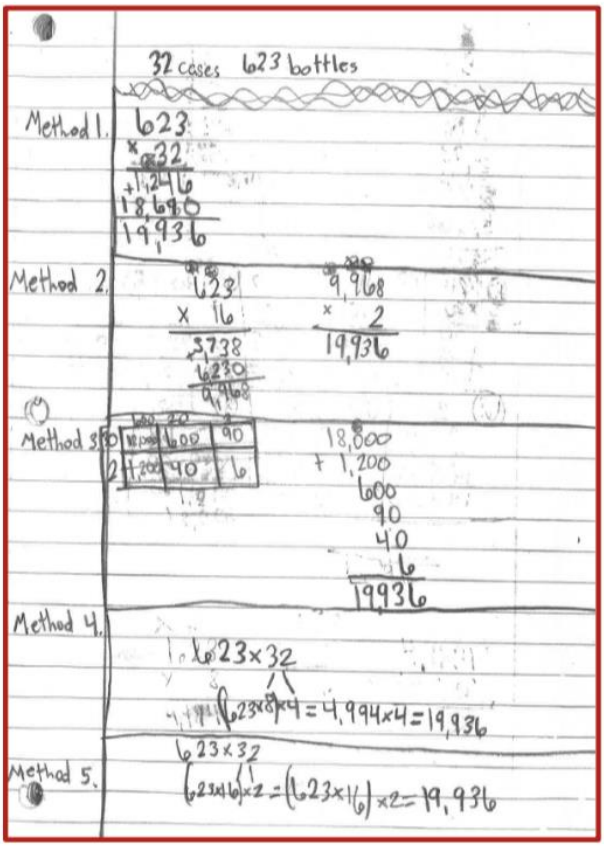
Following are a few examples of our students' work with problem solving and the consideration of multiple approaches including both visual and abstract representations.

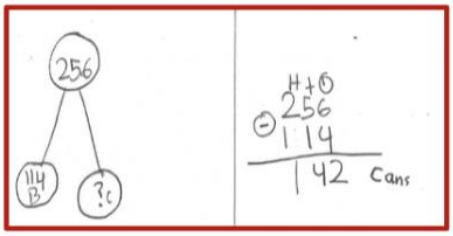












has 56 crayons. She wants to place an equal amount in four tubs. How many crayons are in each tub.

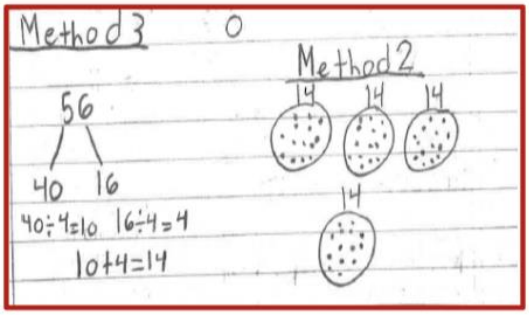
Method 4

56÷4=14

4x14=56

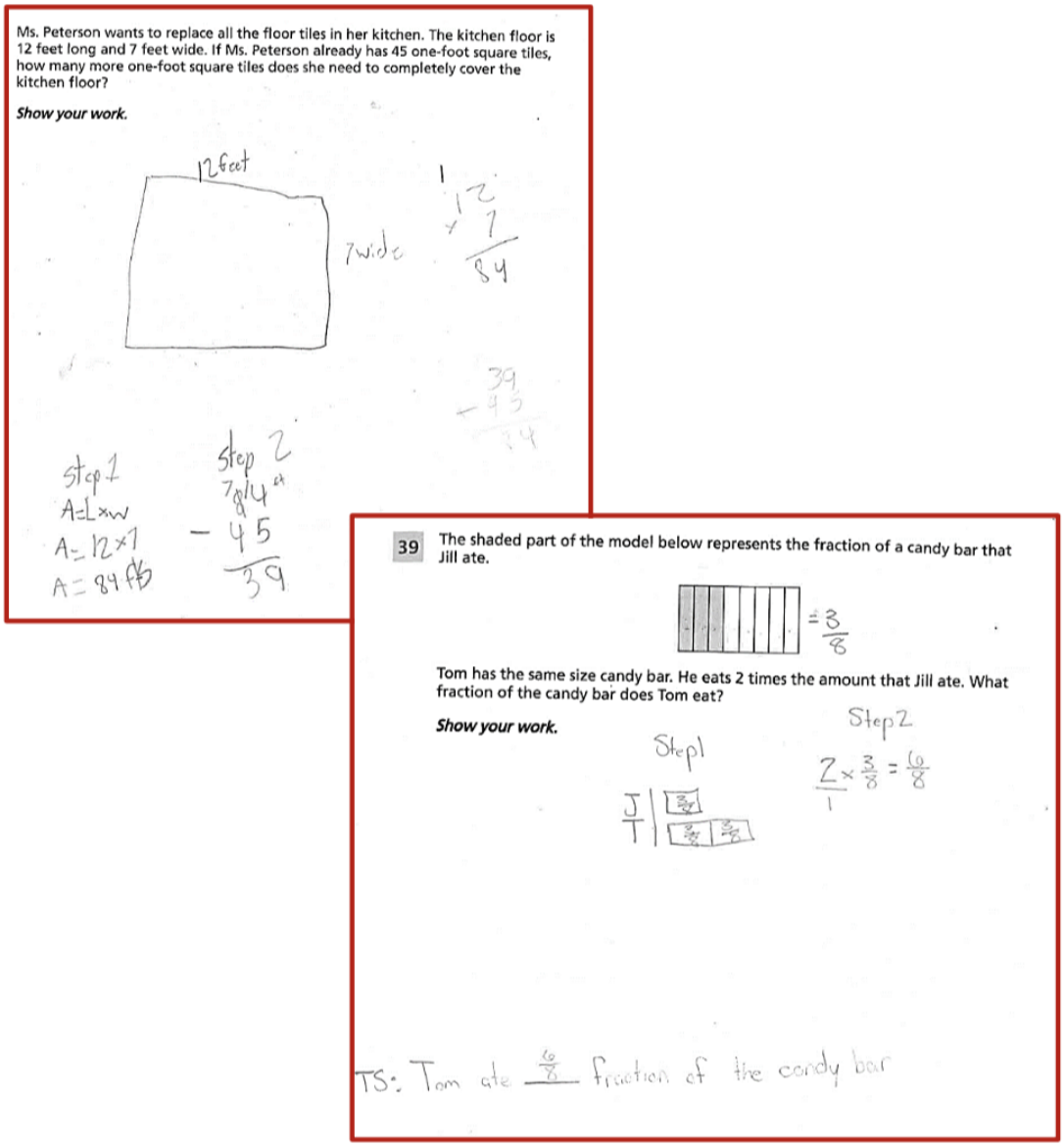
Method 1

14
4/56
-4↓
16
-16



Following are some samples of work in which randomly selected students are implementing problem solving strategies on the State test.

Fourth Grade



Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.

12 feet

7 wide

$12 \times 7 = 84$

$84 - 45 = 39$

Step 1

A = L x W

A = 12 x 7

A = 84 ft

Step 2

84

− 45

39

39 The shaded part of the model below represents the fraction of a candy bar that Jill ate.

$= \frac{3}{8}$

Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

Step1

J | T

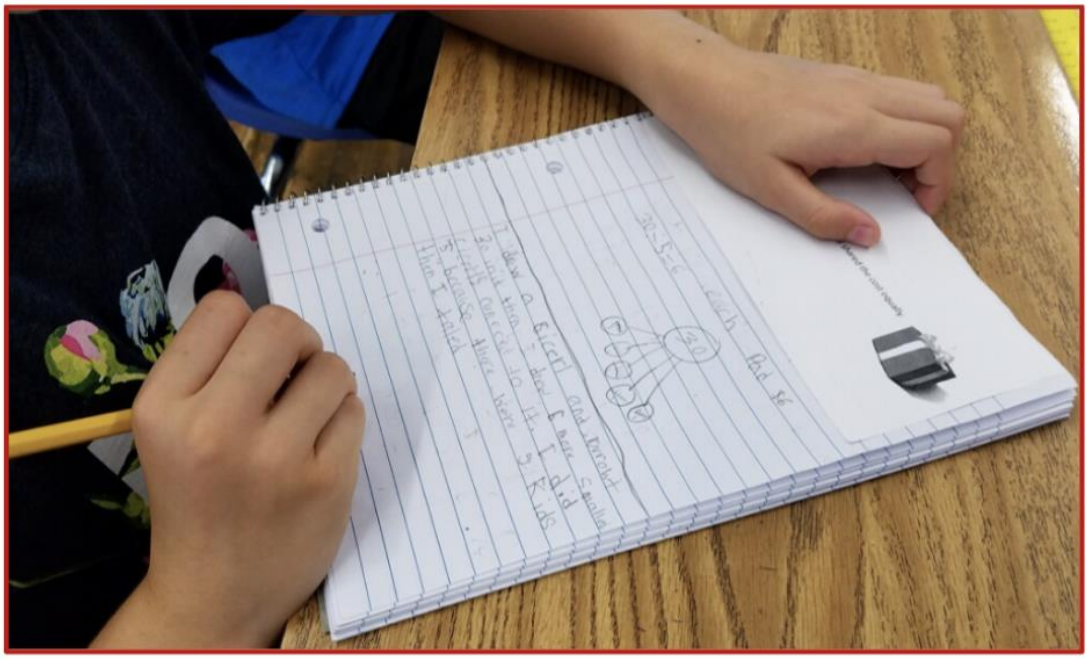
Step2

$\frac{2}{1} \times \frac{3}{8} = \frac{6}{8}$

TS: Tom ate $\frac{6}{8}$ fraction of the candy bar

Communication of Mathematical Thinking

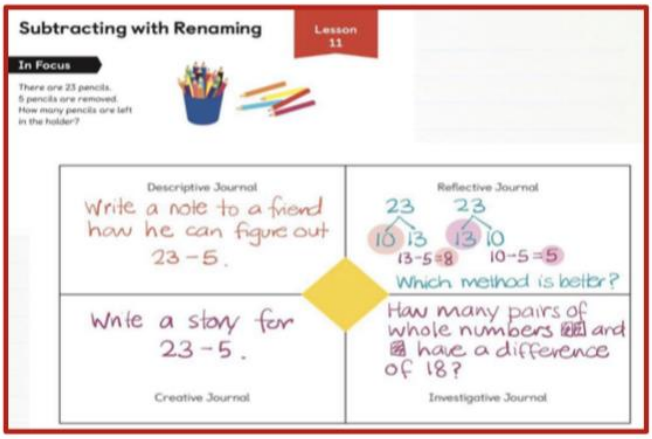
Based upon our own research and analyses of our students' mathematical work, we had identified the communication of mathematical thinking, particularly through writing, as an area of focus in our efforts to continuously improve the learning of our students. According to the National Council of Teachers of Mathematics (2000), the communication of one's thinking is a vital component of mathematics and mathematics education. "Through communication, ideas become objects of reflection, refinement, discussion, and amendment," (NCTM, 2000). When students are challenged to think and reason about mathematics and to communicate their thinking, they develop not only their understanding of concepts and principles, but also their proficiency with the clear communication of mathematical ideas. Students who have opportunities to engage in written and verbal communication about mathematics simultaneously communicate to learn mathematics and learn to communicate mathematically.



Last year, we focused professional development on the incorporation of journaling and on the types of journal prompts which could foster reflection, crystallization, and communication of mathematical thinking. Professional development opportunities included workshops during Superintendent's Conference Day and dedicated segments of STEM professional development days. Many teachers selecting mathematical journaling as the focus of their Individual Professional Development Plans. Feedback centered on the philosophy, the implementation of the lesson structure, and the use of journaling was regularly provided through the formal and informal observation processes.

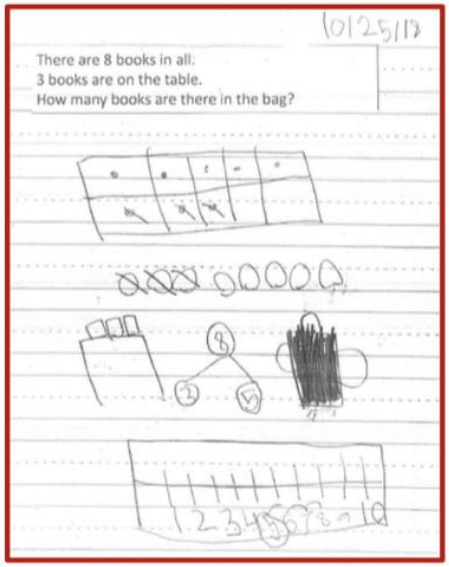
Types of Journal Prompts

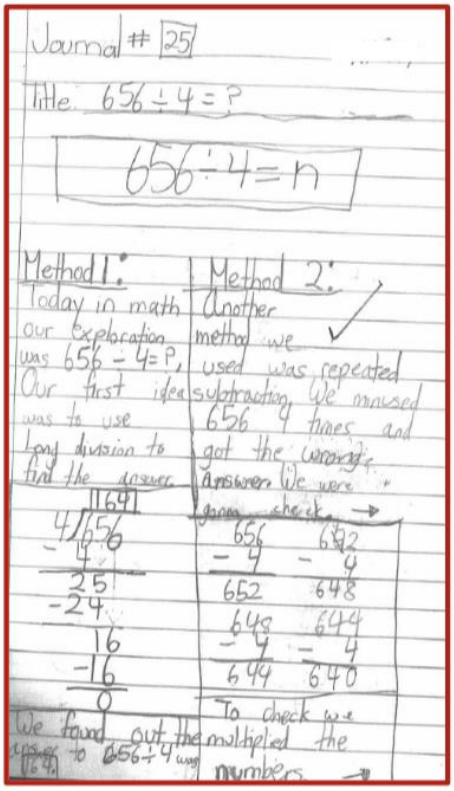
- Descriptive ~ the student explains one or more approach or perspective
- Evaluative or reflective ~ the student makes a judgement related to an approach or perspective, perhaps based on efficiency or preference
- Creative ~ the student creates something, such as his or her own problem or number story related to the situation or concept
- Investigative ~ the student engages in investigation or research, such as an exploration of which method will always work

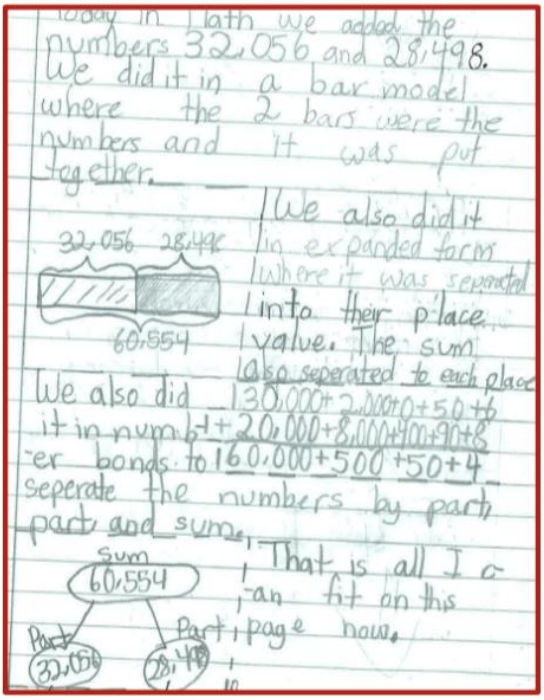


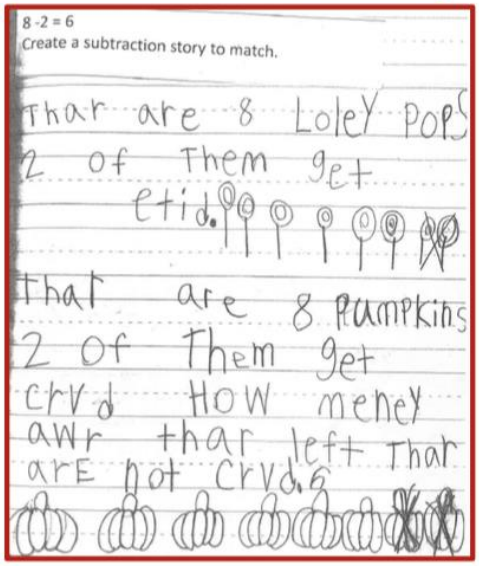
As a result of our focus on journaling, teachers have worked to incorporate their practice within the fabric of their instruction. A range of data sources suggest that students have grown with respect to the communication of their mathematical thinking. This year, we will continue this work with a focus on engaging students in higher order thinking by expanding the types of journaling prompts offered to students.

Across the elementary grade levels, teachers have embraced the use of journaling in their math instruction. Following are some journal entries completed by our students.









Following are some examples of students demonstrating their facility with the communication of their mathematical thinking in their responses on the State test.

Third Grade

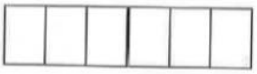
Gianna cuts a ribbon into equal pieces as shown below.

She uses 4 pieces of the ribbon for a project. What fraction of the ribbon does Gianna use for the project?

Explain how you found your answer.

Gianna uses $\frac{4}{6}$ of ribbon for her project because she had 6 pieces her denominator and she used 4 Pieces her numerator.

Gianna cuts a ribbon into equal pieces as shown below.



She uses 4 pieces of the ribbon for a project. What fraction of the ribbon does Gianna use for the project?

Explain how you found your answer.

She used 4/6. I knew that because I counted 6 Pieces in all so i knew 6 was the denomenator it also said she uses 4 Pieces so 4 was the numerator.

Performance in Geometry Domain

Across the grade levels, the performance of our students on the items in all domains was strong as suggested by positive gaps between the performance of North Shore students and the performance of students in the region. However, in past year, in comparison to the performance of our students on items related to other domains, their performance on the items dedicated to the Geometry domain was not as strong as performance in other domains. Generally, in comparison to the average number of points our students received on items within other domains, the average percentages of points received on items within the Geometry domain were lower and the gaps between the percentages by which the performance of the students of North Shore exceeded the performances of the students in the region were not as large. This information complemented other sources of information which suggest the need to continue to review the progression of students' learning in this domain by reviewing our curriculum and instruction.

The development of geometric and spatial thinking is an important part of math learning for a range of reasons including the connection of mathematics with the physical world and the support of the development of arithmetic concepts and skills. The study of geometry entails much more than the study of vocabulary. The progressions within the CCLS delineate three focal areas for elementary geometry: geometric shapes, their components (e.g., sides, angles, faces), their properties, and their categorization based on those properties; composing and decomposing geometric shapes; and spatial relations and spatial structuring.

Students' responses to the items on the State assessments reinforce a range of indicators that a cohort of our students struggle with the categorization of geometric shapes based on their properties. Related research indicates that students develop through a series of levels of geometric and spatial thinking and that this development is fostered through instruction (Progressions for the Common Core State Standards in Mathematics, 2013). At the first level, the visual/syncretic level, students recognize shapes (e.g., a rectangle "looks like a door"). At the second level, the descriptive level, students perceive properties of shapes (e.g., a rectangle has four sides, all of its sides are straight, and opposite sides have equal length). At the next level, the analytic level, students characterize shapes by their properties (e.g., a rectangle has opposite sides of equal length and four right angles). At the final level, the abstract level, students understand relationships among classes of figures (e.g., a rectangle is a parallelogram because it has all of the properties of a parallelogram).

The learning of geometry must be approached as the development of understanding of underlying concepts and principles rather than the learning of discrete facts. The learning cannot progress in the same way as learning about numbers, where the size of the numbers is gradually increased and new kinds of numbers are considered later. In learning about shapes, it is important to vary the examples in many ways so that students do not learn limited concepts that they must later unlearn. Across the grade levels, students must experience all of the properties of shapes, recognizing and working with these properties in increasingly sophisticated ways. Our curriculum and instruction in geometry must unfold systematically, deeply, and extensively, building on related experiences in previous years. We have worked and continue to work to improve curriculum and instruction in geometry.

As a result, performance on local and State assessments suggest our growth in this area.

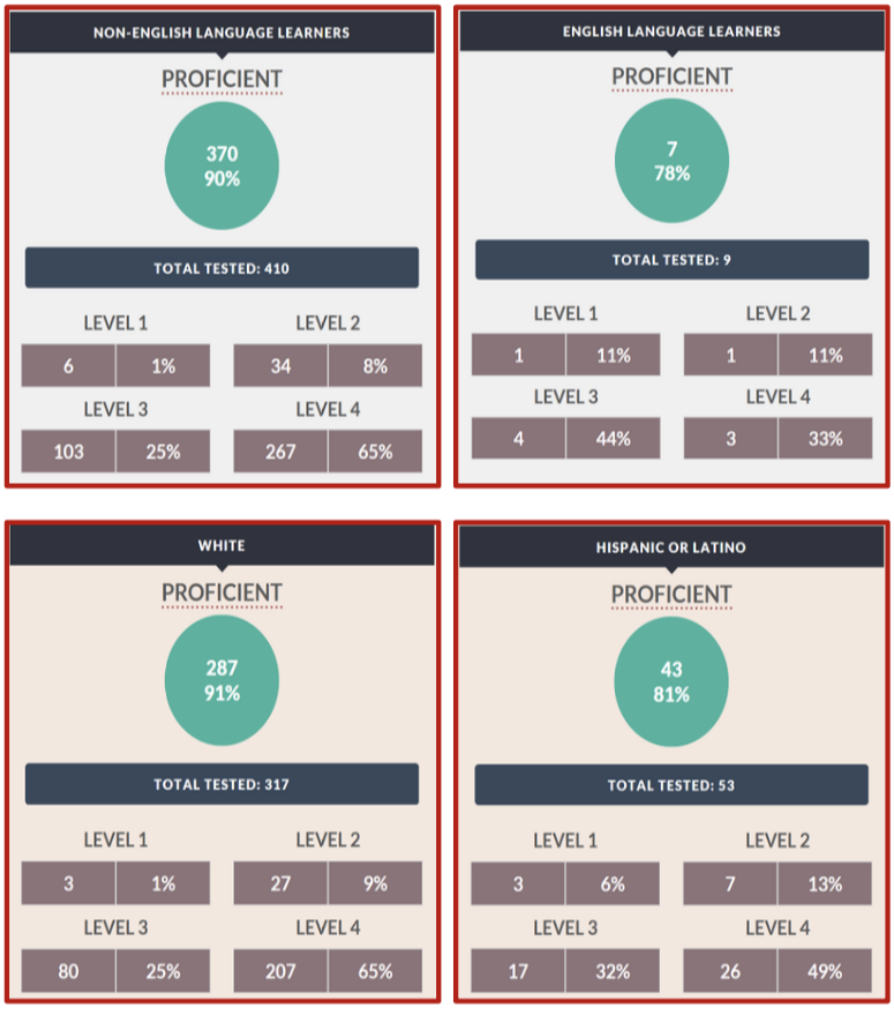
Domain	State Test Percentage or Gap	Third	Fourth	Fifth
Geometry	**Average Percentage of Points Received**	86.18%	75.52%	91.80%
	Average Gap	9.15%	10.98%	10.26%

Elementary Mathematics ~ Synthesis of Findings
Areas of Focus

Performance of Certain Sub-Groups

One of the action steps of the Equity for All Learners pillar of our strategic plan is to close the achievement gaps for all sub-groups across all domains of student growth and development. The results of our longitudinal analyses suggest significant gaps in the proficiency and mastery rates of students identified as receiving ELL services, many of whom are also identified as Hispanic or Latino.

I have worked with Ana Aguiar, Director of World Languages and ENL, to provide opportunities for the Math Support Team to meet with the ENL teachers in order to identify potential ways of supporting our English Language learners in their learning of mathematics. We have identified and begun to implement research-based approaches to enhance the success of these students. Specifically, we have enhanced our use of instructional practices to improve language and content acquisition such as using question/response frames to foster deep thinking and rich discussions around math and capitalized on the use of English language development standards to inform planning and facilitation. This will continue to be an area of focus.



A data analysis guidance document released by New York State suggests that the most effective way to analyze data from the NYS Exams is to seek patterns in Domain Area *(Operations and Algebraic Thinking, Ratios and Proportional Relationships, The Number System, Expressions and Equations, Geometry).* It is with caution that a reader should use data from specific standards, due to relatively few problems available for each standard. Further, it is with extreme caution that a reader should draw conclusions about instruction (or suggest changes to instruction) based on data gleaned from performance on individual problems.

In light of this, we remain pleased to find that our Math 6, Math 7, Algebra, Geometry, and Algebra II exam results demonstrated patterns of excellence across virtually every domain area. There were only three items on any of the exams on which we did not exceed regional performance (BOCES data from across Nassau County): one item on the Algebra I Regents for which we measured at -3% relative to the region, and two items on Algebra II Regents for which we measured at -1% and -11% relative to the region.

2019 - NYS Exam Outcomes

Subject	Test	# L1	# L2	# L3	# L4	Total	L3+L4	% L1	% L2	% L3	% L4	L3+L4%	Region L3+L4%	Regional Gap
Mathematics	Grade 3 Math	3	15	54	80	152	134	2%	10%	36%	53%	88%	69%	19%
	Grade 4 Math	1	13	28	103	145	131	1%	9%	19%	71%	90%	67%	24%
	Grade 5 Math	3	7	25	87	122	112	2%	6%	20%	71%	92%	61%	31%
	Grade 6 Math	5	10	31	66	112	97	4%	9%	28%	59%	87%	63%	23%
	Grade 7 Math	2	5	29	53	89	82	2%	6%	33%	60%	92%	58%	34%
	Grade 8 Math	1	3	3	0	7	3	14%	43%	43%	0%	43%	38%	5%
Mathematics Totals		**15**	**53**	**170**	**389**	**627**	**559**	**2%**	**8%**	**27%**	**62%**	**89%**		

2018 - NYS Exam Outcomes

Subject	Test	# L1	# L2	# L3	# L4	Total	L3+L4	% L1	% L2	% L3	% L4	L3+L4%	Region L3+L4%	Regional Gap
Mathematics	Grade 3 Math	3	16	51	70	140	121	2%	11%	36%	50%	86%	66%	20%
	Grade 4 Math	2	7	30	88	127	118	2%	6%	24%	69%	93%	63%	30%
	Grade 5 Math	4	14	40	83	141	123	3%	10%	28%	59%	87%	59%	28%
	Grade 6 Math	2	12	34	64	112	98	2%	11%	30%	57%	88%	61%	26%
	Grade 7 Math	5	19	50	44	118	94	4%	16%	42%	37%	80%	58%	21%
	Grade 8 Math	1	4	0	0	5	0	20%	80%	0%	0%	0%	31%	-31%
Mathematics Totals		**17**	**72**	**205**	**349**	**643**	**554**	**3%**	**11%**	**32%**	**54%**	**86%**		

Areas of Strength Related to Exam Outcomes

Math 6

Our Math 6 exams held the same very strong percentage of L3 and L4 outcomes that we observed last year. Not only did the cohort taking the Math 6 exam maintain their own strong performance that they had in 5th grade (87% Level 3 & Level 4 both years), but our Math 6 course instruction remained at the same high level from 2018 to 2019 (88% L3+L4 in 2018, 87% L3&L4 in 2019).

As mentioned above, our students showed strong results in every domain, but one area that particularly stood out was **The Number System,** in the clusters that include division of fractions by fractions, division of multidigit numbers, and common factors and multiples. Our students also demonstrated excellence in the area of **Expressions and Equations**, in some cases exceeding regional performance by 20-25%. Our students also excelled in the area of **Geometry**, particularly on several problems that required them to find the area of composite figures.

Math 7

Our students were highly successful on the Math 7 exams last year, as evidenced both by growth that the cohort demonstrated from their 6th to 7th grade year (88% L3&L4 in 2018 to 92% in 2019), as well as the growth that our instructional team demonstrated in their Math 7 results (in 2018, the Math 7 course had 80% at L3&L4, with 37% at L4, while in 2019, Math 7 had 92% at L3&L4, with 60% at L4). Notably, our Math 7 program was ranked #1 in the region for percentage of students scoring Level 3 + Level 4.

One area of particular strength for Math 7 was in the domain area of **Ratios and Proportional Relationships**, which included several problems that nearly every single one of our 89 students who tested answered correctly, and four problems on which our students scored at least 20% higher than students across the region. In addition, our students demonstrated excellent understanding of **Expressions and Equations**, with consistently strong performance on these problems overall as well as in relation to students across the region.

While not a content area, one area of particular strength for Math 7 was the ability to earn full credit on constructed response problems. 75% or more of our students earned full credit on all but two of the constructed response problems. Last year, our Math 7 teachers coordinated their efforts to place a particular emphasis on mathematics journaling during math instruction, and routinely reflected on methods and approaches that were and were not working throughout the year. This practice is specifically aligned to our district-wide approach to mathematics teaching and learning.

Math 8

Our Math 8 exam is difficult to use as a tool for drawing valid conclusions about student performance. We had 29 Math 8 students last year, only 7 of whom sat for the exam. These 7 students did perform more strongly overall than the five students who took the exam the prior year. In 2018, none of the 5 students achieved a L3 or L4 score, while in 2019, 43% (3 of the 7 students who took the exam) achieved L3. Again, while this potentially indicates a promising trend, it is very difficult to make generalizations using such a small number of students.

These seven students demonstrated particular strength in the area of **Functions**, where they exceeded the performance of the region on every problem within this domain, and **Statistics and Probability**, where there were three test items that every single student answered correctly (which resulted in answering those items correctly at a rate of >20% higher than the region).

2019 - Math Regents Outcomes

Subject	Test	# L1	# L2	# L3	# L4	# L5	Total	L3+L4+L5	% L1	% L2	% L3	% L4	% L5	L3 + L4 + L5 %	Region L3+L4 + L5%	Regional Gap
Mathematics	Regents Common Core Algebra I - Aug	0	0	2	3	0	5	5	0%	0%	40%	60%	0%	100%		
	Regents Common Core Algebra I - Jan	1	0	2	2	0	5	4	20%	0%	40%	40%	0%	80%	41%	39%
	Regents Common Core Algebra I - Jun	0	0	34	75	101	210	210	0%	0%	16%	36%	48%	100%	85%	15%
	Regents Common Core Algebra II - Aug	0	1	3	1	0	5	4	0%	20%	60%	20%	0%	80%		
	Regents Common Core Algebra II - Jun	0	0	11	84	119	214	214	0%	0%	5%	39%	56%	100%	94%	6%
	Regents Common Core Geometry - Aug	2	1	0	0	2	5	2	40%	20%	0%	0%	40%	40%		
	Regents Common Core Geometry - Jun	0	3	47	35	89	174	171	0%	2%	27%	20%	51%	98%	84%	15%

2018 - Math Regents Outcomes

Subject	Test	# L1	# L2	# L3	# L4	# L5	Total	L3+L4+L5	% L1	% L2	% L3	% L4	% L5	L3 + L4 + L5 %	Region L3+L4 + L5%	Regional Gap
Mathematics	Regents Common Core Algebra I - Aug	0	0	1	0	2	3	3	0%	0%	33%	0%	67%	100%		
	Regents Common Core Algebra I - Jan	1	1	0	0	1	3	1	33%	33%	0%	0%	33%	33%	44%	-10%
	Regents Common Core Algebra I - Jun	2	1	38	88	74	203	200	1%	0%	19%	43%	36%	99%	82%	16%
	Regents Common Core Algebra II - Aug	0	1	0	0	0	1	0	0%	100%	0%	0%	0%	0%		
	Regents Common Core Algebra II - Jun	0	2	34	58	95	189	187	0%	1%	18%	31%	50%	99%	93%	6%
	Regents Common Core Geometry - Aug	3	3	5	1	1	13	7	23%	23%	38%	8%	8%	54%		
	Regents Common Core Geometry - Jan	0	0	1	0	0	1	1	0%	0%	100%	0%	0%	100%	41%	59%
	Regents Common Core Geometry - Jun	2	3	82	52	113	252	247	1%	1%	33%	21%	45%	98%	79%	19%
Mathematics Totals		**8**	**11**	**161**	**199**	**286**	**665**	**646**	**1%**	**2%**	**24%**	**30%**	**43%**	**97%**		

Student performance on Regents Exams in June 2019 showed improvement in Mastery across the board when compared to 2018 outcomes.

Algebra

Our results on the Algebra exam represents a manifestation of the outstanding preparation they received in earlier grades, particularly in the areas of **Functions**, **Equations**, and **Expressions.** These areas are directly related to areas of relative strength in Math 6 and Math 7. In addition, they are areas where our Algebra teachers take a decidedly conceptual and exploratory approach to student learning - an approach strongly aligned to our district-wide approach to mathematics teaching and learning.

Geometry

Continuing a pattern of strength from earlier years, our Geometry students universally excelled in the domain area of **Expressing Geometric Properties with Equations.** Students demonstrated that they could successfully transfer and build upon their conceptual understandings and skills related to writing and solving equations to a new mathematical setting.

Algebra II

Further building upon strengths of prior years, our students demonstrated outstanding performance in the domains of **Building Functions** and **Interpreting Functions**. These areas represent the foundation upon which conceptual understandings in Algebra are based, most notably supporting students' ability to graphically visualize and represent algebraic functions.

Areas of Strength Related to Qualitative Student and Teacher Measures

Embrace of the North Shore Philosophy of Teaching and Learning Mathematics
Since the beginning of our PD efforts, teachers have been taking steps to understand and implement the instructional techniques discussed in the philosophy document.

- **Willingness to Take a Risk**. At both the middle and high school level, teachers have begun to incorporate ideas and invite their director in to help provide feedback, further their understanding, and co-plan.

- **Increased Commitment to Opening Lessons with Exploration, Shift to Greater Student Discourse.** Using information gathered from grade level common planning meetings and both formal and informal observations, anecdotal evidence suggests a recent increase in teachers actively building their lesson plans to include more exploratory opportunities and using student input during the lesson to drive the learning.

Attending to Differentiated Learning Opportunities at the Middle Level

- **Strengthening AIS Program.** This year, our 6-8 AIS is poised to have an even stronger presence, in that we are now staffed with a full 1.0 at each grade level and have devised a routine meeting schedule in order to ensure consistency and build the program across grade levels. Further, data gleaned from our new universal screening tool should help us to more accurately target student learning needs.

- **Strengthening Enrichment Program.** This year, our 6-8 Enrichment is fully staffed for the first time, with teachers routinely pushing in to support learning at all three grade levels. Teachers have good articulation with one another and will be continually revisiting our approach in order to develop optimal learning experiences for our students.

Areas of Focus

Further Implementation of the North Shore Math Teaching and Learning Philosophy
While the North Shore Philosophy for Math Teaching and Learning is multifaceted and could take years for a teacher to fully master, it is also possible to see significant change by making small, deliberate adaptations to practice. This year, as a department, we see potential to improve across the board by strengthening the following practices:

<u>Journaling</u>
One area that we believe is valuable to explore is not related to a particular content domain area, but to the development of strong mathematical practices. One mathematical practice on which we will be placing particular emphasis i/s attention to precision and mathematical communication. In analyzing our outcomes on the constructed response problems, particularly in Math 6, Math 8, and Algebra, we noticed an opportunity to increase the percentage of points earned as well as the percentage of constructed response items earning full credit. While our middle school teachers have begun to practice journaling in class, we believe an increased focus on a collective effort to add **mathematical journaling** to routine classroom practice, and to

continually refine and improve our use of this practice as an instructional technique, will contribute to students' stronger ability to communicate with precision.

Exploration Before Structuring

While many teachers have begun to take an approach that includes allowing students to grapple with an open ended question before formalizing a concept, both formal and informal observations indicate that we still have a lot of progress to make in this area.

Advancing a Growth Mindset in Teachers and Students

The notion of Growth Mindset is directly linked to the "Belief" component of the Problem Solving pentagon. At the middle and high school levels, there is an opportunity for us to cohesively move from a fixed to a growth mindset, particularly with regard to placement of students in courses.

Refinement of Approach to AIS and Enrichment

While our AIS and Enrichment delivery have improved over the past several years, opportunity for growth remains in solidifying our structure.

- Who should be recommended for AIS or Enrichment and why?
- How do we determine if a student is "at risk?"
- If a student is recommended for additional support for either AIS or Enrichment, what mindset messages, if any, does this send to students, parents, and teachers, and how does this impact student success and growth?
- What is the best instructional model for AIS and Enrichment?

Action Plan

Department Meeting Time Dedicated to Shared Learning

Similar to the approach being taken by ELA, teachers will dedicate Monday department meeting time this year to a comprehensive study of a topic and implementation of new techniques intended to grow their practice in one of the areas related to our goals. The topics from which teachers could choose are:

- Journaling
- Exploration Before Structuring
- Growth Mindset
- Dissecting the Concept: Problem Solving vs. Solving Problems
- Differentiated Instruction

Throughout the year, teachers will conduct research, create plans, implement those plans, debrief, collect feedback and refine, and implement again. Teachers will reflect together and share their findings with one another. Not only does meaningful learning come from within (oneself and also from among peers), but the selection of these five topics is directly linked to our departmental areas of growth. Continually visiting these areas will contribute to consistent messaging to teachers that these areas are important for all of us to keep at the forefront.

Target Teacher Feedback

While every teacher is working on unique aspects of his/her own practice, we can provide a strong and consistent message by ensuring that feedback on any lesson (formal/informal)

includes commentary on how to move to their next level with regards to the areas we are targeting as a department (journaling, exploration, mindset, differentiation, and problem solving in general).

Analysis of Fourth Grade Science Performance ~ District

Performance by Item

Standard/Key Idea	Question #	Item Type	District%	Region%	District Gap
S4 Living Environment	01	MC	98.77%	95.77%	3.00%
S4 Living Environment	02	MC	95.71%	95.39%	0.31%
S4 Living Environment	03	MC	90.18%	90.13%	0.06%
S4 Living Environment	04	MC	82.82%	83.23%	-0.41%
S4 Living Environment	05	MC	84.66%	80.01%	4.65%
S4 Living Environment	06	MC	85.28%	77.10%	8.18%
S4 Living Environment	07	MC	76.69%	69.45%	7.24%
S4 Living Environment	08	MC	95.09%	95.11%	-0.02%
S4 Living Environment	09	MC	74.85%	69.74%	5.10%
S4 Living Environment	10	MC	92.02%	87.25%	4.78%
S4 Living Environment	11	MC	93.87%	88.95%	4.92%
S6 Interconnectedness	12	MC	92.02%	86.30%	5.73%
S4 Living Environment	13	MC	91.41%	78.85%	12.57%
S4 Living Environment	14	MC	89.57%	84.07%	5.50%
S4 Living Environment	15	MC	86.50%	77.74%	8.76%
S4 Physical Setting	16	MC	89.57%	83.08%	6.50%
S4 Physical Setting	17	MC	80.37%	77.26%	3.10%
S4 Physical Setting	18	MC	90.80%	79.92%	10.88%
S4 Physical Setting	19	MC	95.09%	88.13%	6.96%
S4 Physical Setting	20	MC	98.16%	94.00%	4.16%
S4 Physical Setting	21	MC	87.12%	75.76%	11.36%
S4 Physical Setting	22	MC	97.55%	95.11%	2.44%
S4 Physical Setting	23	MC	52.49%	56.59%	-4.10%
S4 Physical Setting	24	MC	92.02%	76.76%	15.26%
S4 Physical Setting	25	MC	87.73%	84.22%	3.51%
S4 Physical Setting	26	MC	87.12%	79.14%	7.98%
S4 Physical Setting	27	MC	77.91%	76.78%	1.14%
S4 Physical Setting	28	MC	99.39%	96.07%	3.31%
S4 Physical Setting	29	MC	87.73%	75.37%	12.36%
S2 Information Systems	30	MC	90.18%	86.96%	3.22%
S1 Scientific Inquiry	31	CR	80.98%	73.66%	7.32%
S1 Scientific Inquiry	32	CR	95.09%	91.47%	3.63%
S6 Interconnectedness	33	CR	90.18%	86.00%	4.19%
S1 Scientific Inquiry	34	CR	79.14%	66.63%	12.51%
S4 Living Environment	35	CR	84.66%	72.55%	12.11%
S4 Physical Setting	36	CR	92.64%	91.12%	1.52%
S4 Living Environment	37	CR	85.28%	73.50%	11.77%
S4 Living Environment	38	CR	95.09%	87.38%	7.71%
S4 Living Environment	39	CR	92.64%	84.15%	8.49%
S4 Living Environment	40	CR	87.12%	76.46%	10.66%
S4 Physical Setting	41	CR	97.55%	94.25%	3.30%
S4 Living Environment	42	CR	73.01%	71.29%	1.71%
S4 Physical Setting	43	CR	67.12%	68.28%	-1.15%
S4 Physical Setting	44	CR	92.02%	81.62%	10.41%
S4 Physical Setting	45	CR	82.82%	81.86%	0.96%
S0 Multiple Standards	STA1-1a	CR	61.35%	63.50%	-2.15%
S0 Multiple Standards	STA1-1b	CR	52.15%	50.72%	1.42%
S0 Multiple Standards	STA1-2	CR	86.81%	81.66%	5.15%
S0 Multiple Standards	STA1-3	CR	87.12%	81.22%	5.90%
S0 Multiple Standards	STA1-4	CR	96.32%	89.32%	7.00%
S0 Multiple Standards	STA1-5	CR	81.80%	72.77%	9.03%
S0 Multiple Standards	STA2-1	CR	95.40%	94.63%	0.77%
S0 Multiple Standards	STA2-2	CR	84.32%	74.01%	10.31%
S0 Multiple Standards	STA2-3	CR	96.93%	92.52%	4.42%
S0 Multiple Standards	STA2-4	CR	72.70%	68.50%	4.20%
S0 Multiple Standards	STA3-1	CR	95.09%	90.78%	4.31%
S0 Multiple Standards	STA3-2	CR	85.28%	81.40%	3.88%
S0 Multiple Standards	STA3-3	CR	87.12%	77.36%	9.75%
S0 Multiple Standards	STA3-4	CR	76.07%	73.30%	2.77%
S0 Multiple Standards	STA3-5	CR	76.99%	67.03%	9.96%
		Average	**86.22%**	**80.72%**	5.50%

Analysis of Fourth Grade Science Performance ~ District

Performance by Domain

Domain	Standard/Key Idea	Question #	Item Type	District%	Region%	District Gap
Multiple Standards	S0 Multiple Standards	STA1-1a	CR	61.35%	63.50%	-2.15%
	S0 Multiple Standards	STA1-1b	CR	52.15%	50.72%	1.42%
	S0 Multiple Standards	STA1-2	CR	86.81%	81.66%	5.15%
	S0 Multiple Standards	STA1-3	CR	87.12%	81.22%	5.90%
	S0 Multiple Standards	STA1-4	CR	96.32%	89.32%	7.00%
	S0 Multiple Standards	STA1-5	CR	81.80%	72.77%	9.03%
	S0 Multiple Standards	STA2-1	CR	95.40%	94.63%	0.77%
	S0 Multiple Standards	STA2-2	CR	84.32%	74.01%	10.31%
	S0 Multiple Standards	STA2-3	CR	96.93%	92.52%	4.42%
	S0 Multiple Standards	STA2-4	CR	72.70%	68.50%	4.20%
	S0 Multiple Standards	STA3-1	CR	95.09%	90.78%	4.31%
	S0 Multiple Standards	STA3-2	CR	85.28%	81.40%	3.88%
	S0 Multiple Standards	STA3-3	CR	87.12%	77.36%	9.75%
	S0 Multiple Standards	STA3-4	CR	76.07%	73.30%	2.77%
	S0 Multiple Standards	STA3-5	CR	76.99%	67.03%	9.96%
			Average	**82.36%**	**77.25%**	**5.11%**
Scientific Inquiry	S1 Scientific Inquiry	31	CR	80.98%	73.66%	7.32%
	S1 Scientific Inquiry	32	CR	95.09%	91.47%	3.63%
	S1 Scientific Inquiry	34	CR	79.14%	66.63%	12.51%
			Average	**85.07%**	**77.25%**	**7.82%**
Information Systems	S2 Information Systems	30	MC	90.18%	86.96%	3.22%
			Average	**90.18%**	**86.96%**	**3.22%**
Living Environment	S4 Living Environment	01	MC	98.77%	95.77%	3.00%
	S4 Living Environment	02	MC	95.71%	95.39%	0.31%
	S4 Living Environment	03	MC	90.18%	90.13%	0.06%
	S4 Living Environment	04	MC	82.82%	83.23%	-0.41%
	S4 Living Environment	05	MC	84.66%	80.01%	4.65%
	S4 Living Environment	06	MC	85.28%	77.10%	8.18%
	S4 Living Environment	07	MC	76.69%	69.45%	7.24%
	S4 Living Environment	08	MC	95.09%	95.11%	-0.02%
	S4 Living Environment	09	MC	74.85%	69.74%	5.10%
	S4 Living Environment	10	MC	92.02%	87.25%	4.78%
	S4 Living Environment	11	MC	93.87%	88.95%	4.92%
	S4 Living Environment	13	MC	91.41%	78.85%	12.57%
	S4 Living Environment	14	MC	89.57%	84.07%	5.50%
	S4 Living Environment	15	MC	86.50%	77.74%	8.76%
	S4 Living Environment	35	CR	84.66%	72.55%	12.11%
	S4 Living Environment	37	CR	85.28%	73.50%	11.77%
	S4 Living Environment	38	CR	95.09%	87.38%	7.71%
	S4 Living Environment	39	CR	92.64%	84.15%	8.49%
	S4 Living Environment	40	CR	87.12%	76.46%	10.66%
	S4 Living Environment	42	CR	73.01%	71.29%	1.71%
			Average	**87.76%**	**81.91%**	**5.86%**

Physical Setting	S4 Physical Setting	16	MC	89.57%	83.08%	6.50%
	S4 Physical Setting	17	MC	80.37%	77.26%	3.10%
	S4 Physical Setting	18	MC	90.80%	79.92%	10.88%
	S4 Physical Setting	19	MC	95.09%	88.13%	6.96%
	S4 Physical Setting	20	MC	98.16%	94.00%	4.16%
	S4 Physical Setting	21	MC	87.12%	75.76%	11.36%
	S4 Physical Setting	22	MC	97.55%	95.11%	2.44%
	S4 Physical Setting	23	MC	52.49%	56.59%	-4.10%
	S4 Physical Setting	24	MC	92.02%	76.76%	15.26%
	S4 Physical Setting	25	MC	87.73%	84.22%	3.51%
	S4 Physical Setting	26	MC	87.12%	79.14%	7.98%
	S4 Physical Setting	27	MC	77.91%	76.78%	1.14%
	S4 Physical Setting	28	MC	99.39%	96.07%	3.31%
	S4 Physical Setting	29	MC	87.73%	75.37%	12.36%
	S4 Physical Setting	36	CR	92.64%	91.12%	1.52%
	S4 Physical Setting	41	CR	97.55%	94.25%	3.30%
	S4 Physical Setting	43	CR	67.12%	68.28%	-1.15%
	S4 Physical Setting	44	CR	92.02%	81.62%	10.41%
	S4 Physical Setting	45	CR	82.82%	81.86%	0.96%
			Average	**87.12%**	**81.86%**	**5.26%**
Interconnectedness	S6 Interconnectedness	12	MC	92.02%	86.30%	5.73%
	S6 Interconnectedness	33	CR	90.18%	86.00%	4.19%
			Average	**91.10%**	**86.15%**	**4.96%**

Strengths ~ Fourth Grade Science ~ District

Overall

On 23 of the 30 multiple choice items for which data are available, over 85% of North Shore students responded correctly to the item. On 9 of the 15 constructed response items that were part of the written test, North Shore students obtained, on average, over 85% of the available points. On 8 of the 15 constructed response items that were part of the performance test, North Shore students obtained, on average, over 85% of the available points.

Across all items, the average percentage of North Shore students who responded correctly to an item was 86.2%. This was 5.5% higher than the average percentage of students in the region who responded correctly to an item.

On 55 of the 60 items on both parts of the assessment, North Shore students outperformed the students in the region by percentages ranging from 0.1% to 12.5%.

Curriculum Standards

An analysis of performance by domain suggests that Scientific Inquiry, Information Systems, Living Environment, Physical Setting, and Interconnectedness were areas of particular strength, with the students of North Shore obtaining, on average, 85.1%, 90.2%, 87.8%, 87.1%, and 91.1% of the available points on the items within these domains. The respective gaps between the performance of North Shore students and the performance of students in the region within these domains were 7.8%, 3.2%, 5.9%, 5.3%, and 5.0%.

Performance Test

In this domain, students demonstrated the application of their knowledge, skills, and conceptual understanding within three performance tasks as they responded to fifteen associated prompts.

On 8 of the 15 constructed response items in this domain, more than 85% of the North Shore students answered the item correctly. On 14 of the 15 items within the domain, North Shore students outperformed students in the region by percentages ranging from 0.8% to 10.3%

Areas of particular strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal 5%, included 7 items.

Scientific Inquiry

In this domain, students use scientific inquiry to pose questions, seek answers, and develop solutions. Students demonstrated their knowledge, understanding, and facility with this domain on three constructed response items.

On one item in this domain, more than 85% of the North Shore students answered the item correctly. In fact, 95.1% of the North Shore students responded correctly to the item and their performance was equal to the performance of students in the region.

Areas of relative strength in this domain, as indicated by the students in North Shore outperforming students in the region by percentages greater than or equal 5%, included two items.

Information Systems

In this domain, students demonstrated their understanding of information systems. Students demonstrated their knowledge, understanding, and facility with this domain on one multiple choice item.

On the one multiple choice item in this domain, 90.2% of the North Shore students responded correctly to the item and their performance exceeded the performance of students in the region by 3.2%.

Living Environment

In this domain, students demonstrated their understanding of the living environment. Students demonstrated their knowledge, understanding, and facility with this domain on 15 multiple choice items and 6 constructed response items.

On 10 of the 15 multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. On five of the six of the constructed response items, North Shore students received, on average, more than 85% of the available points.

On 19 of the 21 items in the domain, the performance of North Shore students exceeded the performance of students in the region by percentages ranging from 0.1% to 12.6%.

Physical Setting

In this domain, students demonstrated their understanding of the physical sciences. Students demonstrated their knowledge, understanding, and facility with this domain on 14 multiple choice items and 5 constructed response items.

On 11 of the 14 multiple choice items in this domain, more than 85% of the North Shore students answered the item correctly. On 3 of the 5 constructed response items, North Shore students received, on average, more than 85% of the available points.

On 17 of the 19 items in the domain, the performance of North Shore students exceeded the performance of students in the region by percentages ranging from 1.0% to 15.3%.

Interconnectedness

In this domain, students demonstrated their understanding of systems thinking, models, magnitude and scale, equilibrium, patterns of change, and optimization. Students demonstrated their knowledge, understanding, and facility with this domain on one multiple choice item and one constructed response item.

On the single multiple choice item, more than 85% of the North Shore students answered the item correctly. On the single constructed response item, North Shore students received, on average, more than 85% of the available points.

On both of the items in the domain, the performance of North Shore students exceeded the performance of students in the region by percentages ranging of 4.2% and 5.7%.

Item Type

On 23 of the 30 multiple choice items for which data are available, over 85% of North Shore students responded correctly to the item. On average, 88.1% of the North Shore students responded correctly the multiple choice items, exceeding the performance of students in the region, on average, by 5.3%.

On 9 of the 15 constructed response items that were part of the written test and 8 of the 15 constructed response items on the performance test, North Shore students obtained, on average, over 85% of the available points. North Shore students obtained, on average, 84.4% of the available points, exceeding the region by 5.7%.

Items

On 55 of the 60 items for which data is available, the performance of North Shore students exceeded the performance of students in the region. On the following 29 items, the performance of North Shore students exceeded the percentage of students in the region by more than 5%:

<table>
<tr><th>Item</th><th>Standard</th><th>Item Type</th><th>District %</th><th>Gap</th></tr>
<tr><td>24

Which color of shirt would absorb the most sunlight?

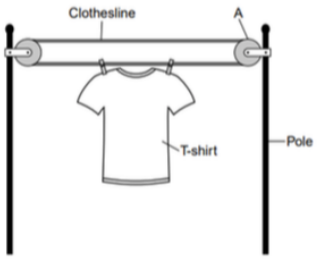
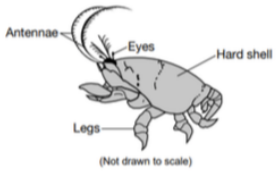
A white
B yellow
C pink
D black</td><td>S4 Physical Setting</td><td>MC</td><td>92.02%</td><td>15.26%</td></tr>
<tr><td>13
Warmer temperatures can cause a deer to rub against trees to remove clumps of heavy fur. This behavior is helping the deer to

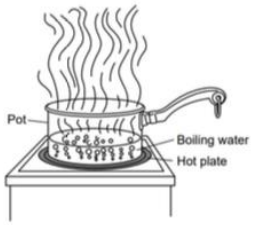
A reproduce
B feel cooler
C store fat
D camouflage itself</td><td>S4 Living Environment</td><td>MC</td><td>91.41%</td><td>12.57%</td></tr>
<tr><td>34

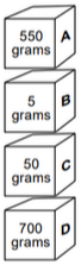
Base your answers to questions 33 and 34 on the data table below and on your knowledge of science. The data table shows some average monthly air temperatures, in degrees Fahrenheit (°F), at the Albany Airport for three years.

Some Average Monthly Air Temperatures at Albany Airport for Three Years (°F)
<table><tr><th>Month</th><th>2006</th><th>2007</th><th>2008</th></tr><tr><td>January</td><td>32</td><td>28</td><td>28</td></tr><tr><td>March</td><td>36</td><td>32</td><td>34</td></tr><tr><td>May</td><td>58</td><td>61</td><td>56</td></tr><tr><td>July</td><td>75</td><td>71</td><td>74</td></tr><tr><td>September</td><td>61</td><td>65</td><td>64</td></tr><tr><td>November</td><td>45</td><td>38</td><td>40</td></tr></table>
Estimate the most likely average air temperature for April 2008. [1]

_____ °F</td><td>S1 Scientific Inquiry</td><td>CR</td><td>79.14%</td><td>12.51%</td></tr>
</table>

29 The diagram below shows a T-shirt hanging on a clothesline. Letter *A* represents a simple machine.  Which type of simple machine is represented by letter *A*? A lever B balance C pulley D inclined plane	S4 Physical Setting	MC	87.73%	12.36%
35 Give **one** reason why eating a balanced diet is important for good health in humans. [1] _____ _____	S4 Living Environment	CR	84.66%	12.11%
37 Base your answers to questions 37 and 38 on the information and diagram below, and on your knowledge of science. The common sand crab lives within the breaking waves of sandy beaches. To feed, it quickly burrows backwards into the sand with its powerful legs, and leaves only its feather-like antennae sticking out to remove small food particles from the water of the waves.  Explain how the antennae could help the sand crab survive in its environment. [1] _____ _____	S4 Living Environment	CR	85.28%	11.77%
21 Which tool would be used to find the weight of a balloon that is filled with water? A graduated cylinder B metric ruler C spring scale D thermometer	S4 Physical Setting	MC	87.12%	11.36%

18 Which process causes a wet towel to become dry? A condensation B evaporation C precipitation D deposition	S4 Physical Setting	MC	90.80%	10.88%
40 In large cities, people are beginning to plant vegetable gardens on the roofs of their apartment buildings. Explain how these gardens may be helpful to the people living in these areas. [1] _____ _____	S4 Living Environment	CR	87.12%	10.66%
44 Base your answers to questions 43 and 44 on the information below and on your knowledge of science. The diagram shows a pot of boiling water on a hot plate.  The handle on the pot is ***not*** made out of metal. Identify **one** material that the handle could be made out of so that it could be safe to touch. [1] _____	S4 Physical Setting	CR	92.02%	10.41%
STA2-2 Not Released	S0 Multiple Standards	CR	84.32%	10.31%
STA3-5 Not Released	S0 Multiple Standards	CR	76.99%	9.96%
STA3-3 Not Released	S0 Multiple Standards	CR	87.12%	9.75%
STA1-5 Not Released	S0 Multiple Standards	CR	81.80%	9.03%
15 When a beaver senses a predator approaching, it slaps its tail on the surface of the water. This action is an example of an animal using a body part to A find food B attract a mate C build a shelter D communicate information	S4 Living Environment	MC	86.50%	8.76%

39 The diagram below shows some birds with their nest.  Each spring, many birds spend time looking for the best places to build their nests. Describe **one** reason why this is an important task for the birds. [1] _____ _____	S4 Living Environment	CR	92.64%	8.49%
06 Which plant structure makes seeds? A stem B flower C roots D leaf	S4 Living Environment	MC	85.28%	8.18%
26 The diagram below shows four boxes labeled *A*, *B*, *C*, and *D*. The mass of each box is shown.  Which box is **under** the box with a mass of 50 grams? A box *A* B box *B* C box *C* D box *D*	S4 Physical Setting	MC	87.12%	7.98%

Areas of Focus ~ Fourth Grade Science ~ District

Curriculum Standards

Performance Test

The average performance on the items in this domain was 82.4% and the average performance of North Shore students exceeded the performance of students in the region of 5.1%. For four items within the domain was the gap between the performance of North Shore students and the performance of the students in the region was less than 5% while the percentage of students responding correctly to the item was less than 85%.

Item	Standard	Item Type	Percentage Correct	Performance Gap
Station 1 – Number 1a	Multiple Standards	CR	61.35%	-2.15%
Station 1 – Number 1b	Multiple Standards	CR	52.15%	1.42%
Station 2 – Number 4	Multiple Standards	CR	72.70%	4.20%
Station 3 – Number 4	Multiple Standards	CR	76.07%	2.77%

The associated skills (measurement, data analysis, and drawing conclusions based upon experimentation) should be reviewed and reinforced with all students across their science learning.

Scientific Inquiry

The average performance on the items in this domain was 85.1% and the average performance of North Shore students exceeded the performance of students in the region of 7.8%. On none of the items within the domain was the gap between the performance of North Shore students and the performance of the students in the region less than 5% while the percentage of students responding correctly to the item was less than 85%.

Information Systems

The performance of North Shore students on the single item in the domain was 90.2% and the average performance of North Shore students exceeded the performance of the students in the region by 3.2%.

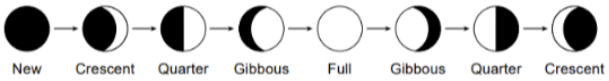
Living Environment

The average performance on the items in this domain was 87.8% and the average performance of North Shore students exceeded the performance of students in the region of 5.9%. However, for three of the 19 items within the domain was the gap between the performance of North Shore students and the performance of the students in the region was less than 5% while the percentage of students responding correctly to the item was less than 85%.

Item	Item Type	Percentage Correct	Performance Gap
4 An example of an inherited trait is A riding a bicycle B having a broken arm C having brown eyes D living in New York State	MC	82.82%	-0.41%
5 The diagram below shows a mature parent plant.  Which young plant is most likely the offspring of this mature parent plant?  A B C D	MC	84.66%	4.65%

Physical Setting

The average performance on the items in this domain was 87.1% and the average performance of North Shore students exceeded the performance of students in the region of 5.3%. However, for five of the twenty items within the domain was the gap between the performance of North Shore students and the performance of the students in the region was less than 5% while the percentage of students responding correctly to the item was less than 85%.

Item	Item Type	Percentage Correct	Gap
17 The diagram below shows the changing appearance of an object in space as viewed by an observer in New York State.  The diagram shows the changing appearance of A the Moon as it revolves around Earth B Earth as it revolves around the Moon C the Sun as it revolves around Earth D Earth as it revolves around the Sun	MC	80.37%	3.10%
23 Ice is solid water that has A a definite shape and a definite volume B a definite shape, but no definite volume C no definite shape and no definite volume D no definite shape, but a definite volume	MC	52.49%	-4.10%
27 It is harder to push a box up a ramp with a rough surface than up one with a smooth surface because the rough surface provides more A motion B friction C gravity D magnetism	MC	77.91%	1.14%

Elementary Science ~ Synthesis of Findings
Context

With the adoption of the *Next Generation Science Standards* and *New York State Science Learning Standards,* science educators are compelled to shift their focus from simply teaching science concepts, principles, and facts as well as having students perform experiments to confirm their understanding of known principles to helping students make sense of phenomena as they ask and answer questions about those phenomena and design solutions to problems (National Research Council, 2012). This emphasis on using science and engineering practices to construct meaning, make sense of complex concepts and phenomena, and design solutions to perplexing problems is new, provocative, and exciting, and it represents a revolution in how we teach science at all grade levels. In their learning, students must use all three dimensions of the new standards - crosscutting concepts, disciplinary core ideas, and science and engineering practices - in an integrated fashion to build models, design investigations, share ideas, develop explanations, and argue using evidence, all of which will allow students to develop with purpose and explicit intentionality the skills and dispositions of our North Shore Shared Values.

At the elementary level, we embarked upon the journey of infusing the Next Generation Science Standards and associated New York State Science Learning Standards into our work several years ago. Our first steps included familiarizing ourselves and teachers with the philosophy of the Standards and the approach to instruction. We learned that the new Standards are highly aligned with our beliefs about learning, in general, and the learning of science, in particular. With the advent of the Next Generation Science Standards and associated New York State Science Learning Standards, we have reaffirmed our emphasis on engaging students in the process of working as scientists while embedding new opportunities for students to engage in the engineering design process. We have begun to provide students with more opportunities to ask questions, to discover answers for themselves, to develop their own ideas, and to evaluate those ideas according to scientific and engineering principles. Our students are naturally inquisitive and, therefore, adeptly engage in inquiry and explanation in order to develop deeper understanding.

We are in the midst of a multi-year plan to implement the new Standards which includes the design of new units of study aligned with the new Standards and providing our teachers with the professional development they need to facilitate the type of instruction required by these Standards. This work has enhanced the science learning experiences of our students and we look forward to the development of local and State assessments to mark the progress of our students with respect to the new Standards. The current timeline from the State suggests that the first assessment of the New York State Science Learning Standards will take place in 2022.

In the design of our new units, we have attended to the outcomes delineated within not only the Performance Expectations of the New York State Science Learning Standards, but also our North Shore Shared Values. Curriculum designers wrote the curricula to inspire and facilitate three-dimensional learning that attends to the disciplinary core ideas, cross-cutting concepts, science and engineering practices, and the skills and dispositions of our North Shore Shared Valued Outcomes.

The following chart outlines our current set of units which have been carefully designed based upon the content and learning intentions of the new Standards.

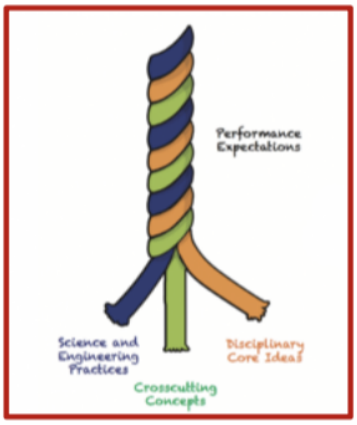
	Unit A	Unit B	Unit C
Kindergarten	*Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment*	*Weather and Climate*	*Forces and Interactions: Pushes and Pulls*
First Grade	*Structure, Function and Information Processing*	*Space Systems: Patterns and Cycles*	*Waves: Light and Sound*
Second Grade	*Interdependent Relationships in Ecosystems*	*Earth's Processes: Processes That Shape the Earth*	*Structure and Properties of Matter*
Third Grade	*Inheritance and Variation of Traits*	*Forces and Interactions*	*Weather and Climate*
Fourth Grade	*Waves, Light, and Senses*	*Energy*	*Earth's Systems: Processes That Shape the Earth*
Fifth Grade	*Matter and Energy in Organisms and Ecosystems*	Structure and Properties of Matter	*Space Systems: Stars and the Solar System*

Following is an excerpt from the newly developed and implemented curriculum map from Kindergarten. You will note that the understandings, essential questions, and evidence of learning have a three-dimensional focus and attend to our North Shore Shared Valued Outcomes.

Forces and Interactions					
Desired Results					***Evidence***
Standards	***Understandings***	***Essential Questions***	***Knowledge***	***Skills***	***Evidence of Learning***
Performance Expectations: K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull. **Science and Engineering Practices:** *Planning and Carrying Out Investigations* With guidance, plan and conduct an investigation in collaboration with peers *Analyzing and Interpreting Data* Analyze data from tests of an object or tool to determine if it works as intended. **Crosscutting Concepts:** *Cause and Effect* Simple tests can be designed to gather evidence to support or refute student ideas about causes. **Disciplinary Core Ideas:** *PS2.A: Forces and Motion* Pushes and pulls can have different strengths and directions. Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. *PS2.B: Types of Interactions*	There are many different types of forces, both natural and man-made. Forces determine how objects move.	Why do things move? Move it? How? How can the motion of objects be impacted?	Pushes and pulls can have different strengths and directions. Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. When objects touch or collide, they push on one another and can change motion. A bigger push or pull makes things speed up or slow down more quickly. Vocabulary: Push Pull Force Motion Incline Speed Direction Object	Plan and conduct an investigation in collaboration with peers. Analyze data from tests of an object or tool to determine if it works as intended. Interpret information and/or draws conclusions. Reflect on learning experiences and/or processes. Try different approaches and methods seizing upon opportunities to learn.	Demonstrate understanding of vocabulary, knowledge, and skills through appropriate usage. Demonstrate understanding of forces Demonstrate understanding that forces cause changes in motion Plan and conduct an investigation involving forces. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull Design a structure using the knowledge and skills of the unit.

When objects touch or collide, they push on one another and can change motion. *PS3.C: Relationship Between Energy and Forces* A bigger push or pull makes things speed up or slow down more quickly. *ETS1.A: Defining Engineering Problems* A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. **Shared Valued Outcomes** *Thinkers* Individuals who: interpret information and/or draws conclusions. reflect on learning experiences and/or processes. try different approaches and methods seizing upon opportunities to learn.			Gravity Friction Ramp Stable Turn		Interpret information and/or draws conclusions. Reflect on learning experiences and/or processes. Try different approaches and methods seizing upon opportunities to learn.

Over the past several years, we have provided the elementary teachers with professional development related to the new Standards. We have capitalized on learning from the K-12 Science Learning meetings which were facilitated by the Science Articulation Team to inform professional development at the elementary level. Professional development has focused on the philosophy and instructional approach of the Standards, the architecture of the Standards, and the included content. This professional learning will continue to be a major focus during the current school year.



Elementary Science ~ Synthesis of Findings
Areas of Relative Strength

Overall Performance

As indicated by data from both the State test and local assessments, student performance in science is strong.

On the State test, 99% of the students achieved proficiency (i.e., a score of 3 or 4) and 80% of the students achieved mastery (i.e., a score of 4). In fact, the average percentage of students who responded correctly to an item was 86.2% and this percentage is 5.5% higher than the percentage of students in the county who responded correctly to an item.

Our local assessments, information from observations, and feedback from students, teachers, and parents suggest that our students are developing deep and transferrable conceptual understanding, strong knowledge bases, and facility with scientific skills as well as extremely positive attitudes about science and themselves as scientists.

Performance of Certain Sub-Groups

Similar to our findings for elementary math, analyses of the performance of sub-groups on the assessments suggested that there were no patterns in the performance of males and females. This data confirms participation and engagement data from classroom observations and club participation. We continue our efforts to ensure gender equity in our STEM programs.

Performance within Particular Domains

Students performed particularly well on items focused on both Living Environment and Physical Setting. The Physical Setting encompasses items related to both the physical and earth sciences.

	Living Environment	Physical Setting
Average Percentage of Points Received on Items within Domain	87.8%	87.1%
Average Gap between the Performance of North Shore Students and the Performance Students in the Region	5.9%	5.3%

The strong performance on items focused on the Physical Setting reinforces our efforts to ensure that our units of study provide our students with opportunities to develop strong foundational understanding not only in the life sciences, but also in the physical and earth sciences. In fact, many of the new units we have implemented have focused on areas in the physical and earth sciences that our previous curriculum did not include, such as astronomy, waves, light, and sound.

Elementary Science ~ Synthesis of Findings

Areas of Progress

Measurement

As part of the performance test portion of the assessment, students are required to select from and use a variety of tools to measure length (both customary and metric), volume, and mass. In addition, they are asked to use their data to answer a series of questions. The performance task is not released by the State, so the actual items cannot be included here.

In the past, a segment of our fourth grade population has struggled with some of the measurement tasks. Other formal and informal assessment data confirm that some of our students struggle with measurement. We have worked to provide meaningful opportunities for them to develop their understanding of and facility with measurement across science, math, and STEAM. Our students have demonstrated progress with respect to their work in measurement on the State assessment, but this continues to be an area to which we are devoting attention. One area on which we are currently working is to foster students' flexibility in the use of both the customary and metric systems of measurement.

Average Percentage of Points Received			
Item	**2017**	**2018**	**2019**
STA1-2	81.8%	82.7%	86.8%
STA1-3	84.3%	86.6%	87.1%
STA1-4	93.7%	96.5%	96.3%
STA1-5	71.1%	75.1%	81.8%

Shared Valued Outcomes

As we developed new units of study aligned with the Next Generation Science Standards and associated New York State Science Learning Standards over the past several summers, we identified particular aspects of our North Shore Shared Valued Outcomes as learning goals and, therefore, are working to target explicit instruction and assessment to the development of the delineated skills and dispositions. This continues to be an area of focus in our work.

For instance, following is an excerpt from the first grade curriculum map for Waves: Light and Sound which focuses on the development of the North Shore Shared Valued Outcome of thinkers, with attention to the skills of reflect on learning experiences and/or processes and try different approaches seizing upon opportunities to learn.

Light					
Desired Results					Evidence
Standards	**Understandings**	**Essential Questions**	**Knowledge**	**Skills**	**Evidence of Learning**
Disciplinary Core Ideas *PS4.B: Electromagnetic Radiation* Objects can be seen if light is available to illuminate them or if they give off their own light. Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. *Cross-Cutting Concepts* *CC2. Cause and Effect* Simple tests can be designed to gather evidence to support or refute student ideas about causes. *Science and Engineering Practices* *SEP2. Planning and Carrying Out Investigations.* Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question *SEP6 Constructing Explanations and Designing Solutions* Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena *Shared Valued Outcomes* *SVO3. Thinkers* Individuals who: interpret information and/or draws conclusions. reflect on learning experiences and/or processes. try different approaches and methods seizing upon opportunities to learn	Light and sound are forms of energy. (PS4.A, PS4.B) Light and sound travel. (PS4.A, PS4.B) We use sound and light to communicate. (PS4.A, PS4.B) We need light to see. (PS4.B) Some objects create their own light. (PS4.B) Light can travel through some objects and is blocked by some objects (PS4.B) Determining the causes of effects helps us make sense of the world. (CC2, SVO3)	What causes waves? (PS4.A, PS4.B, CC2) Where does light come from? (PS4.B, CC2 Why do we need light? (PS4.B) In what ways does light travel? (PS4.B)	Light and sound travel as waves. (PS4.B) Light, sound, and heat are types of energy. (PS4.B) All light has a source or something it comes from. (PS4.B) Objects can be seen if they give off light or if light illuminates them. (PS4.B) Light passes through and bounces off different materials. (PS4.B) Mirrors can be used to redirect a light beam. (PS4.B) Transparent objects allow all light to pass through them. (PS4.B) Translucent objects allow some light to pass through them. (PS4.B) Opaque objects allow no light to pass through them. (PS4.B) Reflective objects allow light to bounce off them. (PS4.B) A shadow is made when an opaque or translucent material blocks the light. (PS4.B)	Observe the behavior of light (PS4.B) Observe light when it interacts with different materials (PS4.B) Construct an explanation based on evidence (SEP6, SV3) Plan and conduct an investigation (SEP2, SVO3) Interpret information and/or draws conclusions. (SVO3) Reflect on learning experiences and/or processes. (SVO3) Try different approaches and methods seizing upon opportunities to learn. (SVO3)	Demonstrate understanding of discipline-specific vocabulary through appropriate usage (PS4.A, PS4.B, CC2, SEP2) Demonstrate understanding that light and sound waves are forms of energy (PS4.A, PS4.B) Demonstrate understanding that light and sound waves travel (PS4.A, PS4.B) **Make observations to construct an evidence-based account that objects can be seen only when illuminated (PS4.B, SEP6, SVO3) ***Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of light (PS4.B, CC2, SEP2, SEP6, SVO3) Describe and explain the behavior of light when it interacts with various materials (PS4.B, CC2, SEP6, SVO3)

As next steps, we hope to continue to refine instruction with respect to the Next Generation Science Standards and associated New York State Science Learning Standards in order to support growth with respect to the skills and dispositions of the Shared Valued Outcomes. A focus will be on enhancing teachers' ability to attend to the types of three-dimensional learning required by the new Standards which will also support the growth of our students as scientific thinkers and problem solvers. Furthermore, a focus will be placed on using progressions to drive and assess students' growth with respect to the skills and dispositions of the Shared Valued Outcomes.

Elementary Science ~ Synthesis of Findings
Areas of Focus

Continued Incorporation of the New Standards

As we continue our ongoing plan to transition to the Next Generation Science Standards and associated New York State Science Learning Standards, we will focus on the provision of assured quality learning experiences within our science units. Our focus will be on the design and implementation of phenomena-based and three-dimensional learning experiences.

In addition, we will continue to work to ensure that, with the many demands within the elementary school day, teachers have time to engage their students in meaningful science learning.

One of the biggest challenges over the next few years will be the transition to the Next Generation Science Standards (NGSS). One of the first common-threads that I am seeing in classrooms is the framing of thinking like a Scientist in the form of: Claim-Evidence-Reasoning (CER). The Science department has been fortunate to have incredibly meaningful PD work with Paul Andersen on two occasions last year and we debated the difference between CER and ECR. The major difference is obviously when you collect your evidence, but both are acceptable pathways to understanding depending on what your end-goal is.

Regents Exams Evidence

Science Regents Exams 6/18

Subject	Test	# L1	# L2	# L3	# L4	# L5	Total	L3+L4+L5	% L1	% L2	% L3	% L4	% L5	L3 + L4 + L5 %	Region L3+L4 + L5%	Regional Gap
Science	Regents Living Environment - Jun	3	2	57	147	N/A	209	204	1%	1%	27%	70%	N/A	98%	87%	10%
	Regents Phy Set/Chemistry - Jun	5	16	98	71	N/A	190	169	3%	8%	52%	37%	N/A	89%	83%	6%
	Regents Phy Set/Earth Sci - Jun	3	3	57	169	N/A	232	226	1%	1%	25%	73%	N/A	97%	89%	9%
	Regents Phy Set/Physics - Jun	10	8	48	33	N/A	99	81	10%	8%	48%	33%	N/A	82%	86%	-4%
Science Totals		**21**	**29**	**260**	**420**	**0**	**730**	**680**	**3%**	**4%**	**36%**	**58%**	**0%**	**93%**		

Science Regents Exams 6/19

Subject	Test	# L1	# L2	# L3	# L4	# L5	Total	L3+L4+L5	% L1	% L2	% L3	% L4	% L5	L3 + L4 + L5 %	Region L3+L4 + L5%	Regional Gap
Science	Regents Living Environment - Jun	1	3	69	144	N/A	217	213	0%	1%	32%	66%	N/A	98%	87%	11%
	Regents Phy Set/Chemistry - Jun	1	8	114	99	N/A	222	213	0%	4%	51%	45%	N/A	96%	85%	11%
	Regents Phy Set/Earth Sci - Jun	3	6	46	121	N/A	176	167	2%	3%	26%	69%	N/A	95%	86%	9%
	Regents Phy Set/Physics - Jun	1	3	21	40	N/A	65	61	2%	5%	32%	62%	N/A	94%	87%	7%
Science Totals		**6**	**20**	**250**	**404**	**0**	**680**	**654**	**1%**	**3%**	**37%**	**59%**	**0%**	**96%**		

Regents Exams Claims:

- Our June 2019 Regents scores were a significant improvement from our June 2018 scores compared to both ourselves and the region.
- Our passing rate was up 3% for all science exams compared to our performance from the previous year.
- Our passing rate of 96% was 10% points higher than the region.
- Mastery was up in total only 1% from 2018 but Physics mastery was up almost 30% from 2018.
- Chemistry also saw big gains in Mastery (8%) and passing (7%) as compared to regional growth of only 2% passing.

Regents Exams Reasoning:

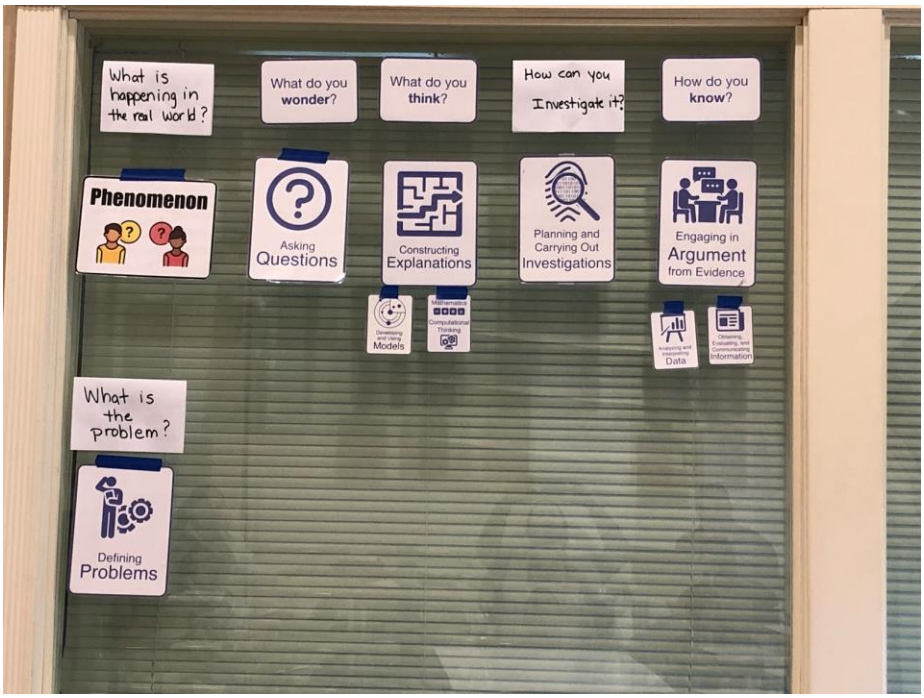
Regents Physics was extremely well coordinated between sections and teachers, with much attention paid to alignment of curriculum and assessments.

Chemistry mastery was a particular focus so I am very glad to see progress. For the first time last year we had Chemistry support classes held during lunch periods throughout the year which afforded students more opportunities to get help from teachers. We also continued to schedule one on one meetings with students and teachers after midterms. The intent of these meetings was to get at the metacognitive aspects of how students prepared for the midterm and their thought processes on incorrect responses.

Classroom observations across science disciplines showed a strong implementation of NGSS practices including:

- Phenomena
- Asking questions
- Constructing explanations
- Modeling
- Analyzing data
- Planning investigations

Most of the Science classrooms have the practices displayed for the students to see.



There is also a consistent effort being made for students to ask questions that can be categorized based on the NGSS cross-cutting concepts.

Questions will range from the most basic “How does it work?” to the more sophisticated “What happens in the system?” By categorizing questions, students will strive for the higher levels which will ultimately lead to better questioning skills, which in turn will lead to better critical thinking.

There is a strong focus on increasing this questioning technique of categorizing and striving for higher-level questions in all science classes.

Constructed Response Analysis Evidence:

			North Shore CSD							Regional (All Perf. Levels)			
			Full Credit		Partial Credit		No Credit		Average Pts. Earned	Full Credit	Partial Credit	No Credit	Average Pts. Earned
Q#	Learning Standard	Max Points Available	#	%	#	%	#	%	%	%	%	%	%
B2-55	Matter is made up of particles whose properties de: 4PS.3.4e Equal volumes of different gases at the same temperature and pressure contain an equal number of particles. --| 4PS.CH.3.4e	1	215	96.8%	0	0.0%	7	3.2%	0.97	93.7%	0.0%	6.3%	0.94
C-76	Matter is made up of particles whose properties de: 4PS.3.1hh Organic acids, alcohols, esters, aldehydes, ketones, ethers, halides, amines, amides, and amino acids are categories of organic molecules that differ in their structures. Functional groups impart distinctive physical and chemical properties to o	1	214	96.4%	0	0.0%	8	3.6%	0.96	87.5%	0.0%	12.5%	0.88
C-69	Matter is made up of particles whose properties de: 4PS.3.3c A balanced chemical equation represents conservation of atoms. The coefficients in a balanced chemical equation can be used to determine mole ratios in the reaction. --| 4PS.CH.3.3c	1	206	92.8%	0	0.0%	16	7.2%	0.93	88.4%	0.0%	11.6%	0.88

The constructed response analysis report shows our performance compared to the region for each CR question. The following chart will try and highlight the major take-a-ways.

Exam 35 CR questions	Highest % of Full Credit NS/Region	Lowest % of Full Credit NS/Region	Number of Questions in which region outperformed NS	Average outperformance gap for previous column
*Living Env.	94.9/78.2	41.5/41.7	4	.65%
Earth Sci.	94.9/83.4	37.5/28.6	2	.61%
Chemistry	96.8/93.7	41.9/32.8	2	.72%
Physics	100/94.4	58.5/56.4	6	.87%

As an example using Living Environment, on our best performing question 94.9% of our students got full credit as opposed to 78.2% of the Region. On our lowest performing question only 41.5% got full credit compared to 41.7% of the region. There were only 4 CR questions in which the Region outperformed North Shore. The average gap between NS and the region on those 4 questions was .65%

Constructed Response Analysis Claims:

- North Shore strongly outperforms the region on Constructed Response questions.
- Even on the few questions in which the region outperforms North Shore, it is on average less than a 1% difference in performance.

Constructed Response Analysis Reasoning:

All of the NGSS factors that were discussed above in the Regents analysis can be applied and magnified for our extremely strong performance on Constructed Response questions. The truth is that at North Shore we our fortunate to have the resources and talented faculty to learn through labs. So much of our science

curriculum is taught through the hands on gathering of data to support (or not support) claims. Very rarely do we attend an unannounced classroom visit and witness a large amount of time being spent on teacher-talk. This type of performance based learning helps educate students to analyze situations and offer possible solutions, leaving students with a deeper understanding that they can apply to different situations.

Our teachers also do a very good job of creating assessments that include constructed response questions. We have seen exams from other districts that are only multiple-choice and that does not happen at North Shore. Lab reports are also required and follow the CER format discussed earlier in this report.

A focus would now be to utilize more of the actual data collected as authentic data for summative assessments.

Students working on species identification lab for AP Environmental Science.

Next Steps – Goals and Actions for Secondary Science

1. Teaching and Learning

- Coordinate and articulate the implementation of the New York State Science Learning Standards (NYSSLS) in grades 6-12.
- Supervise curriculum writing opportunities that require a much needed 6-12 approach, including a well-coordinated team made up of selected NYSSLS stake holders.
- Provide professional development and support for the implementation of the type of phenomenon-based three-dimensional instruction required by the NGSS.
- Continue to improve the use of the 0.1 period to offer extra support and/or elective opportunities for students.
- Find opportunities to implement the work of the STEM task force as they begin to fulfill their vision of an ideal STEM program.
- Work with new Environmental Science Teacher to become a leader in revamping the program.

2. Equity for all Learners

- Analyze data to identify Science achievement gaps that exist for all sub groups at a Secondary level.
- Work with staff to formulate strategies to try and close any identified Science achievement gaps that exist.

3. Social-Emotional Learning

- Work closely with Guidance 6-12 to review student choices in Science scheduling.
- Work closely with AP/IB coordinator and Homework committee to make sure that Science Homework is meaningful and that the quantity is not excessive.

Create meaningful assessments that align with the new NGSS standards

Why: Take control of your lesson planning and curriculum by creating effective assessments that will allow everything else to fall into place.

How: Dedicate Department Meeting times throughout the year to having teachers form appropriate assessment groups that will follow the checklist below to create summative assessments to be used during SY-1920. We will also be able to review these assessments with Paul Andersen when he returns to the district in March. Assessments created must address each of the 11 criteria in at least a partial way. These assessments will force teachers to automatically review or create curriculum through the lens of Understanding by Design. These assessments will also foster an increase in the depth of understanding the NGSS practices and cross-cutting concepts.

Research and propose a plan that reconsiders the sequence of Science classes

Why: Implementation of NGSS 6-12 will create voids in knowledge that do not currently exist because there is really no accounting for acceleration in 8th grade under the new standards. Students that tend to struggle in science may feel more pressure with content since certain foundational pieces may be missing. This is not good for the Social & Emotional welfare of our students.

How: Work closely with all constituent groups (starting at the building level), to review curriculum and propose new science offerings such as an 8th grade NGSS integrated experience that will guarantee that all MS Core-Ideas will be covered.

North Shore Schools Vision for STEM Learning

Within STEM learning at North Shore, we will:

- Maintain strong and compelling instruction in each of the individual disciplines in STEM
- Find and implement natural integration of STEM within each discipline
- Create STEM integrated opportunities (and/or assured experiences)
- Create/Expand upon opportunities outside of the curriculum (i.e. in the area of extra-curricular)

Elementary STEAM ~ Synthesis of Findings

Context

Over the past four years, North Shore has dedicated significant effort to the development of an Elementary STEAM program. As part of that work, we have articulated a vision statement and associated philosophy for STEM and STEAM learning at North Shore.

Elementary STEM Philosophy

Consonant with the District mission and vision statements, STEM is considered more than an acronym in the elementary schools within the North Shore Schools, it is embraced as a philosophy, a way of thinking about how people integrate knowledge within, between, and across disciplines, thinking in a connected and holistic way. STEM requires developing interdisciplinary brides between and among discrete disciplines. It offers a chance for students to make sense of the world by questioning and investigating the interrelated facets of the world rather than simply learning isolated bits and pieces of phenomena. Yet, STEM has the potential be more than interdisciplinary; it can be trans-disciplinary in that it offers a "multi-faceted whole" with greater complexities and new spheres of understanding that ensure the integration of disciplines (Bybee, 2010, 2013; Kaufman, Moss, & Osborn, 2003).

At North Shore, we strive to educate and inspire students through rigorous, thought-filled, and well-designed instruction in science, technology, engineering, and mathematics, with rich and meaningful disciplinary, interdisciplinary, and potentially trans-disciplinary learning opportunities that capitalize on connections within, between, and among disciplines.

In order to thrive as citizens in a highly complex world, students within their elementary STEM at the North Shore Schools will:

- learn deeply the fundamental concepts, knowledge, and processes underpinning the core disciplines of science, engineering, technology, and mathematics;
- construct understanding of the interdisciplinary and trans-disciplinary connections across the STEM disciplines and all learning;
- develop as thinkers, problem solvers, innovators, communicators, collaborators, and individuals committed to themselves and others; and
- understand and appreciate the role of STEM in everyday life and STEM-related careers

With attention to curriculum, instruction, assessment, professional development, and community partnerships, our STEAM endeavors consider:

- the rich and varied possibilities of STEM learning for the development of literacies of science, math, technology, engineering, and STEM

- the role of Standards in STEM curriculum, assessment, instruction
- approaches to instruction grounded in the North Shore Shared Valued Outcomes that maximize student learning in STEM and the Shared Valued Outcomes

- learning experiences that serve as assured experiences for all students and those that serve as opportunities for students to enhance their learning based on interest or readiness level

We use the vision to guide the development of the program and infusion of purposeful and meaningful learning experiences for students. As we have initiated our STEM program at the elementary level over the past four years, specific curriculum modules have been designed for each grade level as assured experiences in which each student engages. These modules are interdisciplinary and trans-disciplinary in nature, tapping into one or more of the STEM disciplines and requiring the potential application of the arts, literacy, and research skills. For instance, a module might involve students generating questions around sustainability and, after engaging in research, designing solutions using the engineering design process and technology. In addition, enrichment opportunities, such as recess clubs, are provided for students to explore areas of interest and passion within the STEM disciplines. For example, students might expand their understanding of and facility with coding and robotics in a recess club.

While we have embarked upon our journey to bring STEM to all elementary students, we hope to build upon this work through the development of an innovative, progressive, and forward-thinking program over the next several years.

Elementary STEAM ~ Synthesis of Findings

Areas of Strength

Assured Experiences

We have worked to design STEAM experiences that stimulate the interest and passion of students in STEAM; address the New York State Science Learning Standards, particularly the Engineering Standards and associated practices; allow students to learn and apply with intentionality the foundational concepts of computer science; and provide students with opportunities to develop and apply the skills and dispositions of our North Shore Shared

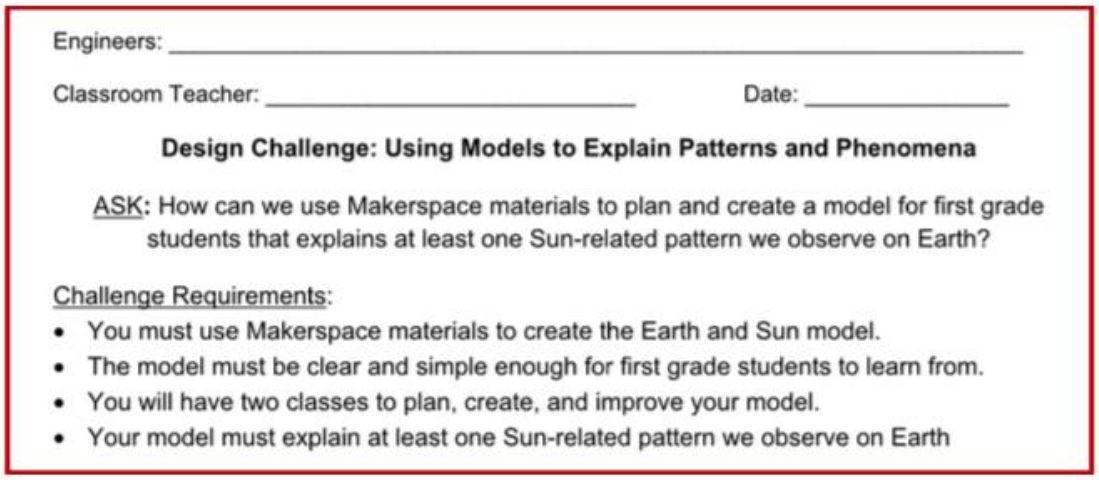
Values.

An area of strength of the program is its commitment to bring common, assured experiences to all students in a grade level. Within the STEAM learning assured experiences, the students learn and apply the engineering design process to a variety of tasks and challenges as they deepen their understanding of associated scientific, mathematical, and technology concepts. Furthermore, the students' work demonstrates their growing facility with the skills and dispositions of the Shared Valued Outcomes and their positive attitudes about STEAM learning.

Following are examples of assured STEAM learning experiences integrating science and engineering. The first is a fifth grade module in which students developed models to explain astronomy patterns and phenomena. The second is a third grade module in which students designed prototypes in which the properties of magnets helped them to solve problems.


What Sun-related patterns do we observe on Earth?
·day + night
·rotation
day night
sunrise sunset
every 24 hours = new day
·year
·revolution
every 365 days = new year
·seasons
·revolution
·tilt of Earth's axis
Summer
Spring
Fall
Winter


EVO



Engineers: _____

Classroom Teacher: _____ Date: _____

Design Challenge: Using Models to Explain Patterns and Phenomena

ASK: How can we use Makerspace materials to plan and create a model for first grade students that explains at least one Sun-related pattern we observe on Earth?

Challenge Requirements:

- You must use Makerspace materials to create the Earth and Sun model.
- The model must be clear and simple enough for first grade students to learn from.
- You will have two classes to plan, create, and improve your model.
- Your model must explain at least one Sun-related pattern we observe on Earth

With the addition of a second STEAM teacher with expertise in computer science, we have been able to incorporate assured experiences in computer science for each student. One of a set of purposefully formulated goals of this component of the program is that students will be able to construct and execute algorithms which include sequencing and simple loops to accomplish a task, both independently and collaboratively, with or without a computing device. Students in kindergarten through second grade explored coding and robotics by observing and tinkering with a range of robots. Students in grades three through five explored more advanced computer science concepts, learning to code, and apply their programming knowledge to solve challenges.

In addition, we engaged all students across the elementary schools in the Hour of Code program this year. As part of National Computer Science Week, all elementary classes had a coding experience during the first two weeks in December 2018. These experiences included coding robots like Ozobots, Bee-bots, or Dash and Dot; exploring programming activities on www.code.org such as Minecraft, Dance Party, and Lightbot; or participating in unplugged coding activities

Elementary STEAM ~ Synthesis of Findings

Areas of Progress and Focus

Expansion of STEAM Opportunities

In order to expand upon the STEAM opportunities available to students, we developed and the Elementary STEAM teachers facilitated a rich, interest-based recess club program in which groups of students are invited to the STEAM Lab to engage in a range of open-ended STEAM experiences. Students are provided with opportunities to explore, experiment, and develop their passions related to particular dimensions of STEAM during the opportunities. This work supports goals embedded within the Teaching and Learning Pillar of the North Shore Strategic Plan. This ever-expanding array of experiences includes coding, robotics, engineering design challenges, and maker-space opportunities. Students have attested to how much they learn from and appreciate these opportunities to explore STEAM learning. Engagement rates in these experiences averaged at 80% of the students in particular classrooms.

ASK: How can we work as communicators and use 30 KEVA planks and a tennis ball to design and create the tallest New Year's Eve ball drop structure?

Challenge:

Happy New Year! You have been hired as engineers to design and create this year's New Year's Eve ball drop structure out of KEVA planks. You will have 30 KEVA planks and a tennis ball. We will measure our structures using a meter stick. As engineers and communicators, you will keep working and improving your ideas as you and your partner try to make your ball drop structure even taller. Good luck!

Incorporation of FIRST

FIRST (**F**or **I**nspiration and **R**ecognition of **S**cience and **T**echnology) is more than robots. The mission of FIRST to inspire young people to be science and technology leaders and innovators, by engaging them in exciting mentor based programs that build science, engineering, and technology skills, that inspire innovation, and that foster well rounded life capabilities including communication, collaboration, thinking, and problem solving skills.
All first grade students participated in the FIRST LEGO League Jr. Mission Moon Challenge as part of their STEAM experience this year. The students were challenged to work in teams as problem solvers to confront the challenges of living on the moon. The students were asked to conduct research, to construct a model of a moon b using LEGO materials, and to build and code a moon rover to help meet the challenges of living on the moon. In final stages of the project, the students shared their ideas with District administrators.

FIRST LEGO LEAGUE JR.

Mission MOON

Essential Questions:

- Why can humans live on Earth?
- What do humans need to survive on the Moon?
- How can we solve problems that make it challenging for humans to live on the Moon?

Challenge:

BLAST OFF! You will be working as part of a team of engineers and astronauts who are going to live on the Moon. After first learning about the Moon and exploring the challenges of living there, your team will design and build a model Moon Base using LEGO materials.

Your Moon Base must include:

- a greenhouse that grows at least two different crops
- a solution to help humans save or recycle water on the Moon
- a part that is programmed to move using LEGO WeDo 2.0

After your team discovers more about the Moon and builds a team Moon Base, get ready to share what you learned with others.

Mission Moon: Saving and Recycling Water on the Moon

Challenge: Our crops need water to grow and there isn't any liquid water on the Moon. We need to find a way to recycle the water that we use.

Solution: We're going to build a greywater system that takes water from _____

and brings it to _____.

Our greywater system will need:

_____ _____ _____

Draw a diagram of your greywater system in the box below.
Label all of the parts of your system.

What will your group's greenhouse model need so plants can grow?

Sunlight · glass	nutrients/ place to grow · soil · boxes/beds · tables/shelves · pots/hanging pots	Plants · seeds
Water · sprinklers · watering can · hose	Air · air tanks	Other Ideas · shades · shovel

Middle School STEAM – Strengths

Revision and Expansion of Assured Opportunities
Assured STEAM courses for all students now exist in grades 6, 7 and 8. In addition, new STEAM electives have been created for students in all grades to choose from.

- ***Grade 6 Technology (Curriculum Revised in 2019)*** is an assured experience for all sixth grade students and is part of the school wide STEM initiative to get students more engaged in Science Engineering, and Technology. Students design, build, and experiment with a wide range of projects in our technology lab using computers, hand tools, and small power tools.

- ***Grade 7 Technology (Curriculum Revised in 2019)*** is an assured experience for all students and is part of the school wide STEM initiative to get students more engaged in Science and Technology. Students plan, design, and implement a wide range of projects that require the use of computers, hand tools, and light power tools. Additionally, students use Math and Science concepts to understand architectural design and to solve common problems faced in the field of engineering.

- ***Coding 8 (Curriculum Created in 2019)*** *is now an assured experience for all 8th grade students beginning in the 2019-2020 school year.* In this 8-week cycle course, students will enter the exciting world of programming using the Python language. Every day we will be using our problem-solving and critical thinking skills as we explore the use of coding for a variety of purposes such as creating art and designing games. We will learn how to write code, debug programs, and discover the key concepts that will extend to any coding language students want to pursue after this course. Because coding is so versatile, students at every level will find a challenge and an opportunity to grow in this course in a way that is empowering and fun!

Expansion of Middle School STEM Elective Options

LEGO Robotics Do You Like LEGOs? Do You Like ROBOTS? Then come explore the field of robotics and automation through LEGOS! Students will learn the basics of programming, robotics, and automation using various sensors and the EV3 LEGO Brick. Design and build your own LEGO robot to compete in a gauntlet of different classroom challenges. In this hands-on experience, you'll look through the lens of science, math, technology, and engineering. Come and see if you can complete all of the LEGO challenges in this LEGO Robotics Course!

Design Squad: In Design Squad, you'll learn to think like an engineer and gain a deeper understanding of the design process. Find out what it takes to confront real-world problems with interesting design constraints. Can you design a container that will safely ship a Pringles chip to your home? Can you create a crutch for someone who needs to move around but also transport their important items? Can you invent a holder for a 6-pack of soda cans that is animal-safe, sturdy, and easy to carry? Join the Squad and tackle these STEM challenges!

MythBusters: Ever wondered if double-dipping really spreads germs? Does toast really always land butter-side down? Can you make a glow stick out of Mountain Dew, vinegar, and baking soda as claimed on the internet? Separating truth from fiction can be tough! In this elective we will endeavor to find the truth as we investigate claims using research and the scientific method, and we'll explore the science behind these phenomena. We will also watch episodes of MythBusters as inspiration and to analyze and critique the investigative methods demonstrated on the show.

STEM Research: Do you ever look at the world around you and think about how you can make it better? Have you ever dreamed of creating your own cool invention or gadget? Work with friends and classmates to take on a problem you see in the world, and improve upon it. In this class, you'll look back in history to consider what engineering and design innovations changed the world...and be challenged to envision a future technology that would help solve a problem we have today. What technological breakthroughs would we need to make your solution into a reality? This course will train you to research, brainstorm, imagine, and tinker.

STEM Investigations: In the words of Albert Einstein, "Failure is success in progress." Throughout this hands-on course, serious math and science students will incorporate mathematical understandings with scientific investigations as they experiment and challenge what we believe about scientific phenomena. Through what material does sound travel most effectively? What makes the highest-bouncing bouncy ball? What is the optimal design for the landing gear used on the Mars Rover? These are a few questions STEM Investigation students have tested and deliberated – join this course and find out what we will test out next! Students will be required to utilize technology, public speaking skills, and data analysis to share and argue the outcomes of each investigation. We design, test, and revise, and our best prototypes become our solutions. We will keep the mindset of being a STEM thinker as we "Build, Create, Destroy, Explore, Design, and Solve."

Coding & Electronics: Have you ever thought about how something works like your phone, radio, computer, or TV? In this course we will explore the different electrical components that go into these devices. We'll use the open source Arduino software and learn the C coding language

to design and test circuits and control the functions of LED lights, servos, and motors...and find out what makes these electronics work the way they do. This hands-on experience with code and electrical circuits will give you the tools to create your own computer or mini robot of your own!!

Renewable Revolution: Do you enjoy working with your hands, recycling, and creating useful items out of trash? Then this is the course for you! Renewable Revolution will open students' minds to creating "green" structures and objects. A "green" structure can be anything that does not harm or impact the environment, and in this course you'll find that this can include furniture made of recycled materials, natural powered electrical sources, and home-grown food instead of purchased from a store. This class promotes environmental stewardship and mindfulness about reducing our carbon footprint.

Computer Design Workshop: This course which is part of the national middle school Project Lead the Way engineering curriculum will introduce students to 3D computer solid modeling using state of the art graphic design software. Students will learn how to solve design and construction problems by creating realistic three dimensional models using a computer as your drawing board and pencil. The images created by students will look so real that they will seem as though you could pull them off the computer screen. Students will learn how to sketch out solutions to problems, develop images on a computer and eventually produce a set of plans and build models in the technology classroom that look as though they were produced by professional architects and engineers. This class will be held in our computer-learning center located in the technology lab.

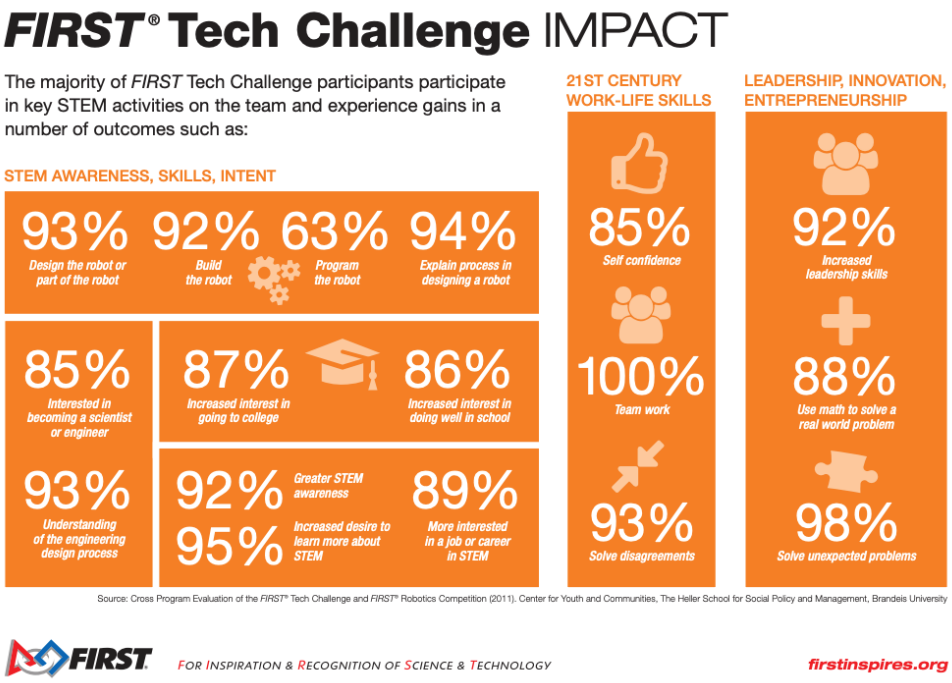
Viking Explorers: Why is that under there? Have you ever asked yourself these questions? Have you ever tried to discover the answers yourself? This is the essence of exploration. This year, dive into underwater exploration and become part of the team that designs, builds, and drives underwater robots. Explore your local waterways; see the unseen; discover Long Island, your home, like never before. This fully hands-on, half-year elective course was designed specifically with you in mind. Come join Mr. Slack and Mr. Lang on an unforgettable adventure - search shipwrecks, discover local marine life, take samples to study in the lab, create art, develop, edit, and publish your video footage, meet experts in the field of Science, Technology, Engineering and Math, travel around Long Island to explore its diversity, and share your observations with a global community of explorers. Don't miss this chance to release your inner Viking! "Equipped with his five senses, man explores the universe around him and calls the adventure science." - Edwin Powell Hubble

High School STEAM - Expansion of New Courses and Integration of STEAM Opportunities

- All Pre-Calculus students will have robotics units infused into their coursework.

- *Implement FIRST Tech Challenge curriculum in the newly designed **Robot Tech Challenge elective course** at the high school. This project-based course will provide authentic, real-world learning to students by bringing robotics and programming into the classroom. Students will learn about way more than robots! They will also get hands on experience in 21st century skills such as technical writing and presentation, communication, project management, collaboration, teamwork, programming, and engineering practices. By designing, building, and troubleshooting industrial-level robots, students will be engaging in a level of electromechanical design and debugging that is applicable to real-life industries. Further, students in this course can qualify*

for industry-recognized micro-certifications (developed by Carnegie Mellon University and the FIRST Robotics organization) including Electrical Foundations, Software Foundations, and Mechanical Foundations.



- ***Other Course Offerings:***
  - APP DESIGN FOR THE WEB
  - GAME DESIGN AND DEVELOPMENT
  - INTRODUCTION TO COMPUTER PROGRAMMING
  - AP COMPUTER SCIENCE A/IB COMPUTER SCIENCE SL
  - IB COMPUTER SCIENCE SL Year 2
  - CYBERSECURITY
  - PRINCIPLES OF ENGINEERING
  - DESIGN AND DRAWING FOR PRODUCTION

AP and IB Computer Science – Mean Scores

	2016	***2017***	***2018***	***2019***
AP Computer Science A		*3.38*	*4.00*	*1.7 (3.24 NY State Average)*
AP Computer Science Principles				*3.4 (3.1 NY State Average)*
IB Computer Science SL			*4.00 (3.79 World Average)*	*2.25 (3.83 World Average)*

North Shore is ranked 321 out of 5,000 in assessment of top STEM high schools.

Newsweek, with its long history of reporting on scientific breakthroughs, technological revolutions and societal challenges, partnered with STEM.org to rank America's Best STEM High Schools. We found schools in every region of the country that offer skilled teachers who keep up with developments in these fields and who create dynamic learning environments to engage their students.

With high-profile institutions in big urban areas and small but strong programs across the nation, America's future in science, technology, engineering and mathematics is in good hands." North Shore was ranked 321 nationally with only Great Neck North (147), Great Neck South (163), and Jericho (182) ranking above us on Long Island.

- Just take a look at these successful schools https://www.newsweek.com/americas-best-stem-high-schools-2020

- Additionally, the following details how the assessment was done: https://stem.org/wp-content/uploads/2019/11/STEM-Accredited-Methodology-Comparison-Newsweek.pdf

Extracurricular Clubs and Organizations:

Middle School

- *Lego Robotics Club*
- *Robotics Club*
- *Rocketry Club*
- *Technology Club*

High School

- *Robotics Organization*
- *Technology Club*
- *Woodworking Club*

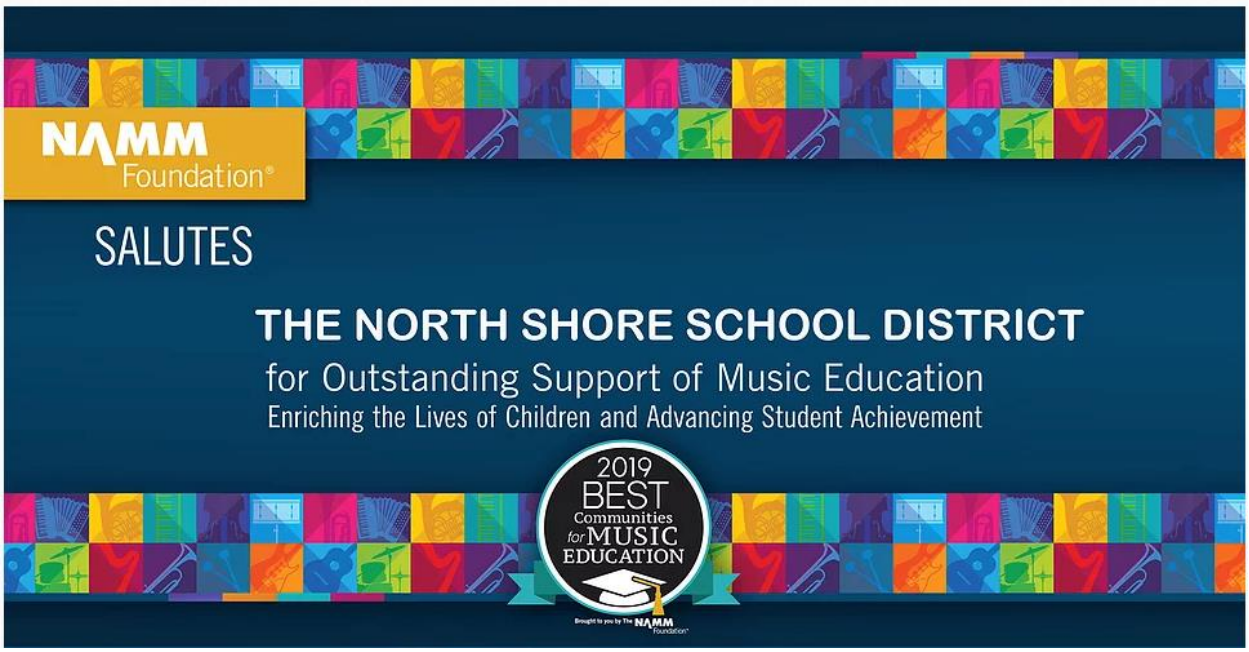
Areas of Focus – Secondary STEAM

- **AP/IB Computer Science and K-12 Integration of Computer Science Skills and Assessments**
  There is a need to create a K-12 computer science framework that direct and articulate how students should grow in the sophistication of their K-12 computer science and STEAM skills at each level of their journey at North Shore. Moreover, the district should focus on developing "checkpoints" to assess how students are progressing along this continuum.

- **Continued Expansion of STEAM Approaches Within Science and Mathematics Courses**
  The integration of robotics into pre-calculus provides an exciting internal model that can be extended to other Math and Science courses at the high school level.

- **Performance Based Assessments and Competitions**
  Using models from other school districts, performance based assessments (perhaps as capstones to assess student growth in the Shared Valued Outcomes) should be designed to engage and assess students in STEAM learning opportunities as a grade level.

- **Expansion of Extracurricular Clubs for Coding, Robotics and Engineering**
  New extracurricular opportunities that broaden the definition, appeal and inclusiveness of STEAM learning opportunities is critical for both the middle school and the high school levels so that our maturing students know how multi-faceted STEAM learning is.



For the third year in a row, the North Shore schools has been named a ***best community for music education***.

What is the Best Communities for Music Education (BCME) program?

The NAMM Foundation's Best Communities for Music Education (BCME) is a signature program of The NAMM Foundation that recognizes and celebrates school districts and schools for their support and commitment to music education and efforts to assure access to music for all students as part of a well-rounded education.

The survey was developed in partnership with the Music Research Institute at the University of Kansas. Survey questions are aligned with goals for equity and access to music education for all students, and also with national standards for music education. This survey seeks to support communities everywhere that are working to assure music education opportunities for all students.

Elementary Instrumental Band and Orchestra Participation

Grade	2017-2018	2018-2019	2019-2020
Elementary Band Grade 3	95	97	92
Elementary Band Grade 4	78	86	91
Elementary Band Grade 5	68	70	77
Elementary Orchestra Grade 3	92	101	102
Elementary Orchestra Grade 4	74	84	82
Elementary Orchestra Grade 5	73	61	71
Total Number of Students	480	499	422
% of Students Enrolled	**85%**	**86%**	**83%**

Middle School Band and Orchestra Participation

Grade	2017-2018	2018-2019	2019-2020
Middle School Band Grade 6	50	50	54
Middle School Band Grade 7	43	40	46
Middle School Band Grade 8	33	37	37
Middle School Chorus Grade 6	45	50	25
Middle School Chorus Grade 7	44	49	52
Middle School Chorus Grade 8	46	41	36
Middle School Orchestra Grade 6	53	51	51
Middle School Orchestra Grade 7	48	42	43
Middle School Orchestra Grade 8	32	42	35
Total Number of Students	394	402	379
% of Students Enrolled	**64%**	**67%**	**65%**

High School Fine and Performing Arts Participation

Fine and Performing Arts Enrollment							
Visual Arts Courses	***SY 17 - 18***	***SY 18 - 19***	***SY 19 - 20***	***Performing Arts Courses***	***SY 17 - 18***	***SY 18 - 19***	***SY 19 - 20***
AP 2D Design	5	14	15	Band	81	75	80
Dwg & Ptng/Adv. Dwg & Ptng	62	46	41	Chorus	72	81	82
IPA	9	10	12	Dance	-	-	12
Open Studio	4	-	-	Orchestra	84	63	90
Photo/Adv. Photo	60	57	61	IB Music 1/2	15	22	8
Sculpture/Adv. Sculpture	6	12	0	IB Theatre 1/2	12	12	10
Studio Art/Adv. Studio Art	78	75	92				
IB Visual Art	-	-	5				
Total Number of Students	***224***	***214***	***226***	***Total Number of Students***	***264***	***253***	***282***
% of Students Enrolled	***27%***	***26%***	***27%***	***% of Students Enrolled***	***31%***	***30%***	***34%***

Fine and Performing Arts Achievements							
Visual Arts	***SY 17 - 18***	***SY 18 - 19***	***SY 19 - 20***	***Performing Arts***	***SY 17 - 18***	***SY 18 - 19***	***SY 19 - 20***
All-County Art - DW	30	27	TBD	ACDA	6	-	6
The Art Guild at Elderfields	-	2	TBD	All-County Music - DW	89	91	100
GO APE Exhibit	4	4	TBD	All-State	6	6	7
LI Best - Hecksher Museum	1	1	TBD	All-Eastern	-	2	-
Regional Scholastic Art & Writitng	12	15	TBD	All-Nationals	-	1	1
Town of Oyster Bay Scholarship	1	-	TBD	Chamber Music - Lincoln Ctr.	-	-	-
				LI Scholar Artist	-	1	1
				LISFA (HS & MS)	15	14	14
				NYSBDA (HS & MS)	13	9	7
				NYSSMA PEAK Festival	1	-	-
				NYSSMA Solos - DW	415	401	TBD

Areas of Strength and Focus

Ensemble Retention

The Fine and Performing Arts program at North Shore has a long history of inclusive participation with opportunities for individual success. While participation in ensembles does decrease from elementary to middle to high school in all school districts, North Shore's participation remains at a relatively high rate. We believe that this is due to strong foundation that students experience in the elementary skills with all students in grades 4 and 5 participating in their grade level choral ensemble while almost 85% of these students also participate in an instrumental ensemble at the same time. This, along with deeply critical musical theory learning in general music classes provides students with a simultaneous confidence and interest. Scheduling concerns and the business of secondary school life and other opportunities (including interscholastic athletics and clubs) often make it challenging for students to maintain the same high levels of participation.

Diversity of Offerings

In part, students do have additional options outside of band or orchestra as the move into the life of secondary school. Theater, specialized fine art courses and opportunities as well as electronic music production, all expand the horizon of what involvement in the fine and performing arts program looks like. In the 2019-2020 school year, electives in theater and dance were added to the course options for students in the high school. Interest is building in these programs and we will explore how to create these diverse opportunities in a resource conscience manner.

Diversity of Participants

As options for fine and performing arts study and participation become more diverse, we intend to attract students who may not have fit into a traditional ensemble model. We will continue to monitor our enrollment and ensure that we are closing any gaps in participation that exist along cultural, linguistic or economic lines.