

	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
ELEMENTARY	<p>New teacher manual upgrades for Investigations, reproducibles and materials</p> <p>Continue professional development for grade 5 & new staff (EMT)</p> <p>Professional development for new upgrades</p>	<p>New teacher manual upgrades for Investigations, reproducibles and materials</p> <p>Evaluate Investigations upgrades</p> <p>Staff development continues</p> <p>Curriculum mapping to determine MLR alignment</p>	<p>Implement changes based on needs identified in the evaluation of the upgrades and curriculum mapping</p> <p>Curriculum mapping to determine MLR alignment</p>	<p>Continue new changes with staff development for new teachers</p> <p>Curriculum mapping to determine MLR alignment</p>	<p>Continue new changes with staff development for new teachers</p> <p>Curriculum mapping to determine MLR alignment</p>
MIDDLE SCHOOL	<p>New text to replace damaged books</p> <p>Rewrite 6th grade to align with MLR</p> <p>Provide opportunity for 5th & 6th grade to collaborate</p>	<p>Revise curriculum</p> <p>Purchase new materials to align with MLR</p> <p>Remedial math course for DNM and low PM students</p>	<p>Professional development for revised curriculum</p> <p>Implement revised curriculum</p> <p>Remedial math course</p>	<p>Continue revised program with staff development for new teachers</p> <p>Remedial math course</p>	<p>Continue revised program with staff development for new teachers</p> <p>Remedial math course</p>
HIGH SCHOOL	<p>New math elective</p> <p>Technology training for calculator/ Smart Board</p> <p>Replace worn textbooks</p>	<p>Review math elective for viability</p> <p>Continue tech training</p> <p>Replace worn textbooks</p>	<p>Revise math curriculum</p> <p>Update calculators</p>	<p>Professional development for revised curriculum</p> <p>Implement revised curriculum</p>	<p>Continue revised program with staff development for new teachers</p>

PK-12 Mathematics Review

March 2009

~STRIVING FOR HIGH QUALITY INSTRUCTION~

THE PURPOSE OF THIS REVIEW IS TO BE SELF-REFLECTIVE ABOUT OUR PRACTICE AND TO DEVELOP A FIVE-YEAR VISION.

THIS DOCUMENT WAS CREATED BY K-12 MEMBERS OF THE MSAD #11 MATHEMATICS COMMITTEE.

PK-2 MATHEMATICS REVIEW

Narrative Description

The PK - 2 mathematics program begins with building number sense through counting, exploration of the structure of our number system, and recognizing relationships between numbers. Primary math also includes geometry with basic shapes and visual images. Patterning and the use of written numbers and symbols lay the foundation for algebra. Collecting and sorting data rounds out the major areas for PK - 2 math.

Students work in a variety of contexts to build their understanding of the concepts in the above areas. They work with hands-on materials and activities, ways to show and extend their work with computers and paper & pencil, and sharing their strategies and ideas with students and teacher.

List of Strengths

- ◆ Constructivist approach builds real mathematical understanding.
 - ◆ Students share ideas and explain their reasoning.
 - ◆ Games and hands-on activities reinforce and extend skills.
 - ◆ Lessons are standards-based.
 - ◆ Support for teachers from the math specialist.
 - ◆ Support for students through Title 1 and Special Education.
- ◆ Early Mathematical Thinking provides a way to identify student strengths and weaknesses as well as professional development to support differentiated instruction.

List of what Needs Upgrading

- ◆ Updated instructional materials.
 - ◆ Focus should continue on numbers sense and computation. Also, areas of need are measurement with standard units, time, money and common fractions.
 - ◆ More material to support fact fluency.
 - ◆ A tighter spiral of topics would help students and teachers revisit, build and reinforce concepts.
 - ◆ The Investigations program we currently use was published in the early 1990's. We have been using it since 1999. An updated program, published in 2007 and currently available, addresses those needs listed above.

How do you know? List specific data from local assessments, anecdotal data, tutorial data, etc. Attach charts if necessary.

SEE ATTACHED EMT DATA

PK-12 Mathematics Review
March 2008

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3-5 MATHEMATICS REVIEW

Narrative Description

Mathematics in grades three through five focuses on further development of number sense and use of operations, especially with multiplication and division. Knowledge of place value builds from working within the number system. Students learn both 2-D and 3-D geometry. Gathering and displaying data develops to analyzing and interpreting. Patterns, functions, and probability all emerge in the intermediate grades as well.

List of Strengths

- ◆ Use of hands-on experiences with manipulatives, mathematical models and symbolic representation to build from concrete to abstract.
 - ◆ Developing strong mathematical thinkers.
 - ◆ Operations of multiplication and division in real-life situations.
 - ◆ A variety of strategies for solving mathematical problems.
 - ◆ Discussion and written explanations about how we create solutions.
 - ◆ Common assessments that give students and teachers information about student progress.

List of what Needs Upgrading

- ◆ Correlation to state expectations (Maine Learning Results, MEA, NECAP)
 - ◆ Resources for more incorporation of teaching time and money.
 - ◆ Tighter spiral of topics like fractions, decimals, and measurement.
 - ◆ More practice to develop fluency with facts and number relationships
 - ◆ More emphasis on place value concepts and algebraic concepts.
 - ◆ More focus on subtraction.
 - ◆ Resources for students/ parents/ tutors such as references and work journals.
 - ◆ Updated teacher manuals for Investigations.

How do you know? List specific data from MEA's, local assessments, anecdotal data, survey data, etc. See attached MEA chart, NWEA chart

PK-12 Mathematics Review

March 2008

~STRIVING FOR HIGH QUALITY INSTRUCTION~

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6-8 MATHEMATICS REVIEW

Narrative Description

- Sixth grade is a transitional year for students' learning, which is moving from concrete thinkers to more abstract thinkers. The focus is on Number Sense; students are expected to compute, using the four operations, with fractions and decimals. They receive an introduction to algebra, which include writing and evaluating expressions and one-step equations. Students will be able to perform the order of operations in the correct sequence, use number theory when applicable, identify and write percents, calculate averages (mean, median, mode) and read and interpret circle graphs. Students will also calculate the area of triangles, quadrilaterals, and circles as well as identify and create 2-D and 3-D figures.
- 7th grade math students are expected to work with fraction, decimals, percents and integers, perform the order of operations in the correct sequence, and use ratios and proportions. Students will be able to create and answer questions based on various data displays and work with theoretical and experimental probabilities. Students will work with angles, calculate area and perimeter of basic polygons, plot coordinates and perform transformations in a coordinate plane. Students will work with slope and solve one and two-step equations.
- 8th grade math is primarily Algebra preparation. Learning is focused on solving equations and writing & graphing linear functions. Continued advancement in geometry, number concepts and proportional thinking is an integral part of this process. Data analysis, problem solving and measurement skills provide much of the framework within these math concepts are practiced and mastered.

List of Strengths

- Monthly math dept. meetings
- Three middle school math staff regularly participate in District Math committees
- After school academic tutorial support is available
- Sixth through eighth grade Math Curriculum Map is aligned to the 2007 MLR
- Parents have access to PowerSchool, progress reports, and report cards
- Technology support is readily available (laptops, internet programs, SMART board)
- MEA Release items integrated into the curriculum via test questions, warm ups, or practice problems
- RayeAnne DeSoto provides guidance to enhance math instruction for all ability levels.
- 55 minute classes

List of what Needs Upgrading

- More opportunities for 5th and 6th grade collaboration on the content covered, when it is covered, and if it is reviewed throughout the year.
- New curriculum materials align with the 2007 MLR
- Flexible grouping within grade levels
- Common vocabulary used across ALL grade levels
- SMART board training for math teachers
- Rewrite 6th grade math curriculum to align with 2007 MLR
- Textbooks
- Remedial math with identified skill deficits
- Math ed. Tech. to facilitate failing students

How do you know? List specific data from MEA's, local assessments, anecdotal data, survey data, etc. See attached MEA data, failure rates and NWEA data

9-12 Mathematics Review March 2008

Narrative Description :

The GAHS Math program is designed with goals set forth by the Maine Learning Results (MLR) with specific course outlines created by members of the high school math department. Three years of mathematics are required, and there are courses above and beyond these requirements available for students to continue their mathematics education. The three required courses for students to have completed are **Algebra 1**, **Geometry** and **Algebra 2**. Some students may have completed **Algebra 1** at the middle school level, which fulfills their requirement for that course, but these students will still need to complete a third high school math class. In these three courses, there are two levels available for students, an Honors course as well as the standard course. There are also "Essentials" courses available for **Algebra 1**, **Geometry**, and **Algebra 2** for those students who require a Special Education level of instruction.

In addition to the three required courses, students have the option of taking **Functions, Statistics and Trigonometry, Pre-calculus** and **AP calculus** during their junior and senior years. Both **Functions** and **Pre-calculus** are offered only as honors courses. These elective courses fulfill a mathematics credit required for graduation.

One additional course that has been introduced to the high school curriculum is **Pre-Algebra** which is available to freshmen. This course is designed for those students who need more practice and explanation of number sense and mathematical operations before they are able to move on to **Algebra 1**. This course is taken as an option of the individual student, and does not count towards the three year math requirement for graduation.

The high school mathematics department has worked together during common planning times to design a syllabus for each offered. These syllabi have been designed to ensure that students are all being exposed to the same topics within each course, regardless of which teacher's class they are enrolled in. The syllabi have been carefully crafted to allow students the opportunity to continuously build their understanding of each topic, incorporating previous units as well as tie-ins to future units.

Students in each math course at GAHS are also introduced to various types of questions used in the SAT's. Students are exposed to different types of problems (multiple choice, open answer) and are shown strategies for solving problem

Teachers in the mathematics department at GAHS all use a variety of instructional methods, including lectures, individual and group work, class discussions, and student centered explanations for problems.

List of Strengths

- Weekly math department meetings
- High school math staff participate in district math committees
- Each high school course syllabi is aligned to the MLR
- Parents have online access to student grades
- Practice problems and techniques for the SAT are introduced and practiced on a weekly basis with all courses
- 80 minute classes
- Courses have common syllabi, which allows for students to transfer from one class to another, if needed
- Open enrollment for Honors and AP
- Students have access to (and practice with) SAT approved calculators
- Math team is available for students who desire a competitive math environment
- All tests given are common assessments, which are annually reviewed and revised
- AP Calculus meets daily (rather than every other day)
- Credit recovery program available for freshmen who fail Algebra 1.

List of what Needs Upgrading

- Addition of a senior math elective
- There is no exit exam required for students to pass a course
- More opportunity for high school and middle school collaboration on content covered
- Technology training (including Calculator Applications and SMART board)
- Textbooks
- More opportunity needed for professional development

How do you know? List specific data from MEA's, local assessments, anecdotal data, survey data, etc.

Percentage of Students Performing 'At or Above' & 'Below' Standard

Chart Results

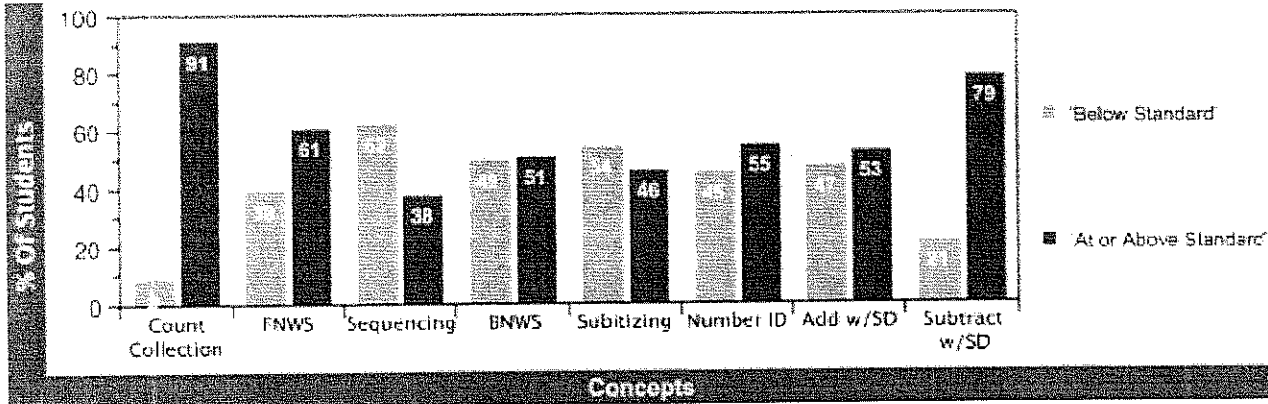


Table Results

Concepts	TOTAL			'Below Standard'			'At or Above Standard'		
	#	Avg		#	%	Avg	#	%	Avg
<u>Count Collection</u>	137	0.91		12	9%	0.00	125	91%	1.00
<u>FNWS</u>	137	0.61		54	39%	0.00	83	61%	1.00
<u>Sequencing</u>	137	0.65		85	62%	0.44	52	38%	1.00
<u>BNWS</u>	137	0.51		67	49%	0.00	70	51%	1.00
<u>Subitizing</u>	137	0.46		74	54%	0.00	63	46%	1.00
<u>Number ID</u>	137	0.55		62	45%	0.00	75	55%	1.00
<u>Add w/SD</u>	137	0.76		64	47%	0.48	73	53%	1.00
<u>Subtract w/SD</u>	137	0.84		29	21%	0.24	108	79%	1.00

Selection Criteria

Percentage of Students Performing 'At or Above' & 'Below' Standard

Maine School Administrative District #11

Criteria [SQL](#)

Assessments

Filter

Subject Mathematics
 Report Category Concepts
 Cohort Currently Enrolled Students
 Year 08-09
 Grade Kindergarten
 Prof. Profile <Primary Proficiency>
 Categorize by <above/below standard>
 School Classification Selected Area

EMT-GrK
 Fall

No filters applied

Percentage of Students Performing 'At or Above' & 'Below' Standard

Chart Results

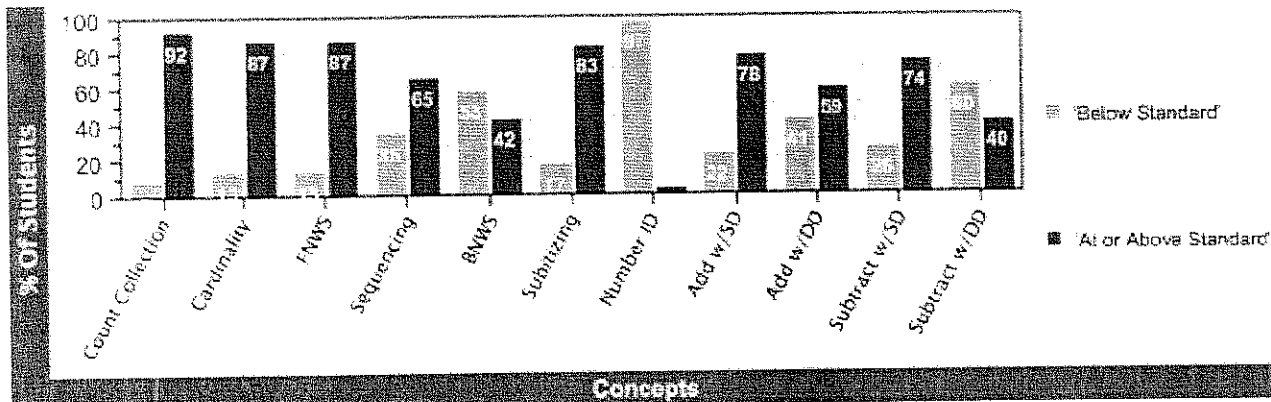


Table Results

Concepts	TOTAL			'Below Standard'			'At or Above Standard'		
	#	Avg		#	%	Avg	#	%	Avg
<u>Count Collection</u>	144	0.92		11	8%	0.00	133	92%	1.00
<u>Cardinality</u>	144	0.87		19	13%	0.00	125	87%	1.00
<u>FNWS</u>	144	0.87		19	13%	0.00	125	87%	1.00
<u>Sequencing</u>	144	0.87		51	35%	0.63	93	65%	1.00
<u>BNWS</u>	144	0.42		83	58%	0.00	61	42%	1.00
<u>Subitizing</u>	144	0.83		25	17%	0.00	119	83%	1.00
<u>Number ID</u>	144	0.47		140	97%	0.45	4	3%	1.00
<u>Add w/SD</u>	144	0.78		31	22%	0.00	113	78%	1.00
<u>Add w/DD</u>	144	0.74		59	41%	0.37	85	59%	1.00
<u>Subtract w/SD</u>	144	0.74		37	26%	0.00	107	74%	1.00
<u>Subtract w/DD</u>	144	0.53		87	60%	0.23	57	40%	1.00

Selection Criteria

Percentage of Students Performing 'At or Above' & 'Below' Standard

Maine School Administrative District #11

Criteria (SQL)

Assessments

Filter

Subject Mathematics
 Report Category Concepts
 Cohort Currently Enrolled Students
 Year 08-09
 Grade Second grade
 Prof. Profile <Primary Proficiency>
 Categorize by <above/below standard>
 School Classification Selected Area

EMT-Gr2
 Fall

No filters applied

Percentage of Students Performing @ each Proficiency Level

Chart Results

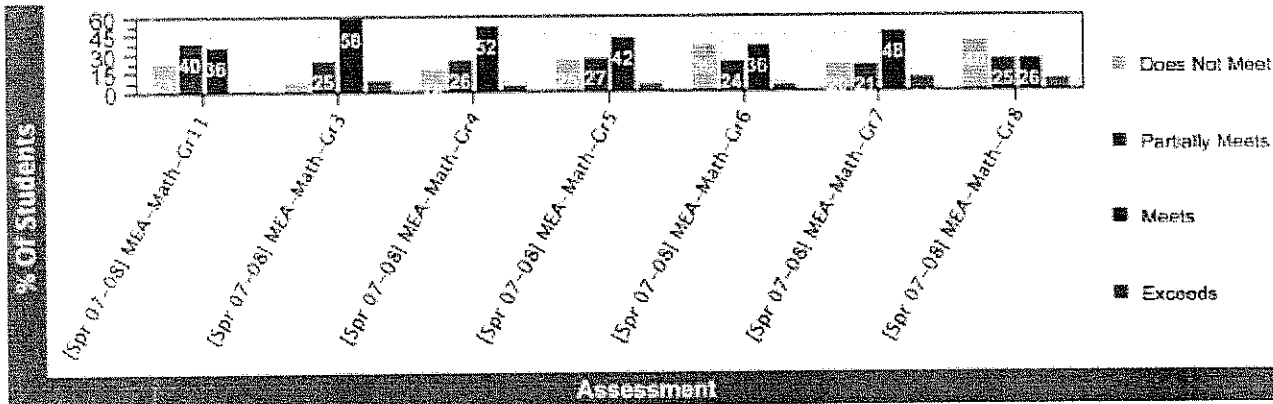


Table Results

Assessment	TOTAL		Does Not Meet			Partially Meets			Meets			Exceeds		
	#	Avg	#	%	Avg	#	%	Avg	#	%	Avg	#	%	Avg
[Spr 07-08] MEA-Math-Gr11	160	1140.31	36	23%	1129.44	64	40%	1138.09	58	36%	1148.55	2	1%	1168.00
[Spr 07-08] MEA-Math-Gr3	125	346.56	10	8%	323.40	31	25%	336.19	72	58%	350.56	12	10%	368.67
[Spr 07-08] MEA-Math-Gr4	132	442.02	24	18%	420.25	34	26%	436.53	68	52%	449.85	6	5%	471.33
[Spr 07-08] MEA-Math-Gr5	154	541.10	39	25%	522.31	41	27%	537.07	65	42%	551.35	9	6%	566.89
[Spr 07-08] MEA-Math-Gr6	135	636.89	48	36%	619.33	32	24%	636.25	49	36%	650.65	6	4%	668.33
[Spr 07-08] MEA-Math-Gr7	151	743.46	30	20%	719.67	32	21%	736.56	73	48%	750.60	16	11%	769.25
[Spr 07-08] MEA-Math-Gr8	173	836.74	69	40%	819.25	43	25%	836.88	45	26%	851.64	16	9%	869.88

Selection Criteria

Percentage of Students Performing @ each Proficiency Level

Maine School Administrative District #11

Criteria -SQL	Assessments	Filter
Subject Mathematics	[Spr 07-08] MEA-Math-Gr11	No filters applied
Cohort Currently Enrolled Students	[Spr 07-08] MEA-Math-Gr3	
Year 07-08	[Spr 07-08] MEA-Math-Gr4	
Prof. Profile District	[Spr 07-08] MEA-Math-Gr5	
Categorize by <proficiency level>	[Spr 07-08] MEA-Math-Gr6	
	[Spr 07-08] MEA-Math-Gr7	
	[Spr 07-08] MEA-Math-Gr8	

HIGH SCHOOL MATH FAILURE RATES:

	TOTAL STUDENTS 1 ST QUARTER	TOTAL STUDENTS 2 ND QUARTER	# OF FAILURES 1 ST QUARTER	# OF FAILURES 2 ND QUARTER	% OF FAILURES 1 ST QUARTER	% OF FAILURES 2 ND QUARTER
Total	593	570	64	73	10.8 %	12.8 %

MIDDLE SCHOOL MATH FAILURE RATES

	TOTAL STUDENTS 1 ST SEMESTER	# OF FAILURES 1 ST SEMESTER	% OF FAILURES 1 ST SEMESTER
6 TH GRADE	169	14	8.28%
7 TH GRADE	163	14	8.59%
8 TH GRADE	170	35	20.6%
Total	502	63	12.5%