To: School Board, Superintendent

From: John Casey, Math Facilitator

Date: May 25, 2010

Re: District Math Report

The district's State of the Schools math report is attached for your review and consideration. Tom Eismeier of Pond Cove, John Casey and Steve Price of CEMS, and Charlotte Hanna and Tony Ghidoni of CEHS have been the lead writers, assisted by teams of math teachers at each school.

Events of the last decade, including *Maine Learning Results* law, federal *No Child Left Behind* legislation, school accreditation requirements, and the Maine *RTI* (Reponse to Intervention) *Initiative,* have necessitated on-going discussion and revision of curriculum and instruction. Arguably, however, the driving force in improving our mathematics program has not been from such outside forces, but rather from within. A culture exists among Cape Elizabeth math teachers that encourages analytical, thoughtful, collegial, progressive discourse about our students and our program. We celebrate successes, study data, identify weaknesses, and create solutions. The outcome is reflected in a strong program.

We trust that this report will inform you about the current program of study, differentiation for high- and low-performing students, remediation, role of technology, and what test data shows. We are encouraged by students' end-of-program scores (SAT and AP Exams), which indicate that our K-12 mathematics program is working extremely well in preparing students for college and for work.

In our on-going process of improvement, we welcome your questions, comments, and suggestions. We hope that this report will lead to more conversations and ideas that will guide future work.

Respectfully submitted,

CE Math Committee

State of Math in Cape Elizabeth Schools
Report to the School Board
May 25th, 2010

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Section 1 - District Goals and Reflections:

Where are we? Where do we need to go?

As stated in the executive summary of *Math Framework for the 2009 National Assessment of Educational Progress:*

"In the rapidly changing world of the 21st century, math literacy is an essential goal for all of our nation's youth. Through math education, children come to understand the world in which they live and learn to apply scientific principles in many facets of their lives. In addition, every school has an obligation to provide young people who choose to pursue careers in math and technology with a strong foundation for their postsecondary study and work experience. The nation's future depends on mathematically and scientifically literate citizens who can participate as informed members of society and as highly skilled workforce, well prepared to address challenging issues at the local, national, and global levels."

Further, the *National Math Standards: An Overview* states that:

"In a world filled with the products of scientific inquiry, scientific literacy has become a necessity for everyone. Everyone needs to use scientific information to make choices that arise every day. Everyone needs to be able to engage intelligently in public discourse and debate about important issues that involve math and technology. And everyone deserves to share in the excitement and personal fulfillment that can come from understanding and learning about the natural world.

Scientific literacy also is of increasing importance in the workplace. More and more jobs demand advanced skills, requiring that people be able to learn, reason, think creatively, make decisions, and solve problems. An understanding of math and the processes of math contributes in an essential way to these skills. Other countries are investing heavily to create scientifically and technically literate work forces. To keep pace in global markets, the United States needs to have an equally capable citizenry."

According to the National Math Education Standards, there are four basic principles (National Math Education Standards ,1996) that are intended to guide math education in the United States. Those principles are as follows:

· **Math is for all students.** This principle is one of equity and excellence. Math in our schools must be for all students; regardless of age, sex, cultural or ethnic background, disabilities, aspirations, or interest and motivation in math, should have the opportunity to attain high levels of mathematical literacy.

· **Learning math is an active process.** Learning math is something students do, not something that is done to them. In learning math, students describe objects and events, ask questions, acquire knowledge, construct explanations of natural phenomena, test those explanations in many different ways, and communicate their ideas to others.

· **School math reflects the intellectual and cultural traditions that characterize the practice of contemporary math.** To develop a rich knowledge of math and the natural world, students must become familiar with modes of scientific inquiry, rules of evidence, ways of formulating questions, and ways of proposing explanations. The relation of math to mathematics and to technology and an understanding of the nature of math should also be part of their education.

· **Improving math education is part of systemic education reform.** National goals and standards contribute to state and local systemic initiatives, and the national and local reform efforts complement each other. Within the larger education system, we can view math education as a subsystem with both shared and unique components. The components include students and teachers; schools with principals, superintendents, and school boards; teacher education programs in colleges and universities; textbooks and textbook publishers; communities of parents and of students; scientists and engineers; math museums; business and industry; and legislators.

In relation to **The Maine Parameters for Essential Instruction (2007),** the following statement is offered: "Math and technology provide people with the knowledge and tools to understand and address many of the challenges. Students must be provided with opportunities to access, understand, and evaluate current information and tools related to math and technology if they are to be ready to live in a 21st century global society.

The study of math and technology includes both processes and bodies of knowledge. Scientific processes are the ways scientists investigate and communicate about the natural world. The scientific body of knowledge includes concepts, principles, facts, laws, and theories about the way the world around us works. Technology includes the technological design process and the body of knowledge related to the study of tools and the effect of technology on society.

Math and technology merge in the pursuit of knowledge and solutions to problems that require the application of scientific understanding and product design. Solving technological problems demands scientific knowledge while modern technologies make it possible to discover new scientific knowledge. In a world shaped by math and technology, it is important for students to learn how math and technology connect with the demands of society and the knowledge of all content areas. It is equally important that students are provided with learning experiences that integrate tools, knowledge, and processes of math and technology."

Therefore, it is the goal of math educators in Cape Elizabeth to provide each student with rich mathematical experiences that incorporate contemporary mathematical knowledge, employ a mathematical process, and promote conceptualization. Students will utilize related skills learned in core disciplines (i.e., literacy and numeracy) in concert with these experiences, knowledge, and concepts in mathematical discourse.

Where are we?

Based on the data and research of student math performance in Cape Elizabeth, we believe the following are strengths of our current math program:

· Beginning in the late 1980's and continuing to the present, Cape Elizabeth math educators have consistently aligned our K-12 math programs with the standards and principles of such councils as the National Council of Teachers of Mathematics (NCTM), the Maine Learning Results, The Maine Parameters for Essential Instruction, The National Mathematics Advisory Panel and have also been correlated to the New England Comprehensive Assessment Program (NECAP's)
· K-12 priority and secondary math goals are to be approved by the School Board on May 11th 2010 (see appendix).
· Curriculum templates, the focus of our 2008-2009 efforts are completed.
· Increased focus on communication and making the K-12 math program transparent and accessible to students, parents and the larger community has been accomplished through the completion of this state of the schools report and its subsequent posting on the district website along with other content area reports.
· All students K-12 are continually exposed to a program that focuses on real-life problem solving, appropriate use of technology, student communication of mathematical thinking and multiple opportunities to learn

concepts and practice skills.
· Instructional strategies/activities that require students to explain and defend their mathematical and scientific thinking to peers are continually implemented.
· The construction and use of common assessments closely aligned to the newly approved priority goals provides further data to inform instruction.
· Student scores on standardized assessments accessed in grades five through twelve (i.e., MEAs, NECAPS, NWEA'S,SAT and AP exams) indicate Cape Elizabeth students generally excel at state and national levels.

Where are we going?
Based on the results of the above-mentioned standardized assessments coupled with some common assessments now in place, the following are recommendations for future work:
· Complete/revise and review/accept curriculum templates, priority and secondary learning goals.
· Explore activities that allow more writing opportunities for math purposes at the Pond Cove and middle school levels.
· Analyze data from new 5th grade accelerated textbook Pre Transition Mathematics, new Algebra and Transition Math textbooks that have just been implemented this year. Use results to determine program curriculum and instruction needs. Revise templates, primary and secondary goals where necessary.
· Develop and implement formative assessments to benchmark student performance growth and inform differentiated instruction especially in classes involving students whose math readiness is lower.
· Continue to develop teaching staff's ability to collect and analyze data to inform instruction and programmatic needs.
· Continue to develop and take advantage of cross-curricular connections that readily present themselves. (i.e., informational reading, note-taking and research skills, graph construction and interpretation, oral communication, measurement skills, overlapping project/content activities).
· Use NECAP middle school grades 5 and 8 math results to identify possible New England "peer" performer schools for conversations, sharing, and reciprocal learning (i.e., blogs and webinars).
· Continue to incorporate the judicious use of technology in math education.
· Continue to expand local resources beyond classroom walls to provide a context and place for math learning.
· Continue to enhance teachers' abilities to provide for differentiation.
. If the Common Core L.D. 1800 is adopted by the Maine State Legislature, make sure that alignment of our standards (done in the 1980's, 1997, 2007 and 2009) is done once again!!!!

Section 2 - Staff, Materials, and Time Resources

A. Classroom Teaching Positions

Pond Cove

Teachers: 28
Grade Levels: 5 (K-4)
Advanced Sections: 0
% of Time Spent on math: % (average 300 out of 1350 instructional minutes)
% of Total Regular Education Staff expenditure: 22%
Estimated Cost: $374,528.00- (28 staff X % of time on math X average budgeted salary/benefits per teacher)

Middle School

Teachers: 6.4
Number of Classes: 30 sections
Levels: Grade 5: 6 grade level classes, 1 accelerated class, 1 controlled class.
Grade 6: 5 grade level classes, 2 accelerated classes, 1 controlled class.
Grade 7: 4 grade level classes, 3 accelerated classes, 1 controlled class.
Grade 8: 2 grade level classes, 3 accelerated classes, 1 controlled class
Total Advanced Sections: 9
% of Time Spent on math: 16.67% (225 minutes per 1350)
% of Total Regular Education Staff expenditure: 23.91% (11/46 staff, including all regular ed staff, for instance: Allied Arts, nursing, guidance)
Estimated Cost: $389,120 [11 staff: Walsh 0.6, Karlonas 0.5, Doane 0.5, Killip 0.5, Record 0.6 and Caruso 0.5; Casey, Price 0.6. Solender 0.8. Bearor .2 and Freccerro 1.0- (6.4 x average salary\benefits per teacher of $60, 800.)

High School

Teachers: 8 teachers, but 7.2 FTE (Brownell 0.8, Ghidoni 1.0, Hanna 1.0, Rioux 1.0, Ferrell 1.0, Thayer 0.6, Hayward, 1.0, Newell, 0.8)
Number of Classes: 36
Levels: College Prep, Honors, Advanced Placement
Advanced Sections: 2 Sec AP Statistics, 1 Sec AP Calculus AB, 1 Sec AP Calculus BC
% of Time Spent on Math: 100% of 7.2 FTE teacher time; 16.67% of student class time
% of Total Regular Education Staff expenditure: 17.8%
Estimated Cost: $437,760
(FTE) X (% of time on math) X (avg budgeted salary/benefits per teacher)= 7.2 X 100% X $60,800 = $437,760)

B. Math Material Costs

Pond Cove

Current annual costs:

Grade 1	journals	2400.00
Grade 2	journals	2100.00
Grade 3	journals	3000.00
Grade 4	journals	2200.00
	Total	$ 9700.00

Projected costs:
Since we've built up a stock of resource material, the replacement costs will be relatively stable over the next few years. The additions this year have been related to computer and Smartboard use.
Updating to the Everyday Math 3rd Edition in '97 required buying the revised Teacher Editions at an additional expense of approximately $3500. A 4th edition will be published in the future.

Middle School

Current costs:
5th grade- "Everyday Math Journal 1- (125 copies @ $ 9.24 each) = $ 1,155.00
- T108 calculator kits- (2 @ $ 85.55) = $171.10
6th grade-none
7th grade-none
8th grade-none
Total current costs-$1,326.10

Possible projected costs: (for 2010-2011)
16 electronic replacement site licenses (1 unit) for Plato- $ 3060.00
Total possible projected costs: $3060.00

High School

Current costs: (2009-2010)
Textbooks- $3793.21
Professional Memberships- $546.00
Awards (end of year)- $350.00
AMC (national math competition fee) - $150.00
Total current costs- $4839.21

Projected costs: (2010-2011)
Textbooks- $5000.00
Professional Memberships- $600.00
Awards (end of year)- $350.00
AMC (national math competition fee)- $150.00
Total projected costs-$6100

Cost Classroom Teaching Positions:	**$ 1,201,408 (Total from all 3 schools)**
Current Material Costs:	**$ 15,865,31 (Total from all 3 schools)**
Projected 2010-11 Material Costs	**$ 12,660 (Total from all 3 schools)**

Section 3 - Program Description at Each School

Pond Cove

Everyday Mathematics is one of the standards-based curricula developed with National Science Foundation (NSF) funding in the 1990's. Introduced by grade level as it was published, Everyday Math is the now the core curriculum K-5. An important point to remember is that instead of a "flat spiral," common to many textbooks that include upwards of 50% review each year, Everyday Mathematics uses a strategy of distributed practice, backed by research that suggests that people need repeated engagement and practice over time to fully understand new concepts and to practice procedures.

Explanation of standards-based curriculum materials

> Most curricula (standards-based and conventional) intend for students to learn concepts, skills, applications, problem solving and efficient procedures. They differ, however, with regard to order and manner in which these elements are presented, the balance that is struck among different elements, and organizational style. For example, conventional curricula tend to rely on direct explication of the to-be-learned material as well as careful sequencing and the accumulation of lower-level skills before presenting students with the opportunity to engage in higher-order thinking, reasoning and problem-solving with those skills. In contrast, standards-based materials rarely explicate concepts for students; rather, they rely on students' engagement with well-designed tasks to expose them to concepts. After the concept has been introduced and its features explored by students, the curriculum and teacher step in to apply definitions, standard labels, and standard procedural techniques. (Stein, *NCTM Research Brief*, 2007)

Overview from What Works Clearinghouse, U.S. Department of Education Institute of Education Sciences (IES):

> *Everyday Mathematics* , published by Wright Group/McGraw-Hill, is a core curriculum for students in kindergarten through grade 6 covering numeration and order, operations, functions and sequences, data and chance, algebra, geometry and spatial sense, measures and measurement, reference frames, and patterns. At each grade level, the *Everyday Mathematics* curriculum provides students with multiple opportunities to learn concepts and practice skills. Across grade levels, concepts are reviewed and extended in varying instructional contexts. The distinguishing features of *Everyday Mathematics* are its focus on real-life problem solving, student communication of mathematical thinking, and appropriate use of technology. This curriculum also emphasizes balancing different types of instruction, using various methods for skills practice, and fostering parent involvement in student learning.

Kindergarten

Everyday Mathematics is structured differently for kindergarten than for grades 1–6. The kindergarten *Everyday Mathematics* curriculum is composed primarily of activities such as counting games, money exchanges, and puzzles. There are no books or workbooks, just a Teacher's Guide with activities designed to be integrated into the typical K day though attendance counts, calendar tracking, weather observation, recording daily temperature, and the always popular survey and graphing. Since we have a half-day K, the team bases their lessons on the priority goals. Although the emphasis in on positive attitudes and developing the vocabulary to express mathematical ideas, a break-out list of skills covered looks like this:

Kindergarten Math Grade Level Condensed Priorities
Students will:
Count to 100 by 1's
Count to 30 by 5's
Count to 100 by 10's
Count to 20 by 2's
Count backwards 15-0
Count up by 1's starting with any number to 50
Read 0-30
Write 0-30
Identify and form groups 0-10
Create number stories to 10
See and utilize patterns
Sort objects using various attributes
Recognize geometric shapes: circle, square, triangle, rectangle, sphere, cube
Recognize penny, nickel, dime, quarter, dollar
Tell time to hour (analog)
Make a simple graph and share observations
Recognize and name geometric shapes: circle, square, triangle, rectangle, sphere, and cube
See and utilize patterns
Sort objects using various attributes

Grades 1-4

In grades 1–4, the curriculum is divided into units covering specific topics. The number of units per school year ranges from 9 to 12, depending on the specific grade and the topics covered. Each unit is composed of 7 to 14 individual lessons.

The lessons themselves have a similar routines from grade to grade introducing new material while still allowing for review and practice. All students become familiar with the expectations for whole class, small group, and individual work. Besides pencil and paper, they use toolkits, which include such items as 6-inch rulers, pattern block templates, and math cards. Calculators are integrated into the activities.

Grade 1

The first grade program emphasizes the following content:
Counting, reading, and writing numbers; investigating the place value of whole numbers, and investigating fractions and money. The operations of addition and subtraction are stressed while introducing fact families, extended facts, and beginning work with properties of numbers and problem solving. Students also begin collecting, organizing, and displaying data using tables, charts, and graphs. Establishing common attributes for groups of objects and recognizing basic patterns are introduced as a way to look at numbers too. In the area of measurement students learn to use tools to measure length, capacity, and weight, and they practice measuring time using clocks, calendars, and timelines. Some basic geometry is covered too, as students explore some 2-dimensional and
3-dimensional shapes.

Grade 2

The second-grade program emphasizes the following:
Counting, reading, and writing numbers, identifying place value, and comparing numbers.
Working with basic fractions and using money to develop place value and decimal concepts.
Recalling addition and subtraction facts while continuing to explore fact families, adding and subtracting with tens and hundreds, beginning multiplication and division, and exchanging money amounts (units). Students also continue collecting, organizing, and displaying data using tables, charts, and graphs and use tools to measure length, weight, capacity, and volume; using U.S.
customary and metric measurement units. The use of clocks, calendars, timelines, thermometers, and number lines to measure time and other parameters like temperature continue to be practiced.
Continued exploration of 2-dimensional and 3-dimensional shapes takes place as does practice with number patterns, rules for number sequences, relations between numbers, and attributes of groups.

Grade 3

With its expectation of mastery of many of the skills and concepts introduced previously, grade three completes an important cycle in Everyday Math's multiple exposure and practice strategy. You can see in the full view that the curriculum becomes more dense from now on: the curriculum strands fan toward the advanced content of the Middle and High Schools.
The third-grade program emphasizes the following:
Counting patterns, place value, and reading and writing whole numbers through 1,000,000. Fractions, decimals, and integers; practicing multiplication and division facts extended to multi-digit problems; working with properties; operations with fractions and money; collecting, organizing, and displaying data using tables, charts, and graphs; using basic probability terms; recording equivalent units of length; recognizing appropriate units of measure for various items; finding the area of rectangles by counting squares; using multiplication arrays, coordinate grids, thermometers, clocks, calendars, and map scales to estimate distances; exploring 2-dimensional and 3-dimensional shapes and other geometric concepts; finding patterns on the number grid; solving Frames-and-Arrows puzzles having two rules; completing variations of "What's My Rule?" activities; exploring the relationship between multiplication and division; using parentheses in writing number models; naming missing parts of number models.

Grade 4

As with grade 3, a significant shift occurs in grade 4 with an emphasis on real-world applications, especially through the lessons in the World Tour.
The fourth-grade program emphasizes the following content:
Reading, writing, and using whole numbers, fractions, decimals, percents, and negative numbers; exploring scientific notation; practicing addition and subtraction to proficiency; developing
multiplication and division skills; exploring addition, subtraction, multiplication, and division methods; inventing individual procedures and algorithms; experimenting with calculator procedures; collecting, organizing, displaying, and interpreting numerical data; exploring metric and U.S. customary measures; linear, area, volume, and weight; exploring geographical measures; using numbers in reference frames; number lines; coordinates; times and dates; latitude and longitude; developing an intuitive sense about 2-dimensional and 3-dimensional objects, their properties, uses, and relationships; designing, exploring, and using geometric and number patterns; reading, writing, and solving number sentences.

Math Support in Pond Cove

Math Lab

The Pond Cove Math Lab was developed through an initial grant from CEEF in 2007. The primary focus of the program is to track all students in grades K-2 to identify specific grade level standards that students have not mastered, and provide remediation and extra targeted instruction to fill in foundational gaps in students' mathematical understanding. Information and work samples collected in each student's math portfolio aid in the transition from one grade to another.

In addition to working with students, the Math Teacher Leader works with grade level teams, collecting, analyzing and compiling assessment data. This practice tracks the achievement of every student in grades K-2, and facilitates conversations with grade level teams regarding concerns about specific curriculum components, and allows for revisiting of identified concepts within the context of the classroom curriculum.To this end, the Math Lab provides consistent, structured support for struggling math students in small groups 3 times per week for each K-2 class, as well as support for teachers in the classroom 1session per week. In addition to targeted instruction for specific students, Kindergarten students also visit the Math Lab as a class monthly for structured activities and themed instruction.

Programming is also provided for accelerated students in grades 1 and 2, who are recommended by their teachers for extension, enrichment, more challenging activities and math explorations.
In order to provide the specific information needed regarding student achievement, the Math Teacher Leader compiles assessment data, analyzes concepts per grade level to determine weak areas, compares and analyzes this data across several years to determine trends and help form instructional practices. From this set of information, she is able to provide narrative analyses of student performance to guide instruction for subsequent years.

Additional home support is encouraged by dispersing information to community and parents to guide them in helping their students at home with math games and web-based activities.
The Math Teacher Leader is currently working with grade level teams to revise assessment practices and tools, examining the grade level standards to develop essential skill mastery topics. This work is being done in consult with classroom teachers and an author of the math program. This work will result in a revised report cards and possible changes in instructional practices.

Another focus for the Math Lab is to have every student in grades K-2 visit the Lab sometime during the year to participate in math activities, whether it be for enrichment, remediation, extended instruction or extra practice. The mission is also to build self-esteem and a feeling of confidence in math through successful math achievement activities and accomplishments.

Goals for student enrichment include the development of a lending library of grade level and concept appropriate games and activities for Grades K-4. This would be housed in the school Media Center and multiple packages of teacher-developed games would be available for borrowing by teachers, students, and parents, similar to books. This would encourage students to practice math concepts in an enjoyable way, and help parents to become more involved with their child's mathematical development.

Another goal is to provide an expansion of "Math Power", a series of optional, challenging math activities, currently provided to grade 2, to other grades on a weekly basis.
Total number of students served in 2008-9: approximately 600. More specifically, there are approximately 2-3 students per classroom, K-2, who receive math support on a regular, on-going basis. The vast majority of students identified as needing help come for 3 or 4 concepts over the course of a school year, averaging out to 12-15 visits in a school year.

Math Masters, Gr. 3-4

Math Masters is a remedial math program for third and fourth grade students. It is offered daily, four days a week, for forty-five minutes per grade level. Students who have not earned a "3" or "4" on the Everyday Math unit checklists are given an opportunity to explore different ways of understanding the skill until they meet with success. When the child has grasped the concept of the lesson an exit slip is given to the classroom teacher for the child's cumulative math folder.

Two substitute teachers collaborate extensively, sharing the preparation and teaching time, so that students may transition easily from topic to topic and so that a clear picture of each child's process of learning can be understood. The program exists through the generosity of a Pond Cove Parent Association grant.

Instructional Support

Math Programs

Saxon Math: Incremental math instruction that teaches a new concept each day and constantly reviews old concepts. These concepts are divided into smaller, more easily grasped pieces.

Touch Math: Touch Math uses multi-sensory, tactile methods to teach diverse learners with hands-on learning style. It makes math concepts visible to students who have difficulty with the language of math.

On Cloud Nine: The On Cloud Nine math program teaches the concept of imagery and incorporates this to improve comprehension of the following mathematical procedures and concepts:

- The number line
- Addition and subtraction family facts
- Word problems
- Place value, decimals, fractions
- Carrying and borrowing
- Multiplication and Division

Mastering Math & Focus on Math: Review and practice grade level skills

Learning Profiles:

Visual Processing: Students with a general visual processing disability often experience most learning difficulty in the areas of math and spelling because they have trouble 'visualizing' words, letters, symbols, etc.

Auditory Processing: Involves how well a student can understand auditory information. They may have difficulty remembering information that they hear.

Sequential/Rational Processing: Appears to be the main filing system in the brain. They may have difficulty remembering math formulas and steps and with computation.

Processing Speed: Refers to how fast information travels through the brain. A general weakness in processing speed causes difficulty in all processing areas.

Executive Functioning Refers to the overall ability to manage or regulate all of the various cognitive and emotional processes. Weakness in this area is often associated with an attention deficit disorder.

Perceptual Reasoning/Working Memory/Processing Speed/ADHD

Number of Students

1st Grade: 6
2nd Grade: 6
3rd Grade: 2
4th Grade: 9

Total: 23

How Differentiation Happens at Pond Cove

The following link explains what the Everyday Math curriculum includes for differentiation opportunities and strategies.

Here are some key points:
The sequence of lesson and units
• Incorporates predictable routines that help engage children in mathematics and regular practice in a variety of contexts.
• Provides many opportunities throughout the year for children to acquire, process, and express mathematical concepts in concrete, pictorial, and symbolic ways.
• Extends children's thinking about mathematical ideas through questioning that leads to deepened understandings of concepts.

The lessons themselves use proven differentiation strategies:
• Making Connections to Everyday Life: Lessons offer regular opportunities to build on children's everyday life by helping them make connections between common experiences and new mathematics concepts.
• Modeling Concretely: Everyday Mathematics lessons frequently include the use of manipulatives. Modeling concretely makes math accessible for children and deepens understanding.
• Modeling Visually: Because classrooms tend to be highly verbal places, visual representations can help children make sense of the flow of words around them.
• Modeling Physically: Lessons also suggest ways to have children demonstrate concepts and skills with gestures or movements.
• Providing Organizational Tools: Lessons provide a variety of tools to help children organize their thinking. Using diagrams, tables, charts, and graphs improves student learning.
• Engaging Children in Discussing Math: Lessons often suggest discussion prompts or questions and emphasize sharing and comparing solution strategies. This type of "math talk" involves not only what is done, but also why it is done, and why it is correct or incorrect. Also, journal pages prompt children to explain their thinking, which offers opportunities to access their mathematical understanding.
• Summarizing the Lesson: Lesson summaries offer children a chance to bring closure to the lesson, reflect on the concepts and skills they have learned, and pose questions they may still have.

Support for Teachers

Everyday Mathematics gives teachers the support they need to address different learning styles. First, the Everyday Mathematics Teacher's Lesson Guide contains explicit instructions for teachers on how to differentiate instruction throughout the lessons.
Second, Everyday Mathematics uses a three-part lesson format: 1) Teaching the Lesson, 2) Ongoing Learning and Practice, and 3) Differentiation Options. The Differentiation Options section includes Readiness, Enrichment, Extra Practice, ELL Support, and Adjusting the Activity. Adjusting the Activity notes provide recommendations for tools, visual aids, and other instructional strategies that provide immediate support for all types of students. These notes also offer suggestions for open-ended questions to extend children's thinking.
Finally, each grade level of Everyday Mathematics includes a Differentiation Handbook. It explains the differentiation features within Everyday Mathematics lessons and includes a number of special projects, activities, and ideas for teachers to differentiate instruction even further.
Support for All Students
Research suggests that using a short readiness activity or providing some brief reminders and support before teaching a lesson offers struggling students a distinct learning advantage. Everyday Mathematics includes Readiness activities to review previously taught skills and concepts necessary for success in a lesson.
Frequent practice is also necessary for children to build and maintain strong mathematics skills. There are many opportunities in Everyday Mathematics for practice through games. Games are not merely attractive add-ons, but an essential component of the curriculum. The games help children develop critical thinking and problem-solving skills. The games are easily adapted to meet a variety of practice needs.

The Role of Technology in Pond Cove Math Classes

As previously mentioned, Pond Cove students have used calculators in the classroom for a number of years. Besides learning how and when to use them, the students explore arithmetical patterns that develop their number sense; these activities are accessible to all levels and eliminate unnecessary reliance on paper and pencil.

In the past year, the number and use of interactive whiteboards have increased dramatically at Pond Cove. Replacing the venerable overhead projector and lately the computer projector, Smartboards have proven to be a versatile tool for lesson presentation, student motivation, and student involvement. Besides the material provided directly from Everyday Math, grade level teams are locating and evaluating links to reinforce concepts, practice skills, and explore topics in more depth.

The Smartboards also allow easy access to data collection and representation, even (especially?) in grade 1, where teachers and kids deftly reaarrange the icons. A majority of the classrooms are now outfitted with Smartboards, and the goal is to have one in every room. Most of this equipment has come from the Cape Elizabeth Education Fund and Pond Cove Parents Association.

Middle School

Prioritized Goal- The most important mathematics goal at CEMS is to build balanced student skills in the areas of Number Sense, Data, Algebra and Geometry as emphasized by the National Council of Teachers of Mathematics (NCTM), the Parameters for Essential Instruction (formerly, the Maine Learning Results), and the

New England Common Assessment Program (NECAP's) so that they will be able to successfully meet the mathematical demands of all 9th grade placement offerings.

In support of the above primary goal, we work to increase each student's capacity to problem solve by learning and applying a variety of appropriate strategies to solve authentic problems.

In addition, a third goal is to enhance students' ability to communicate their mathematical thinking coherently and clearly to peers, teachers, and others using a variety of formats (oral, written, manipulatives, or other representations).

Program Descriptions

5th Grade Math

UCSMP Everyday Math is a program designed to give fifth grade students the opportunity to learn more mathematical content and become lifelong mathematical thinkers. Building upon the skills acquired through the elementary program, fifth graders study number theory, estimation, geometry, measurement, place value, and the interrelationship of fractions, decimals and percents. Students will continue to solidify their knowledge of basic facts while expanding and applying problem solving skills and strategies to every day situations. Hands-on manipulatives and skills-based games provide a rich and varied set of experiences designed to reinforce the spiraling concepts of this program.

5th Grade Accelerated - Pre-Transition Mathematics

The UCSMP Pre-Transition Mathematics class is the accelerated placement for fifth grade. It is focused toward students who are ready for a sixth grade curriculum and works well as a bridge from Everyday Math in fourth grade to the Transition Math program in sixth grade. The program emphasizes the practice of identifying and working with numbers as they are used in operations, with particular focus on fractions and percents.

Students working in this program exhibit above average math ability and have the focus, drive, and independent work ethic to be successful in the classroom setting and on their own at home.

6th Grade Math

This course combines the study of rational numbers, patterns, geometry, and integers with everyday applications and problem solving to provide students with strategies and tools they need to be effective and independent learners. In 6th grade students use a text book as a tool for practicing concepts and learning math through reading, which is heavily emphasized in Chicago Math from Transition Math through Pre-Calculus. An emphasis on fractions/decimals/percents and patterns helps to solidify basic understanding of rational number operations. The use of paper and pencil exercises and skill based games are continued in 6th grade.

6th Grade Accelerated - Transition Math

The UCSMP full-year Transition Math class is the accelerated placement for 6th grade. It is intended to prepare 6th graders for Algebra in 7th grade. In terms of content, the course focuses heavily on the use of algebraic thinking to model mathematical operations and geometrical concepts. The use of variables and solving of equations and inequalities are also a major focus. Other content areas studied include ratios and proportions, data representation, and probability. Students are expected to be at mastery level for most major computational

areas.

In terms of student disposition, more is required than to simply be good at math. Students must enjoy the subject, have an innate ability for it, possess a strong work ethic, and demonstrate the ability to drive their own learning independently. The course is fast-paced in terms of period length and in terms of material covered throughout the year. Independence is absolutely critical for students to be successful in this course.

Differentiation is accomplished through the assignment of longer-term activities that tie directly to each unit of study. These may or may not be collaborative in nature, and usually involve teacher guidance to enhance learning. Longer-term activities and other enrichment opportunities occur outside of the required 35-40 minutes per night of regular homework. Other non-required activities students are strongly encouraged to do to be successful include keeping lists of key terms and vocabulary, keeping lists of key mathematical properties, and participating in extra help sessions offered outside of class.

Rational Math

The Rational Math course is a program designed to give identified 7th grade students an opportunity to practice basic arithmetic skills, reinforce concepts, and solidify math facts so that they may become successful as they enter Transition Math in their 8th grade year and Algebra when they reach the high school. The curriculum for this course is supported by the Saxon Math program and its associated materials, teacher created materials, and some lessons from the Transition Math program.
Ideally delivered in a small group setting (less than 12 students), students are presented with a classroom environment that builds confidence in individual skills and sets a pace dictated more by readiness than by specific program goals. Courses like Controlled Math in grades 5 & 6, Rational Math in grade 7 and Transition Math Part 1 in grade 8 have been created upon these following core beliefs:

- Students who struggle with Chicago Math's distributed practice/spiraling curriculum benefit from a program based on fewer, key concepts
- The inability to master and retrieve basic computation facts lies at the heart of this struggle.
- These students need continual skill development and timed practice on proficient computation.
- Ongoing, formative assessments should be used to guide progress and instruction.
- Visual models, manipulatives and technlogy should be used consistently to represent procedures in another meaningful way.
- Like all students, regular, systemic instruction (but in a smaller classroom setting) where students ask, answer questions, think out loud, hear what others think and see other ways/stategies to solve problems must occur daily.

7th Grade Transition Math - Part 1

The typical student at CEMS will complete half of the Transition Math textbook in their 7th grade year, finish the book in 8th grade, then move on to algebra as a freshman. The pace in "Part 1" allows for more review of the concepts presented (usually two days per lesson rather than one), as well as time for reinforcement of fundamental computational skills (working with decimals, fractions, & percents). Especially challenging material is often pre-taught in class, rather than following the protocol of having students read about it on their own. Additional time is alloted for review prior to quizzes and tests as well.

The topics covered include in-depth practice with decimals, scientific notation, measurement, introduction to the use of variables, probability, properties of addition, solving simple equations, and geometry. The emphasis is on developing algebraic thinking and moving students from the concrete level of thinking to the abstract.

7th Grade Accelerated math - Transition Math

For students placed in the accelerated version of Transition Mathematics, the textbook is covered in its entirety over the course of one year, beginning with Chapter 4. Placement is determined by a combination of test scores, classroom performance, teacher observation, and student interest. Students are exposed to the material by reading and investigating independently, followed up with class discussion and practice. Because students placed in this course have strong basic arithmetic skills, the focus is on developing concepts which will support success in Algebra in eighth grade rather than strengthening computational skills and knowledge of fractions, decimals, and percents.

Transition Math concepts cover a multitude of areas including algebra, geometry, measurement, data, problem solving and number sense and integrates them within units. Students see how these concepts apply to real world problems and also learn how to read about mathematics as well as express themselves in verbal or written form.

7th Grade Accelerated math- Algebra

The 7th grade algebra course is designed to challenge 7th grade students who have proven to be superior mathematicians compared to their peers. It constitutes the core of the third year in a seven year middle and high school mathematics curriculum.
This course is the introduction to the "language of mathematics." Topics to be covered include basic concepts and operations in algebra, linear equations and inequalities, word problems, graphing, exponential functions, polynomials, quadratic equations and systems of equations. The course is steeped in real world situations in both content and application. We require reading of mathematics and taking notes as this will benefit the student in later courses and in reading technical matter in the real world. The introduction and use of powerful technology (graphing calculators) is integrated throughout. Homework is challenging, time-consuming, and is assigned 5 nights per week. Students read the material, work their way through the problems and are asked to come in the following day with questions.

8th Grade Math - Transition Math Part 2

The 8th grade Transition Math, Part 2 course, is designed to meet the needs of the majority of 8th grade students and prepares them for Algebra at the high school. This course constitutes the core of the second year in a seven year middle and high school mathematics curriculum. As this course is a continuation from part 1, the year starts off with a review of chapter 7 (TM1 finishes chapter 7) and the text is completed by mid to late May. Topics covered include patterns leading to subtraction, multiplication and division, data analysis, area, volume and graphing. There is an emphasis on algebraic thinking to model mathematical operations and geometrical concepts. The use of variables and solving of equations are integrated throughout and are a major focus. Technology takes the form of a scientific calculator and is used daily with lessons focused on its functions. Homework is assigned five nights per week and can be difficult for some due to the level of reading required. Students are required to read the text, take notes, and be prepared to ask questions in class. Problems are represented utilizing real world situations. This skill will benefit them throughout their lives. For the remaining 4 to 6 weeks after the text is completed, a review is conducted based on the observed weaknesses of the

students. Topics often covered are operations with unlike signs and working with fractions. If time permits, an exploration of more advanced algebra topics transpires.

8th Grade Accelerated math-Algebra

The 8th grade algebra course is designed to challenge 8th grade students who have proven to be outstanding mathematicians compared to their peers. It constitutes the core of the third year in a seven year middle and high school mathematics curriculum.
This course is the introduction to the "language of mathematics." Topics to be covered include basic concepts and operations in algebra, linear equations and inequalities, word problems, graphing, exponential functions, polynomials, quadratic equations and systems of equations. The course is steeped in real world situations in both content and application. We require reading of mathematics and taking notes as this will benefit the student in later courses and in reading technical matter in the real world. The introduction and use of powerful technology (graphing calculators) is integrated throughout. Homework is challenging, time-consuming, and is assigned 5 nights per week. Students read the material, work their way through the problems and are asked to come in the following day with questions.

8th Grade Accelerated math- Geometry

The 8th grade geometry course is an honors math program that is taught to 8th grade students who are on pace to take calculus their senior year in high school. It continues to teach the students the "language of mathematics." Some of the major topics covered involve: one-step proofs (parallel and perpendicular lines), isometries, and proofs using congruence. From there the students learn how to find the area and perimeter of various polygons (including irregular shaped objects) and the surface area and volumes of three-dimensional figures. The course concludes with indirect proofs, the similarity of various figures and and an in-depth investigation of chords, arcs and tangents of circles.

In addition to a rigorous geometry program, students are expected to remember and use skills from algebra to solve problems. Some algebraic concepts that are used throughout the year are: solving for one unknown, graphing on coordinate planes, linear equations and word problems. The course also jumps ahead to trigonometry by teaching the sine, cosine and tangent ratios.

This course is challenging, as is reflected in the homework and pace of the class. Homework is assigned 5 nights per week and quizzes are given every 3-4 lessons. Due to the fast pace of this advanced course, students are expected to do approximately 40 minutes of homework every night in order to successfully complete this course.

Accelerated Program Placement Guidelines

The accelerated math curriculum is based on the Chicago Math Series. Students accepted into the accelerated program will be moved one year ahead. This means that an entering fifth-grade student would take Pre-Transition Mathematics instead of Everyday Math 5. Although the two books cover much of the same material, for success in the Pre-Transition Mathematics program, a student should have already demonstrated a readiness to move into extended study at a more advanced stage. Students who successfully complete Pre-Transition Mathematics in grade five may move on to Transition Math in grade six, which sets up the following, possible, progression: Grade 7- Algebra, Grade 8-Geometry, Grade 9-Advanced Algebra, Grade 10-Functions, Statistics and Trigonometry, Grade 11-Pre-Calculus and Grade 12-Calculus.

The accelerated math program includes a focus on problem solving, fractions, decimals, percents, variables, formulas, graphs, algebra, geometry, proportion and integers. Students are asked to go beyond simple recall in arithmetic mastery; making connections and exercising higher-level thinking are stressed. Students in the program should have mastered whole-number operations and be very strong conceptually. The class is not for those who just "like mathematics." Students must be highly proficient in the subject matter. *The class moves quickly*, and there is homework every day. One of the expectations of the accelerated program, in fact, is that students spend up to thirty to forty-five minutes on homework each day. Fifth and sixth grade students taking the regular math class are typically assigned between ten and twenty minutes of homework each day, while students in grades seven and eight taking the regular math class are typically assigned thirty minutes of homework.

Candidacy for students entering the fifth grade into the accelerated math program is based on parent, teacher, or self-nomination. Likewise, a nomination form for fourth to fifth grade placement should be sent to the guidance office by March 30 of each academic year. Included in the criteria for candidacy are: a parent rating form, a teacher rating form, a math assessment, and a review of the math NWEA and possibly math NECAP scores. Notification of acceptance into the accelerated math program will be sent home prior to the end of May.
Students who enter CEMS after grade six will take a placement examination, and their school records, NWEA scores and NECAP scores (if available) will be reviewed for appropriate placement. From the end of fifth grade and continuing through sixth grade, each student will take multiple assessments that will be used to select the most appropriate math course for him or her upon entering grade six. Further, teacher recommendations, additional diagnostic assessments, NECAP scores, and NWEA scores will be used to address placement options that may present themselves during grade seven or eight. Students are also able to advance at CEHS based on mathematical developmental growth.

Instructional Support Students Receiving Direct Math Instruction

Students with disabilities who are unable, due to gaps in their math skills, to participate in the mainstream setting, are provided math instruction in a resource room setting. This instruction is delivered in a small group using research-based programming. Currently, the primary curriculum used is Saxon Math. We offer various levels (Saxon 3 through Saxon 6/5) to reach all students at their individual instruction levels. The program is presented in a spiraling manner in which new concepts are introduced while previously learned concepts are continually reinforced. Supplemental materials from other curriculum resources are provided at teacher discretion based on individual student needs.

Students who are working on their math fluency skills may also be participating in the Great Leaps Math program in which they participate in drills 3-5 days/week.

Teachers are also integrating the methods of Professor Mahesh Sharma (Director of The Center for Teaching and Learning Mathematics in Framingham, MA) in order to improve students' automaticity of basic facts and overall understanding of mathematics concepts.

Students who need further practice in math skills may have also recently begun participating in a web-based program called PLATO. This program allows students to work individually, at their own pace, from any computer. They participate in pre-tests, followed by tutorials, practice and then a post-test to demonstrate their mastery of the concepts. Teachers are able to track progress through online reports.

The 5/6 Resource Room is currently providing math instruction to 13 students. The 7/8 Resource is currently providing math instruction to 7 students.

If you have an educational need to know and would like to view NWEA data related to students in Instructional Support who receive direct instruction, that information is available upon request but due to its sensitive nature will not be printed in this report.

Math Support Programs in CEMS - RTI & Control Classes Gr 5/6

Math Support programs are in place for fifth and sixth grade students through two "controlled-group" math classes (one for each grade level) and for all grade levels through the "RTI program" (**R**esponse **T**o **I**ntervention).

Controlled-Group for 5th and 6th grade

Currently in its second year, the Controlled-group math program for 5th and 6th grades targets students who are struggling with skills, concepts, and overall "math confidence" by placing them in a small group (maximum 12 students) and adjusting the pace and delivery of the curriculum to better suit the individual needs of each student. The program still follows the prescribed courses of study in each grade, but the size and nature of the class allows for more differentiation and remediation than might be possible in a larger class setting.

This class is the RTI math program for these students. It incorporates many of the tools and strategies that are used in RTI such as the PLATO Learning Environment, a computer-based teaching and remediation platform, which uses technology to demonstrate and model concepts and skills in a way that may allow for greater understanding and accommodation of different learning styles. It also provides another source of data to help monitor student progress in identified areas of strength and weakness.

Students are recommended for this program using a variety of measures and observations which include standardized assessment data, classroom teacher input, and parental requests

RTI Program for 7th and 8th grade

Students in 7th and 8th grade who are in need of math support to supplement their regular classroom program are often provided help through the RTI program. Using a variety of strategies the program works to enhance skills, develop math fluency, and practice problem solving and computation. It is not a replacement for the regular math class, but reinforces and re-teaches concepts that may have been missed or misunderstood. The PLATO Learning Environment is used as one tool to monitor student progress, one-on-one help with assignments and classroom work is often employed, and accommodations in the classroom environment are supported.

Students are usually recommended for this program through a system which involves assessment data, classroom teacher input, SST (Student Study Team) input, and parent support.

How Differentiation Happens in CEMS Math Classes

When one truly differentiates, you do whatever it takes to help students learn by providing individual accommodations and making adjustments to your daily lesson plans. Of course some of our most obvious differentiation occurs through the diverse levels of math (14 classes) that we offer at CEMS in an attempt to meet the student at their appropriate level of readiness.This would be differentiation with respect to curriculum. Since a one-size-fits-all education no longer works, (if in fact it ever did) all teachers also differentiate in more subtle ways in their daily areas of content, instruction, process, product and assessments. We believe in this because we know that every student has special needs at some time (or many times) during a school day, a school year, and a school life.

Some common forms of differentiation used in grades 5 & 6 with respect to instruction and assessment are the following:
-small group/partner activities
-enrichment activities (for individuals in a choice binder)
-modified number of homework problems
-extended time on certain assessments or assignments
-differentiation activities provided with the USCMP program
-activities tailored to NWEA subsections that identify 5th or 6th grade areas of weakness
-extra help sessions before school, during recess, or after school

Some common forms of differentiation used in grades 7 & 8 are:
-small group/partner activities
-use of learning stations
-menu choices for projects based on student learning styles, modalities, intelligences
-menu choices for the manner in which a student demonstrates what he/she has learned
-reading, taking notes, pre-teaching before homework assignment
-use of manipulatives, technology(applets), modeling, for those who need to see and do the math
-modifying class work and homework for individual students
-enrichment assignments
-extended time on assessments or assignments
-learning contracts
-providing multiple/tiered assignments and supplementary materials
-technology again!-There are literally thousands of websites that can be used to tutor, introduce, reteach, reinforce, or provide rote drill and skill practice and assessment feedback.
-utilizing alternative assessment forms and or formats

Lastly, since we are currently using new/3rd edition textbooks (Pre Transition Math, Transition Math and Algebra) our teachers can now access a built-in resource section called "Acccomodating the Learner" in a further attempt to reach different learning styles.

The Role of Technology in CEMS math classes

In grades 5 & 6, the use of technology involves the use of scientific calculators, Smart Boards (where available) and online quizzes and tests which are now a part of the grade 6 Prentice Hall program. The computer lab and portable labs at each grade level provide students with the opportunity to access the thousands of math websites that can be used to introduce, re-teach, reinforce, and assess both basic and advanced math concepts and skills.

In grades 7 & 8 due to the existence of the MLTI since 2002 (Maine Learning Technology Initiative) and our participation in MISTM (Maine's Impact Study of Technology in Mathematics in 2004/5 & 2005/6) programs, access to technology in math has greatly increased. One big advantage is Excel. The use of spreadsheets has become a great way to teach students in both math and science about functions, variables, and dependent and independent variables. This hands on approach has helped to break the barrier with students who previously struggled with arithmetic. As mentioned previously, while there are literally hundreds of math websites available to both staff and students, CEMS teachers in grades seven and eight have concentrated much of their focus on the sites made available to them through their 2 year professional development association with MISTM. After completion of this two year program, teachers spent summer professional development time alligning the various applets and websites with the correct units/chapters of study offered in each course. Graphing calculators have become an integral part of our programs with the introduction of the most recent editions of our textbooks. Students use both hand-held and graphing software on their laptops. All Algebra and Geometry students are required to have one to use (the school has purchased some to lend too) and it is strongly suggested that our Transition Math students use them.

High School

Prioritized Goals

At the high school, the math department prioritizes numbers, operations, algebra, geometry, measurement, data analysis and probability. Emphasis is also placed on problem solving, reasoning, proof, connections, communication, and representations. External assessments, including NWEA, PSAT, SAT, and AP Exams, are used to determine the level of student performance on math standards. Analysis of this data is used to modify individual classroom instruction and high school curriculum. We are actively pursuing another external evaluation option such as ACT or New York Regents Exam.

CEHS Program Descriptions

Algebra (UCSMP)

Algebra, the introductory course to all high school level math, includes both pure and applied mathematics. Abstract thinking is developed as a student learns to model patterns by algebraic expressions and to work with algebraic expressions according to the theorems and properties of pure mathematics. A real-world orientation rich in applications from a variety of fields and the integration of geometry, probability, and statistics are fundamental features. Students learn to use the graphing calculator, not simply as a computation device, but as a tool to explore equations, graphs, and charts and to compare, contrast, communicate, and connect at higher abstract levels.

Topics:

- Algebraic Expressions and Equations
- Linear Equalities and Inequalities
- Ratios and Proportions in Algebra
- Slopes and Lines
- Functions
- Exponential Growth and Decay
- Powers and Roots
- Quadratic Equations

Linear Systems

Geometry (UCSMP)

Geometry focuses on the deductive process of Euclidean geometry and on the application of the geometry to real-life problems. The student starts with postulates and undefined terms and, using logic, proves the theorems and deduces the formulas. Applied geometry is then used in a wide variety of problem-solving situations. The skills of algebra are reviewed as they are used throughout the course.

Topics:

Undefined Terms and Postulates of Euclidean Geometry
Logic
Lines, Angles, and 1-Step Proofs
Transformational Geometry
Congruence and Proofs
Polygons and Proofs
Triangle Congruence and Proofs
Perimeter and Area
3-Dimensional Figures
Surface Area and Volume
Indirect and Coordinate Proofs
Similarity
Right Triangle Trigonometry
Circles

Advanced Algebra (UCSMP)

Advanced Algebra, according to the author of the UCSMP textbook, "contains much of the mathematics that educated people around the world use in conversation and that most colleges expect you to have studied." A student who completes *Advanced Algebra* has covered the content required by the SAT and by the Maine math standards (Maine Learning Results). As in UCSMP *Algebra*, the course is rich in real-world applications and the instruction builds the student's ability to use graphing calculator technology to understand functions in greater depth.

Topics:

Functions
Variation
Linear Functions and Sequences
Matrix Algebra
Systems
Quadratic Functions
Powers
Inverses of Functions and Radicals
Exponential and Logarithmic Functions
Trigonometry
Polynomials

AP Statistics / Trigonometry

AP (Advanced Placement) Statistics/Trigonometry is an introductory, college-level class that prepares a student to take the AP Statistics Examination in May. The course follows the AP syllabus and has been formally approved by the Advanced Placement board. A student may, depending on exam score and each college's policy, receive college credit for an introductory statistics course.

After the AP Exam, the focus shifts from statistics to functions and trigonometry to prepare the student for the next course, Pre-Calculus (UCSMP).

Topics:

- Organizing Data
  - Exploring Data
  - The Normal Distribution
  - Examining Relationships
  - Examining Relationships (Non-Linear)
- Producing Data
  - Samples and Experiments
- Probability
  - Probability: The Study of Randomness
  - Random Variables
  - The Binomial and Geometric Distributions
  - Sampling Distributions
- Inference
  - Introduction to Inference
  - Inference for Distributions
  - Inference for Proportions
  - Inference for Tables: Chi-Square Procedures
  - Inference for Regression
- Post-AP Exam
  - Functions
  - Trigonometry

Functions, Statistics, and Trigonometry (UCSMP)

The course *Functions, Statistics and Trigonometry* (*FST*) covers three areas of math that connect strongly to real world situations. Students study linear, quadratic, power, exponential, logarithmic, trigonometric, and polynomial functions, as well as their transformations. The study of trigonometry includes the unit circle, right and oblique triangle trigonometry, the Law of Sines, the Law of Cosines, and applications of trig functions and their transformations. Statistics includes mean, mode, median, five number summaries, z-scores, outliers, normal, and binomial distributions. Time is spent exploring situations with and without the use of technology, primarily graphing calculators.

Topics:

- Analysis of data via the measures of center, 5 number summary, outliers, variance and standard deviation
- Methods of regression and estimating
- Parent functions and their transformations

Composition of functions and inverse functions
Unit circle in trigonometry
Graphs of trig functions and their transformations
Law of Sines and Law of Cosines
Power functions
Exponential functions and their inverses (logarithms)
Counting via the counting rule, combinations and permutations, and probability
Series and Sequences
Polynomial functions and factoring techniques

Honors PreCalculus (UCSMP)

Honors PreCalculus integrates the major ideas of mathematics needed for calculus with the fundamental notions of discrete mathematics. Mathematical thinking, including specific attention to formal logic and proof and comparing structures, is the unifying theme. The algebra, geometry, and function ideas studied in previous years are applied throughout in the solutions of equations and inequalities, in graphing and in proofs.

Topics
Logic and Reasoning
Analyzing Functions
Functions, Equations, and Inequalities
Integers and Polynomials
Rational Numbers and Rational Expressions
Trigonometry Identities
Inductive Proof
Polar Coordinates and Complex Number
Derivatives
Combinatorics
Graphs and Circuits
Vectors
Integrals

AP Calculus

AP (Advanced Placement) Calculus is offered in both A/B and B/C. A/B is equivalent to a first semester calculus at most universities. B/C is equivalent to a first year (2 semester) calculus course. The course follows the AP syllabus and has been formally approved by the Advanced Placement board. A student may, depending on exam score and each college's policy, receive college credit for an introductory calculus course.

Topics:
Functions and Models
Limits
Derivatives
Application of Derivatives
Integrals
Application of Integrals
Differential Equations

Series and Sequences (BC Only)

How Differentiation Happens at CEHS

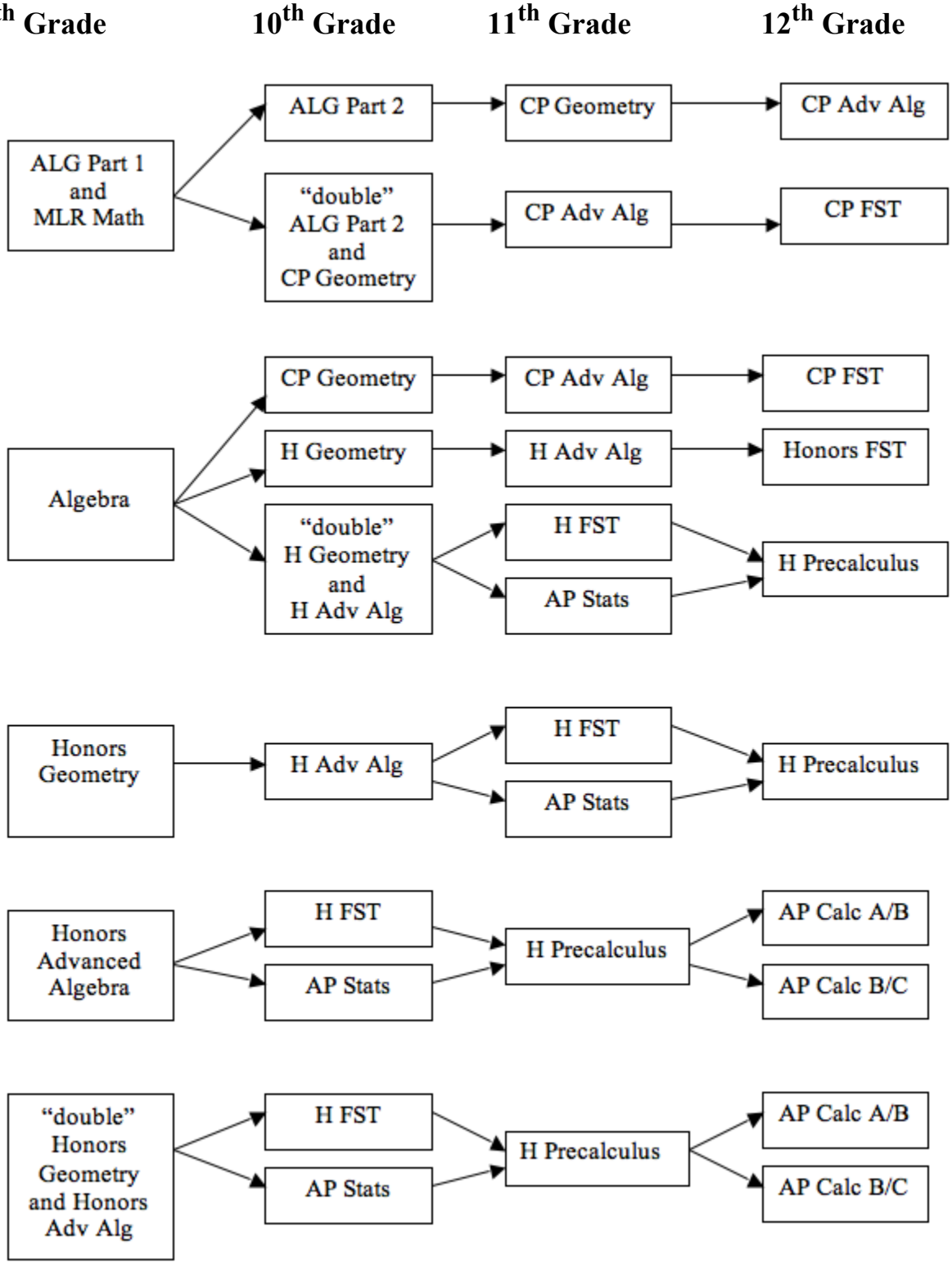
High school math is offered at three levels--College Preparatory (CP), Honors, and Advanced Placement (AP). A student is not locked into a level, but may move between levels based on performance, motivation, and teacher recommendation.

A student, depending on readiness, begins the course titled *Algebra* in the UCSMP series (University of Chicago School Mathematics Project, aka "Chicago") in either grade 7, 8, or 9. The student then continues through the UCSMP sequence of courses in the following order: *Geometry*, *Advanced Algebra*, *Functions Statistics and Trigonometry*, and *Pre-Calculus*, finishing with the level attained in senior year. Approximately 20% of students complete not only the entire UCSMP curriculum, but also an AP Calculus course before graduation.

While CEHS requires three years of math, 92% of the class of 2010 will have completed four or more years of math by graduation.

The flow chart on the following page shows most of the many paths a CEHS student may follow in mathematics from freshman year through senior year.

CEHS Math Course Sequences



Differentiation for High Performing Math Students:

The math department provides differentiation through acceleration and enrichment to the strongest math students in the following ways:

1. A capable and motivated student may concurrently take *Advanced Algebra* and *Geometry* or may double up in *AP Statistics* and *Honors Pre-Calculus*, allowing for completion of an additional year of mathematics before graduation.
2. A strong *Advanced Algebra* student may elect to take *AP Statistics* in place of UCSMP *Functions Statistics and Trigonometry*, providing instruction equivalent to a one semester, introductory, college level, statistics course.
3. A student who has successfully completed *Honors Pre-Calculus* may continue beyond the UCSMP curriculum to take either *AP Calculus AB* or *AP Calculus BC*.

Differentiation for Low Performing Math Students:

Brief History: The 2003 Maine Learning Results (MLR) Law required every Maine student to demonstrate knowledge of algebra and geometry (at a level close to that of UCSMP *Algebra*, *Geometry*, and some of *Advanced Algebra*) in order to receive a diploma from a public high school. At that time, a weak CEHS math student could fulfill one or even two years of our math requirement by taking a course titled *Math Tutorial*, a non-UCSMP review of middle school level content and life skills math.

In 2004-05 the math department set a goal to meet the needs of our lowest 15% of students, to provide a more challenging curriculum, and to improve these students' prospects of both graduating from high school and entering post-secondary education. Eliminating the *Math Tutorial* option, we designed and implemented the following plan, which is still an important part of our math program:

1. A freshman judged to be low in math skills, based on standardized test scores and teacher recommendation, takes *Algebra Part 1* (half of the UCSMP *Algebra* course).
2. The student concurrently must take a second math course, *MLR Math* (*Maine Learning Results Math*, a name that has stuck, though the 2003 state-mandated graduation requirement has not). *MLR Math* is explained below, under "Remedial and Other Support at CEHS."
3. As a sophomore the student continues with *Algebra Part 2*. Though the student no longer has the support of *MLR Math*, the course covers just the second half of the usual *Algebra* curriculum, so the pace is better suited to the student's needs.
4. A successful *Alg Pt 1/MLR Math* student may accelerate learning by doubling in *Algebra Part 2* and *CP Geometry* during sophomore year.

Our academic goal for these low-performing students is to provide high expectations, a challenging program, and support to help them study math through *Advanced Algebra* and thereby attain the minimum level of math required by Maine public universities, technical colleges, and most private colleges.

Remedial and Other Support at CEHS

The course *MLR Math* (Maine Learning Results Math) was first introduced and implemented in 2004 as a course for freshmen who had not achieved proficiency at the eighth grade level as required by the Maine Learning Results law. It has been very successful as a remedial and supplemental course for 9th graders

concurrently enrolled in *Algebra Part 1*. Eighth grade students identified by low standardized math test scores and teacher recommendation are required to take this course for one semester, or two, depending on their progress in *Algebra Part 1*. The main objective of the course is to remediate skills and concepts taught in *Algebra Part 1*, using UCSMP and other text resources, teacher-created activities, and Accelerated Math and PLATO software. Much of the curriculum is individualized to focus on each student's areas of weakness, and class size is kept under 15 to allow for small group and one-on-one instruction. Teachers of MLR Math and Algebra Part 1 communicate almost daily to ensure prompt and specific support and to maximize each student's learning.

Math teachers encourage students in any course and at any level to access math help in the Achievement Center from three different sources:

1) a math teacher (Period C only) and/or the Achievement Center director (any period when available)
2) a peer tutor (some are assigned to specific students and others respond to drop-ins)
3) Math PLATO software (modules which have been aligned with UCSMP *Algebra* and *Advanced Algebra* textbooks and courses). Some students utilize this resource as a result of teacher recommendation or direction and others by self-referral.

All high school math teachers make themselves available during free periods or before or after school for extra help.

Instructional Support Students Receiving Direct Math Instruction

Some high school students who receive math instruction through Instructional Support, as determined in their IEP's, are studying mathematics in the Saxon Math program. In 2009-10, three students are in Pre-Algebra, four in Basic Math, one in Business Math, and one in Functional Math. There is also one student in (non-Saxon) Basic College Math.

The Choices Program and Life Skills Program each have five students receiving individualized math instruction.

The Role of Technology in the CEHS Math Classes

A graphing calculator is the essential technological tool in all high school math classes. The depth and variety of material that a graphing calculator brings to the classroom can no longer be questioned. Students are expected to be proficient with TI-83/84 calculators. While almost all students purchase their own, the math department has a loaner program (funded by a grant from the CEHS Parents Association) to insure every student has access to a graphing calculator.

The math department evaluates technology to determine its optimal use in mathematics instruction. We have evaluated and used *Geometer's Sketchpad, Green Globs,* and *Gizmos* programs in Algebra and Geometry classes. *Fathom*, a statistics software program, is used for demonstration purposes in AP Statistics. One teacher has a *Smart Board* for use in the classroom.

Students use the computers in the Achievement Center for *Plato* math practice. *Accelerated Math,* a computer-assisted software program to design individualized problem sets (funded by a grant from CEEF), is used in MLR Math classes.

Having laptops on mobile carts, with the time needed for transporting, set-up, log-in, and trouble-shooting, has made the use of laptops very inefficient compared to the math computer lab that was once available. The PC's in the Achievement Center are a much more effectice way to deliver technology to our students.

Section 4 - What does the data tell us?

Pond Cove

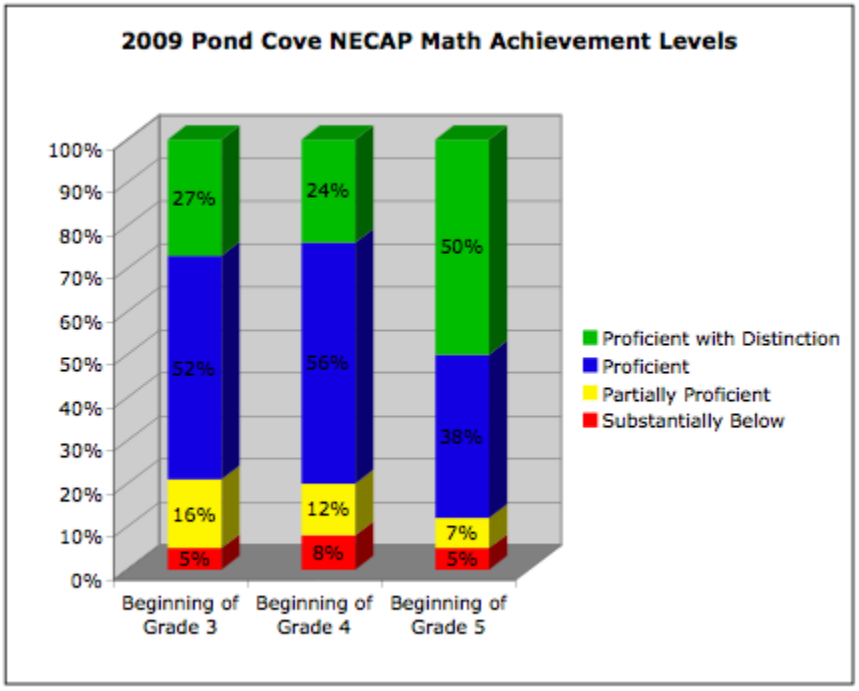
Fall 2009 NECAP Tests

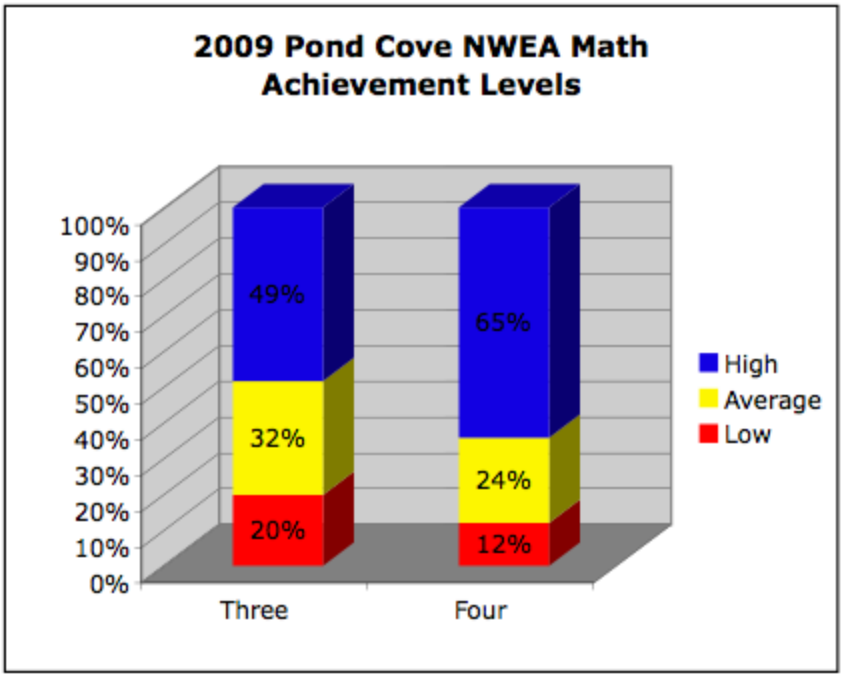
School Summary

2008-2009 Students

School: Pond Cove Elementary
District: Cape Elizabeth School Dept
State: Maine
Code: 1029-1205

Mathematics	Enrolled	NT Approved	NT Other	Tested	Achievement Level								
	N	N	N	N	Level 4		Level 3		Level 2		Level 1		Mean Scaled Score
					N	%	N	%	N	%	N	%	
Pond Cove Elementary				**372**	**128**	**34**	**179**	**48**	**42**	**11**	**23**	**6**	
Beginning of Grade 3				129	35	27	67	52	20	16	7	5	348
Beginning of Grade 4				110	26	24	62	56	13	12	9	8	448
Beginning of Grade 5				133	67	50	50	38	9	7	7	5	552





Note: If you would like to view the breakdown of these scores into the separate categories/subsections of "Individual RIT Score", "Number", "Data", "Geometry" and "Algebra" please see the appendix section at the end of this report.

Overall success: As you can see the results from the New England Common Assessment Program (NECAP) and the Northwest Educational Assessment (NWEA) confirm that Pond Cove students continue to score well. Administered in the fall, the NECAP replaced the Maine Educational Assessment, and the results are available around the middle of the school year.Since they are done in the fall, the NECAP scores reflect achievement on the standards for the end of the previous grade, and they are very useful for schoolwide and grade level team discussion and analysis. The data includes detailed item analysis, which allows us to see patterns of answers on both the multiple choice and open response questions. The NWEA math section consists of 52 multiple choice questions, answered online and adapted to individual student levels; though not as deep as the NECAP, it provides useful reference points for group and student progress. All of this information is available to teachers through Powerschool.

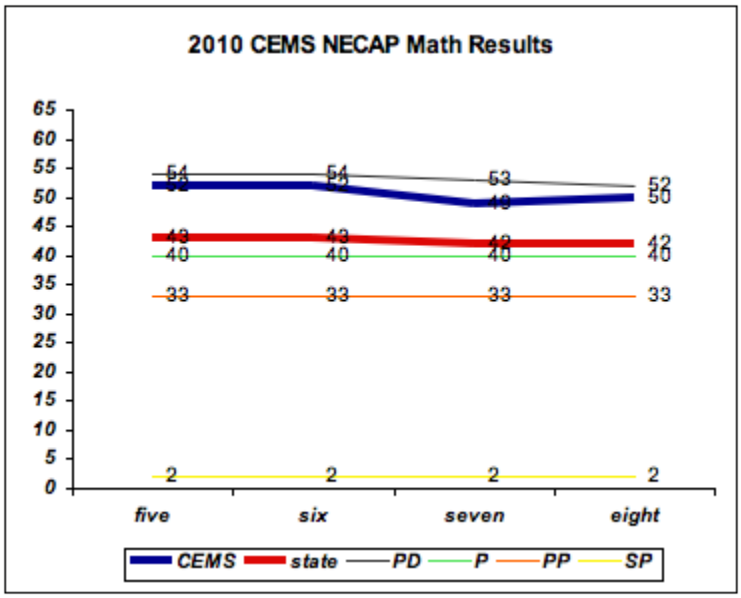
Middle School

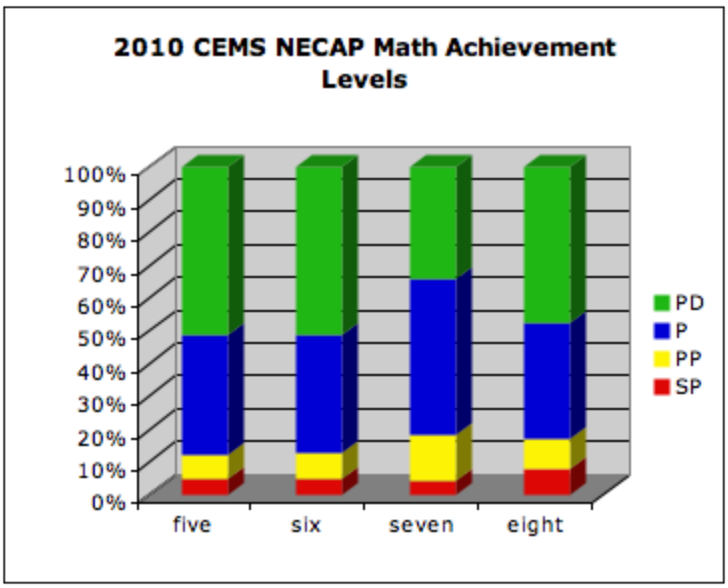
While CEMS always has used some form of data to drive decisions about math teaching and learning there has been a special emphasis since the 2006-2007 school year for CEMS to become as data driven as possible and our staff has made great strides in learning how to triangulate data to make the most informed decisions about our math students. We believe strongly that our teachers must become as data-savvy as possible and we have been assisted in this task greatly by the assistance of Gary Lanoie and his talented technology staff. We also believe it is equally essential that our teachers who are charged with this task of using the data to help implement the agreed upon curriculum need the time to work with the data and collaborate with their peers about their findings. Unfortunately in recent years professional development opportunities for this very purpose have been cut back due to budget difficulties. One of our biggest hopes for next year is that the structural

changes we have in mind regarding the teaming process will create the needed common planning time during the school day for CIA coherence and discussion about data and differentiated instructional practices.

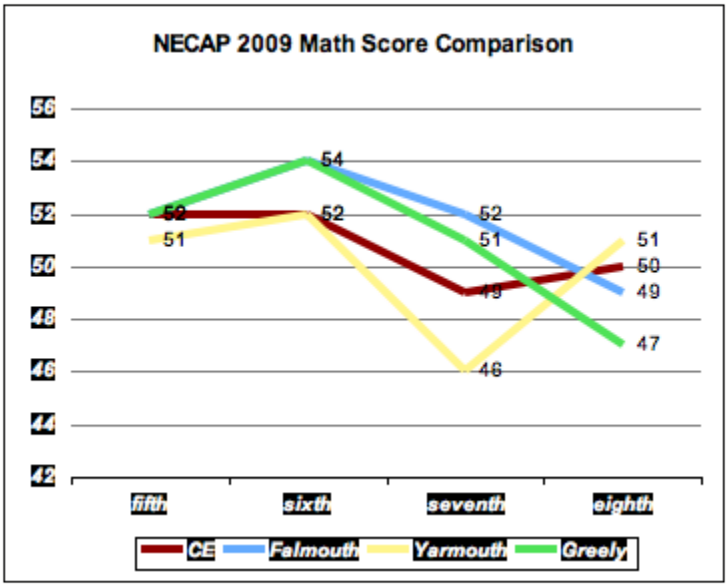
The most common forms of data utilized at CEMS (besides the obvious input of classroom teachers) are the following: the MEA's (Maine Educational Assessment), the NWEA's (Northwest Evaluational Association), the NECAP's (New England Comprehensive Assessment Program) and teacher constructed diagnostic assessments used in conjunction with placement decisions.

CEMS began taking the MEA'S in the mid 1980's. Historically, our math MEA scores have been at or within a couple points of leading the state and have always matched favorably to comparable districts such as Yarmouth, Falmouth and Greely. If you would like to view past MEA results please visit the Cape Elizabeth Middle School Data Profile conducted for the years 2008 and 2009 .
Data 2008 and 2009. There are also paper copies of this profile available at the school. The State of Maine elected to replace the MEA's this year with the NECAP's. The results of this first year assessment show that while the majority of the state lies slightly above the "proficient " level, the 2010 CEMS math scores fell consistently within 2 points of the highest level, "Proficient with Distinction." Please see the following line graph entitled "2010 CEMS NECAP Math Results" for this data. The ensuing bar graph, "2010 CEMS NECAP Math Achievement Levels" shows that basically 90% or higher of all grades 5-8 are achieving in either the "Proficient" or "Proficient with Distinction" categories.





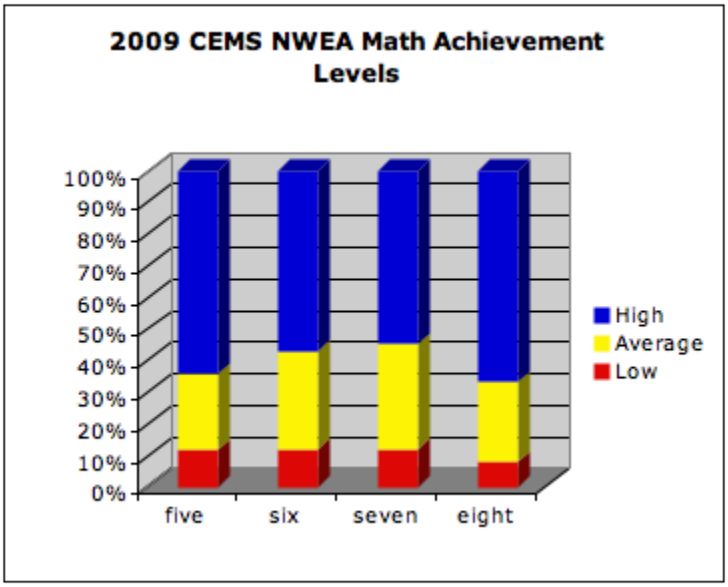
In the following line segment graph you can see our fall 2010 math scores compared to those of Yarmouth, Greely and Falmouth. These comparisons appear similar to past MEA results.



	CE	Falmouth	Yarmouth	Greely
fifth	52	52	51	52
sixth	52	54	52	54
seventh	49	52	46	51
eighth	50	49	51	47

Another vital aspect of the CEMS data picture is the NWEA. CEMS began using this program in the fall of 2007. Once again, we refer you to the aforementioned CEMS Data Profiles and related online sites. Historically, CEMS students perform at 10+ points above the national median on this assessment. Initial NWEA scores revealed relative strengths in the Decision- Making, Geometry and Number Theory subsections. Relative weaknesses were found in the Measurement, Patterns and Computation subsections. The staff has been working

to address these areas by providing more time and practice while also revisiting past materials that addresses these skills and topics. Included below are the spring 2009 NWEA scores:

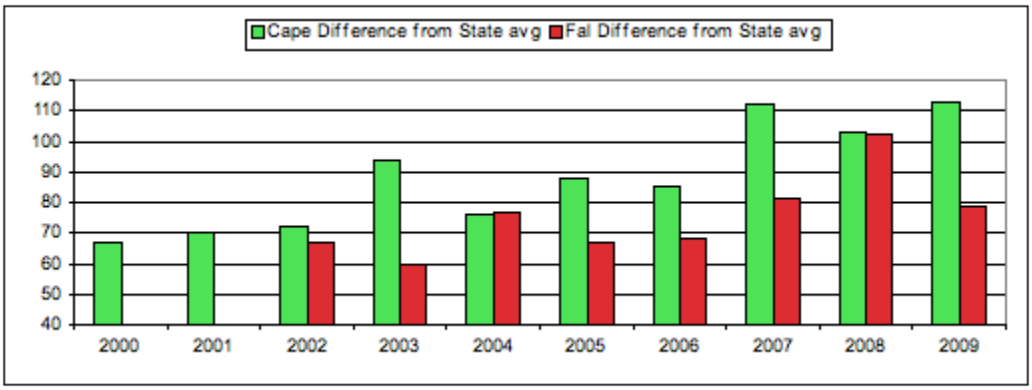


If you would like to view the breakdown of these scores into the separate categories/subsections of "Individual RIT Score", "Number", "Data", "Geometry" and "Algebra" please see the appendix section at the end of this report.

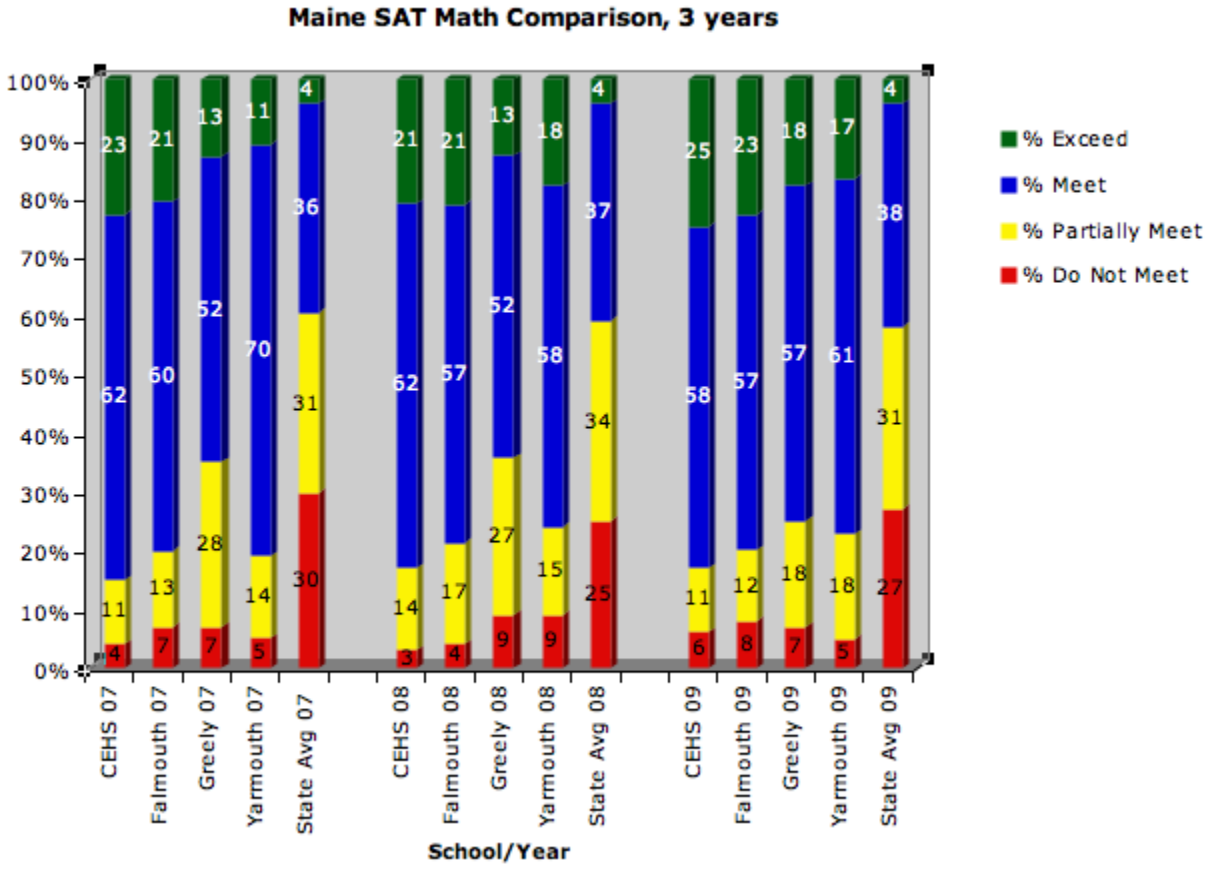
High School

a) SAT Results

The graph below shows a comparison of mean SAT Math scores for both CEHS and Falmouth HS (a high school with which CEHS is often compared) to the State of Maine average. The green bar indicates this difference: *CEHS mean* minus *Maine mean*. The red bar represents: *Falmouth HS mean* minus *Maine mean*. In both 2007 and 2009, the CEHS mean was more than 110 points above the Maine mean and more than 30 points higher than FHS. In the most recent three years CEHS has widenend the gap between our mean and the Maine mean, with a difference of more than 100 points in 2007, 2008, and 2009.

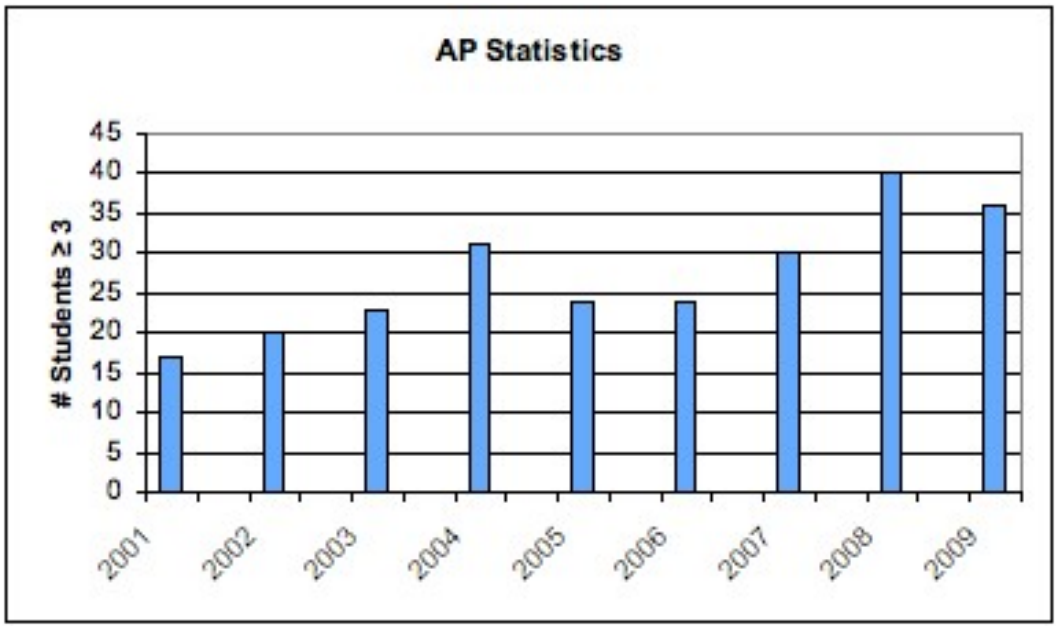


The graph below shows SAT math scores, broken down by the percentage in each of four levels of achievement, as determined by the Maine Department of Education. CEHS can be compared to four nearby, comparable high schools- Falmouth, Greely, and Yarmouth- and to the State of Maine as a whole. Note that CEHS has had the highest combined percentage of students who MEET or EXCEED standards (top 2, green and blue bars) in all three years.

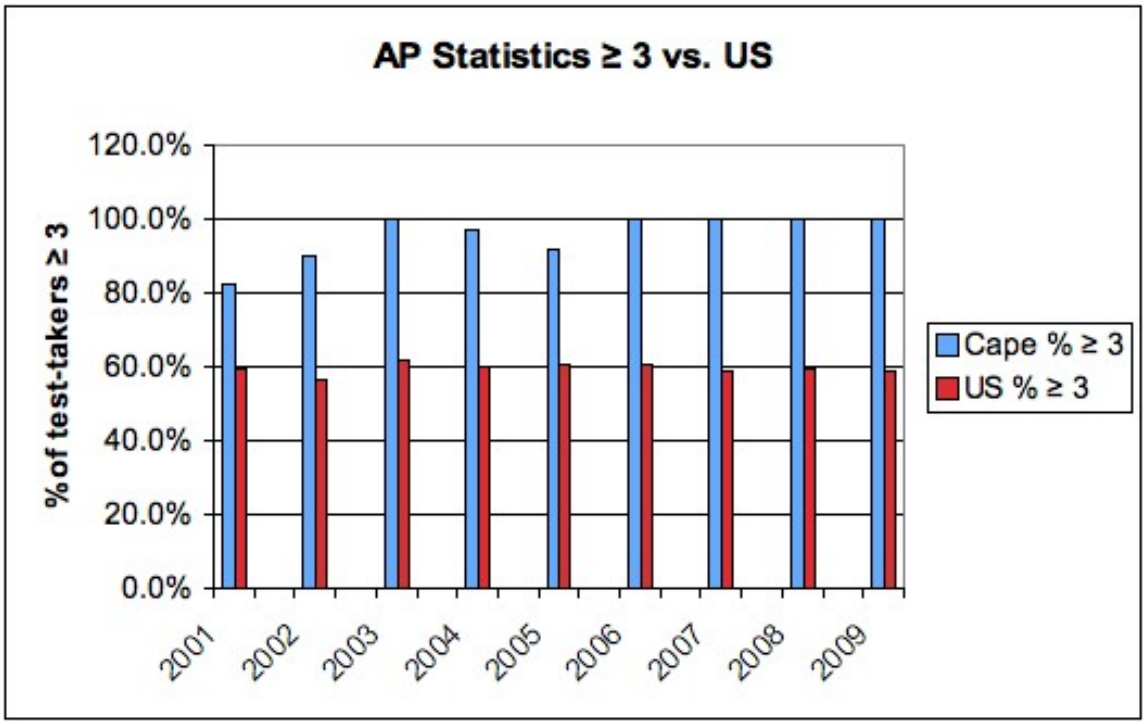


b) Advanced Placement Exam Results

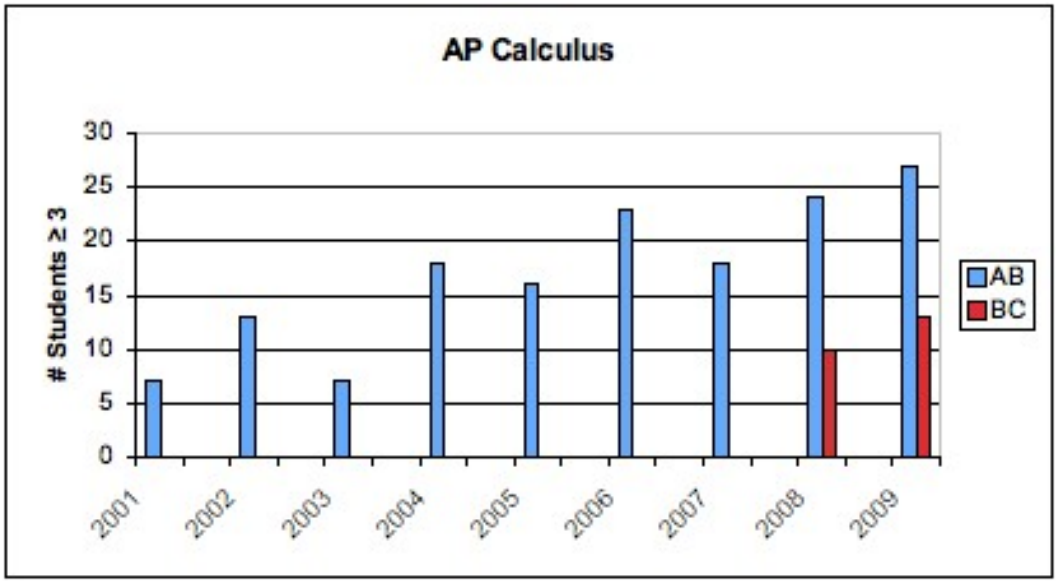
The CEHS math department is encouraging students to take more and higher level mathematics, including Advanced Placement mathematics. Between 2001 and 2009, the number of students taking AP Statistics and passing the exam (score of 3 or higher) has more than doubled, as seen in the graph below.



Not only has the number of students taking AP Statistics increased dramatically, but for the past four years 100% of the students enrolled have scored a 3, 4, or 5 on the AP exam. In the graph below, the results for CE students in AP Statistics are compared to national results, where less than 60% score a 3 or above.



The CEHS math department is encouraging students to take more and higher level mathematics, including Advanced Placement mathematics. Starting in 2008, we began offering not only AP Calculus A/B, but also the next level, AP Calculus B/C. As seen in the graph below, in 2008 and 2009 the number of students scoring a 3, 4, or 5 at the A/B level is three to four times the number in 2001. Moreover, in the last two years almost half of these students scored a 3 or higher at the more advanced AP Calculus B/C level.



c) NWEA Results

Exceptionally strong growth in mathematics is happening for CEHS freshmen and sophomores, as illustrated in the chart and graph below. The yellow bars in the graph show the mean of actual growth in math of CE students in each of the grades three through ten, as measured by the NWEA. The red line delineates the mean of the annual growth targets, what the NWEA views as the average expected growth in each grade. Note the large positive gap between what grade 9 and 10 students actually gain (yellow bar) and what NWEA statisticians expect them to gain (red line).

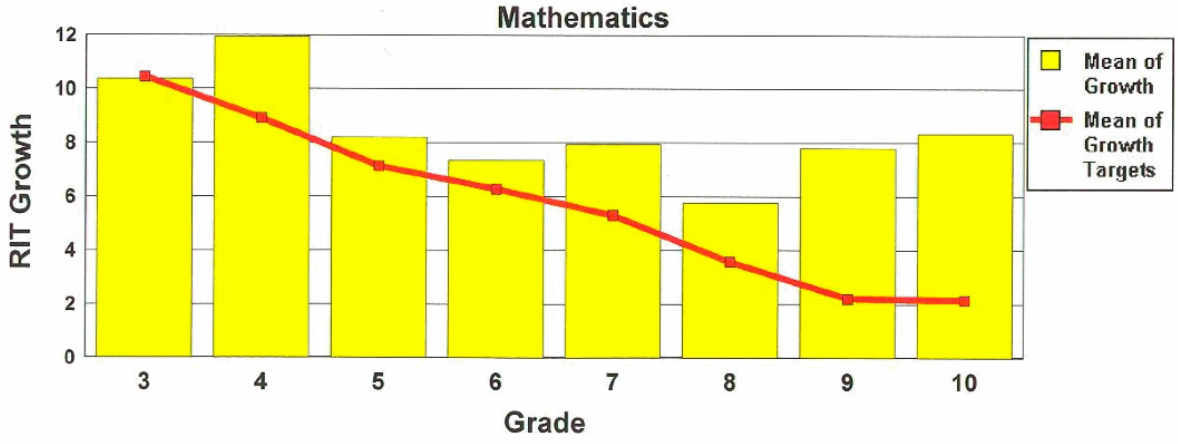
The table shows that the mean scores of both freshmen and sophomores grew far more than expected and reached higher percentages of growth targets than in any previous grade. In fact, the actual growth as a percent of target growth rose to 363.7% for freshmen and to 388.9% for sophomores. About 84% of freshmen and sophomores met their target growth, as compared to between 51% to 75% in previous grades. This data supports our belief that the HS math curriculum and instructional practices are instrumental in helping students achieve at a high level.

Student Growth District Summary - Fall 2008 to Spring 2009

District: Cape Elizabeth School Department

*(Small Group Summary Display is OFF)

Mathematics	Count	Fall 2008 Mean RIT	Fall 2008 Std Dev	Spring 2009 Mean RIT	Spring 2009 Std Dev	Growth Mean	Growth Std Dev	Growth Std Error	Mean Growth Target **	Growth Index	Percent of Target	Count Meeting Growth Target	Percent Meeting Growth Target
Grade 3	109	195.9	11.3	206.3	11.9	10.4	6.5	0.6	10.4	-0.1	99.3	55	50.5
Grade 4	136	208.7	10.5	220.6	12.2	11.9	7.3	0.6	8.9	3.0	134.1	97	71.3
Grade 5	151	219.7	12.4	227.9	14.0	8.2	7.0	0.6	7.1	1.1	114.9	80	53.0
Grade 6	141	225.7	13.9	233.0	12.8	7.3	7.2	0.6	6.3	1.1	117.1	85	60.3
Grade 7	126	234.5	13.5	242.5	14.3	8.0	6.0	0.5	5.3	2.6	149.9	95	75.4
Grade 8	134	244.1	16.7	249.9	16.1	5.8	5.9	0.5	3.6	2.2	161.4	94	70.1
Grade 9	130	248.4	15.5	256.2	18.3	7.8	7.0	0.6	2.2	5.6	353.7	108	83.1
Grade 10	97	247.6	14.3	255.9	13.3	8.3	6.8	0.7	2.1	6.2	388.9	82	84.5



* Summary data for groups with less than 10 students are suppressed because they are not statistically reliable.

** All Targets based on the most recent NWEA RIT Scale Norms study.

Section 5 - Current State of K-12 Curriculum/ Assessment/ Instruction Work

Current State of K-12 Math CIA Work

Our current Math Leadership Team has been working for just over one year. Our focus during the 2008-2009 school year was on the development of our templates and the priority and secondary learning goals. During this work it became obvious that the three building levels (Pond Cove, Middle School and High School) were all at different levels of work completion. For example, Cape Elizabeth High School, in order to satisfy accreditation requirements for the 2004-2005 school year, had already done considerable, advance work in this area. Initial curriculum work in the other buildings that had started as early as 2002 was interrupted by the state mandated work on assessment in 2003-2004 . As of spring 2009, all levels had completed their primary and secondary goals for presentation to the school board (according to the Curriculum Management Plan) which was planned for Fall of 2010. During this fall, under the direction of the Teaching and Learning Committee the focus shifted from this expected presentation to the compilation of this state of the school report due for April 27th, 2010.

Our collaborative work this year has been to use the designated, (one hour and twenty minutes) CIA-based Monday afternoons starting on January 25th to learn the Google Doc Application and compile this report for the Teaching and Learning Committee. We just learned on Wednesday, March 18th that our state of the school math presentation has been shifted to May 25th. We also learned that our priority and secondary learning goals will now be presented to the school board on May11th for their review and questions regarding these goals would be addresed at the May 12th school board meeting. The current status of our template work and priority/ secondary learning goals, although obviously put somewhat on hold as we focused on the preparation of this report, is currently as follows:

<u>Pond Cove</u>

1) Pond Cove has completed the curriculum templates. Given the amount of material covered in each grade level, we are now revisiting and sorting out priority and secondary learning goals. Through a CEEF grant, Everyday Math author/researcher visited Pond Cove for two days this year to review our ongoing curriculum/ instruction/assessment work and meet with teaching teams K-5; this professional development opportunity has helped clarify our ranking of the topics and where we need to concentrate our instructional time and resources, including extra support or remediation.

Each grade level has a common pacing guide for completion of units, and this schedule promotes conversations and collaborative decisions around curriculum topics. Classroom teachers currently use the Everyday Math unit assessments as the most regular and direct method of gauging instructional effectiveness. Grade level teams share the results among themselves and determine whether re-teaching or adjusting certain lessons would be advisable. They also share strategies and methods that they have found to particularly successful. Correlated with the outside assessments , these curriculum-embedded tests are also the source for choosing team's SMART (Strategic Measurable Attainable Results-Oriented Timebound) Goals. Recent cycles have included improvements in telling time, solving word problems, and multiplication fact fluency.

We are planning a meeting of teachers representatives K-5 this summer to work with Debbie Butterworth to develop written math assessment (formative and summative) for classroom use, with three reference points for each identified essential goal

The Pond Cove Progress Report uses a standards-based format, with proficiency indicators (1-4) in a range of concepts and skills. Since math reports are lengthy and detailed, we are consulting with Gary Lanoie and the technology department about developing a more streamlined version of the progress report, which would allow families to see general progress in identified priority areas; they would also have the option of digging deeper, if interested.

Pond Cove teachers have periodically attended local or regional workshops designed for experienced Everyday math users. Last fall, Math Lead Teacher Debbie Butterworth and Teacher Leader Shari Robinson attended the National Council of Teachers of Mathematics (NCTM) convention in Boston.
Finding continuing funding for these opportunities will be important for our ongoing improvement plans.

2) Middle School

Middle School-Our team has completed its work on templates, priority and secondary goals but needs to complete work in the "timeline" column. This would have been the focus of this year's CIA work until the prioroties changed to the compiling of this report. Since the new 5th grade accelerated textbook, "Pre-Transition Mathematics" being used currently as a pilot text this year is now approved and the 6th and 7th grade accelerated classes have begin using the newest version of "Transition Math" then some minor revisions that reflect actual practice may need to also be done on the templates and priority and secondary learning goals sections. It is our hope that future professional development work will be focused on not only these areas but also on topics related to differentiation and the use of Lexia and Plato by all of our teachers of mathematics. Also, if the Maine State Legislature adopts the Common Core L.D.1800, we may once again have to review the allignment of our standards. We hope that this is not the case for we are now finally at the point where our external assessment (the NECAPS) match our priority and secondary goals. If you would like to see the entire district's priority and secondary learning goals click the appropriate grade level link below.

K-4 (PC Priority Learning Goals)
K-4 (PC Secondary Learning Goals)

5-8 (CEMS Priority Learning Goals)
5-8 (CEMS Secondary Learning Goals)

9-12 (CEHS Priority Learning Goals)
9-12 (CEHS Secondary Learning Goals)

3) High School

The High School has completed templates, "curriculum timelines," and identification of primary and secondary learning goals. If the State, federal government, RTI regulations, or district or school policy mandate the development of common assessments of primary learning goals, these assessents will be worked on in the future.

Appendices

Pond Cove

Spring 2009 NWEA breakout scores by individual grade levels.

Current 3rd grade

php reporting for users of: PowerSchool

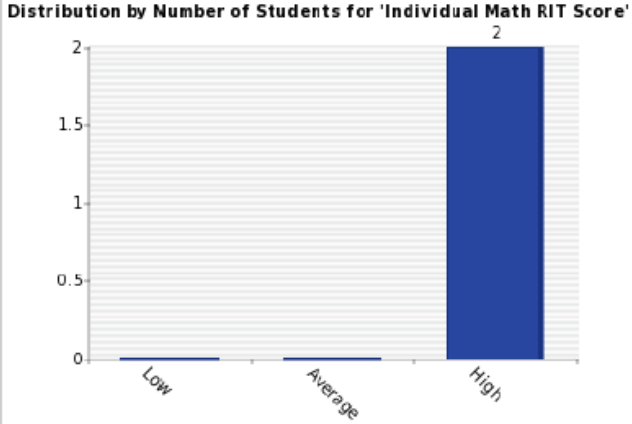
Pond Cove Elementary School
Summary of NWEA Scores by Grade
Monday, April 26, 2010

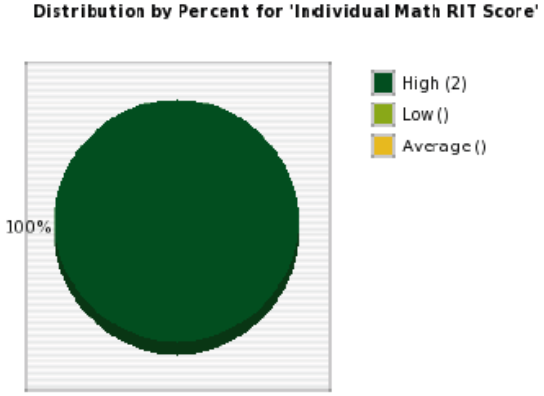
Start Page > Reports > PHP Report Menu >Summary of NWEA Scores by Grade

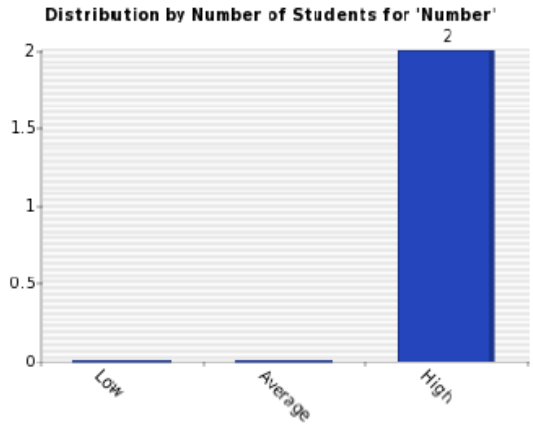
Casey, John

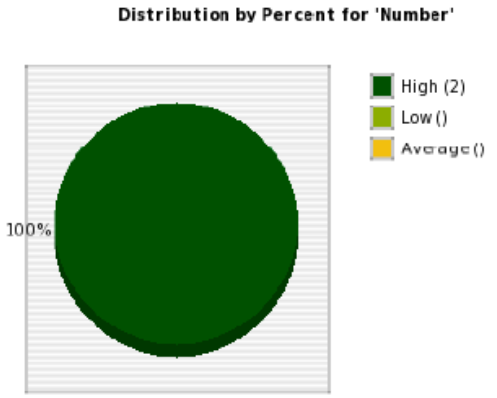
Class Of: 2019
Test: NWEA_Math_V4
Date: Spring 2009

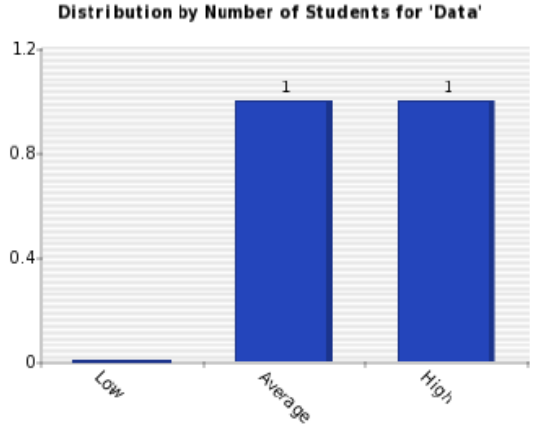
Totals	Individual Math RIT Score	Number	Data	Geometry	Algebra
Low					
Average			1		
High	2	2	1	2	2

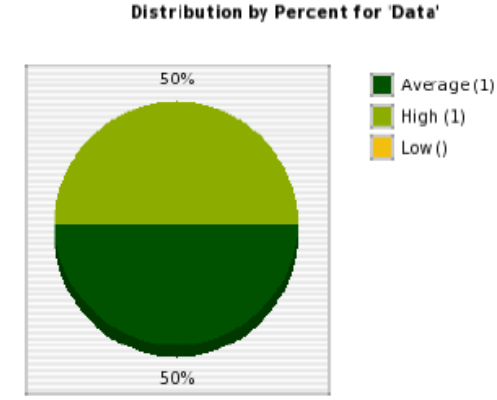


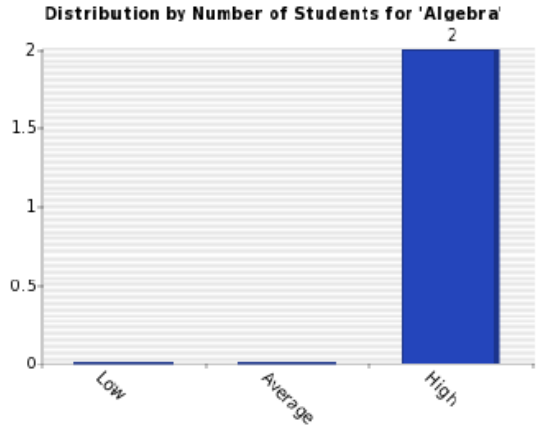


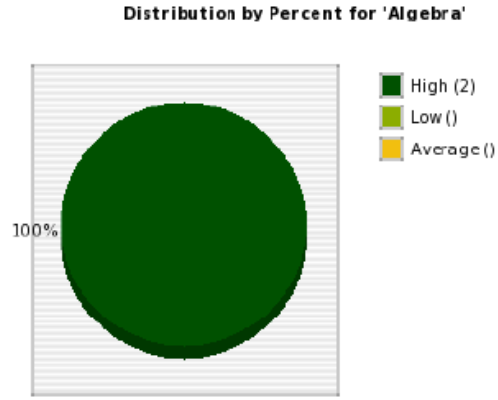

Distribution by Number of Students for 'Number'
2
2
1.5
1
0.5
0
Low
Average
High

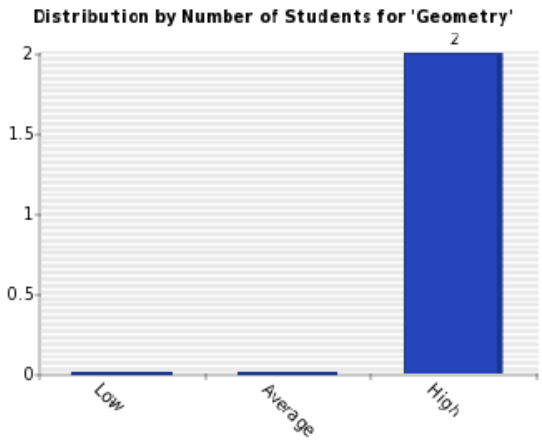

Distribution by Percent for 'Number'
100%
High (2)
Low ()
Average ()

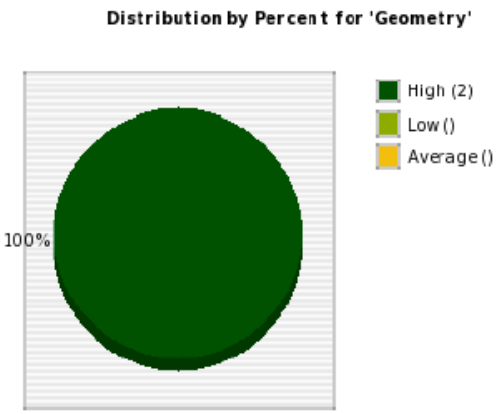

Distribution by Number of Students for 'Data'
1.2
1
1
0.8
0.4
0
Low
Average
High


Distribution by Percent for 'Data'
50%
50%
Average (1)
High (1)
Low ()


Distribution by Number of Students for 'Algebra'
2
2
1.5
1
0.5
0
Low
Average
High


Distribution by Percent for 'Algebra'
100%
High (2)
Low ()
Average ()


Distribution by Number of Students for 'Geometry'
2
2
1.5
1
0.5
0
Low
Average
High


Distribution by Percent for 'Geometry'
100%
High (2)
Low ()
Average ()

Current 4th grade

php reporting for users of: PowerSchool

Pond Cove Elementary School
Summary of NWEA Scores by Grade
Tuesday, March 16, 2010

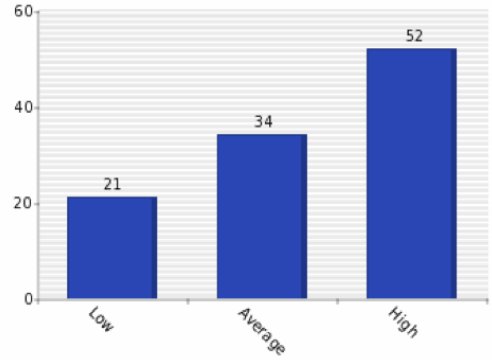
Start Page > Reports > PHP Report Menu >Summary of NWEA Scores by Grade

Zaharis, Dean

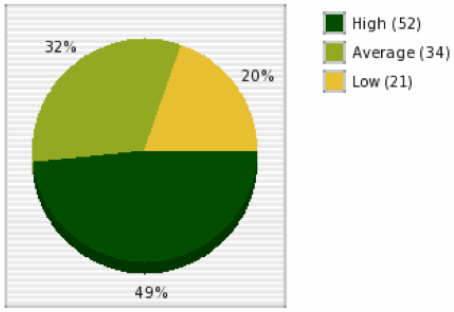
Class Of: 2018
Test: NWEA_Math_V4
Date: Spring 2009

Totals	Individual Math RIT Score	Number	Data	Geometry	Algebra
Low	21	31	25	14	27
Average	34	35	26	38	24
High	52	41	56	55	56

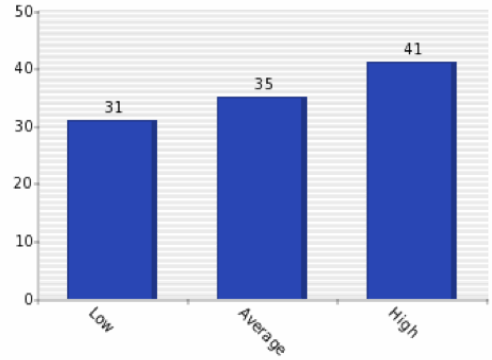
Distribution by Number of Students for 'Individual Math RIT Score'



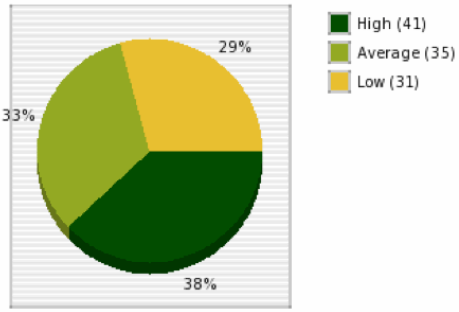
Distribution by Percent for 'Individual Math RIT Score'

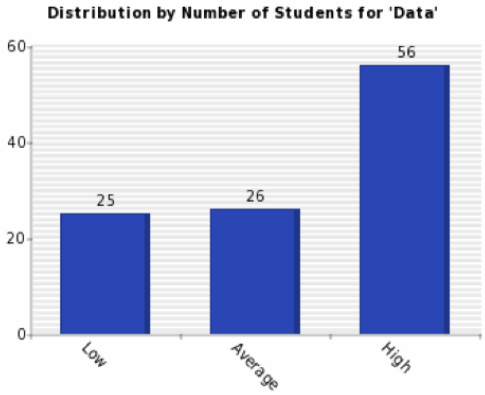


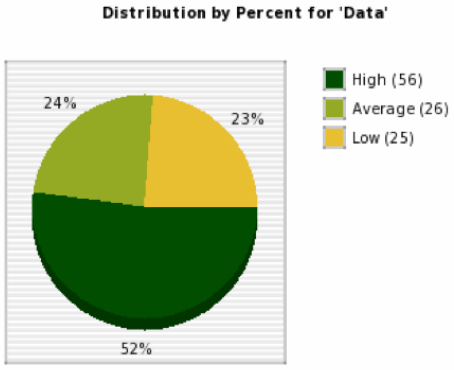
Distribution by Number of Students for 'Number'

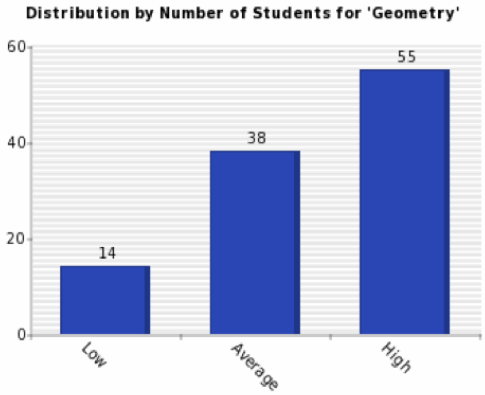


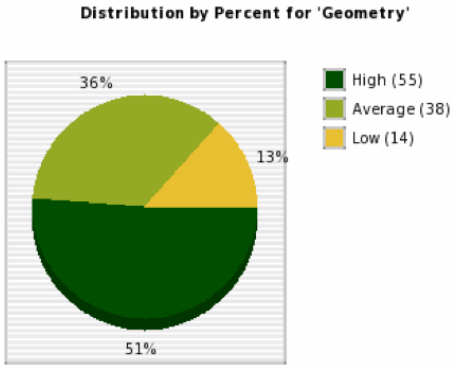
Distribution by Percent for 'Number'

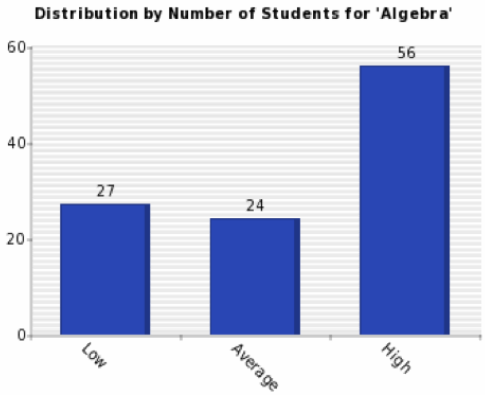


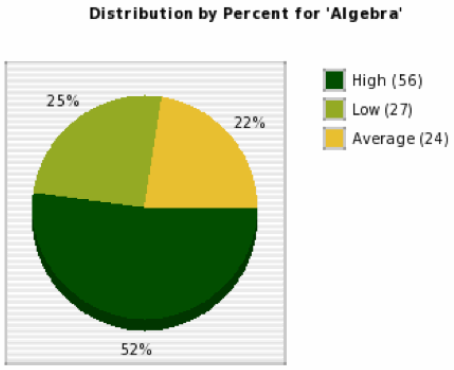

Distribution by Number of Students for 'Data'
60
40
20
0
25
26
56
Low
Average
High


Distribution by Percent for 'Data'
24%
23%
52%
High (56)
Average (26)
Low (25)


Distribution by Number of Students for 'Geometry'
60
40
20
0
14
38
55
Low
Average
High


Distribution by Percent for 'Geometry'
36%
13%
51%
High (55)
Average (38)
Low (14)


Distribution by Number of Students for 'Algebra'
60
40
20
0
27
24
56
Low
Average
High


Distribution by Percent for 'Algebra'
25%
22%
52%
High (56)
Low (27)
Average (24)

CEMS

1) NWEA scores for students in Instuctional Support:
These scores are available upon request for those with an educational need to know but obviously will not be presented in this report due to the sensitivity of the information. These math students are making slow, but steady progress. They are still behind the national norm with NWEAs, but when looking at each student's individual growth, it is there. When doing a fall to fall comparison or a spring to spring comparison, growth is typically seen. They are also meeting mastery requirements on most Saxon assessments; however, that is likely because they are working at their appropriate instructional level which is below their actual grade level.

2) Spring 2009 NWEA breakout scores by individual grade levels

Current 5th grade

php reporting for users of: PowerSchool

Cape Elizabeth Middle School
Summary of NWEA Scores by Grade
Wednesday, March 10, 2010

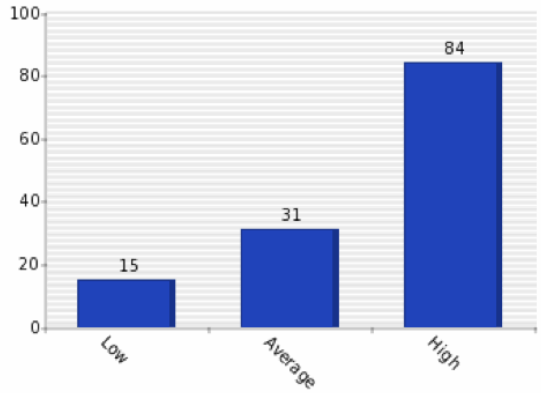
Start Page > Reports > PHP Report Menu >Summary of NWEA Scores by Grade

Zaharis, Dean

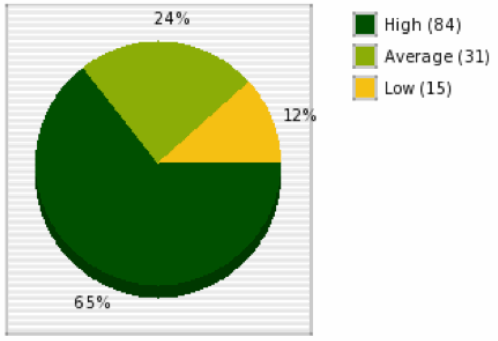
Class Of: 2017
Test: NWEA_Math_V4
Date: Spring 2009

Totals	Individual Math RIT Score	Number	Data	Geometry	Algebra
Low	15	17	22	11	16
Average	31	33	35	33	37
High	84	80	73	86	77

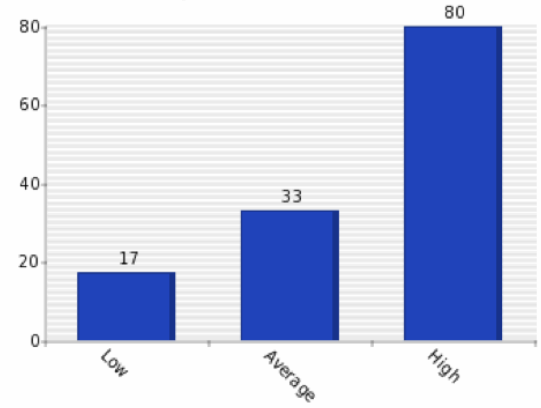
Distribution by Number of Students for 'Individual Math RIT Score'



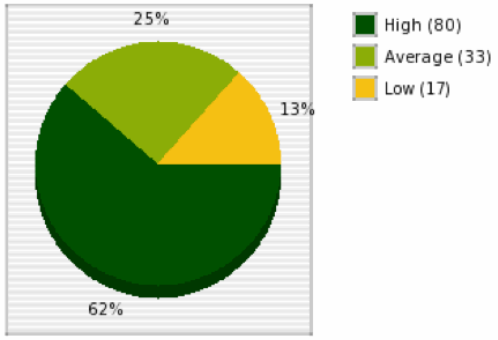
Distribution by Percent for 'Individual Math RIT Score'

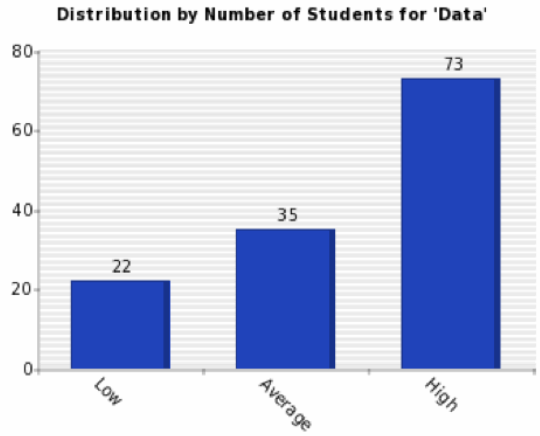


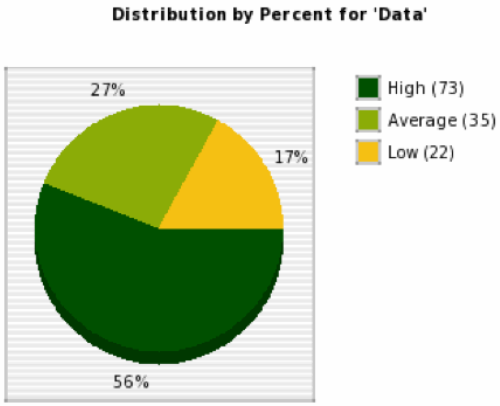
Distribution by Number of Students for 'Number'

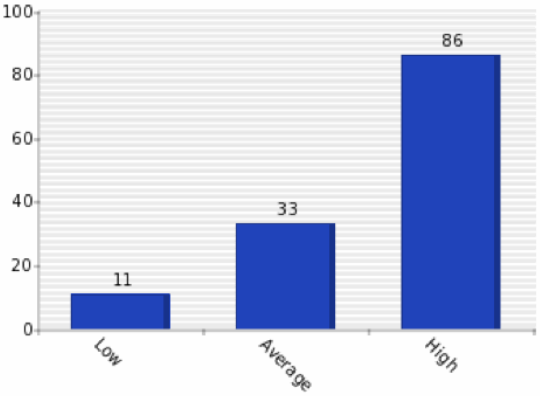


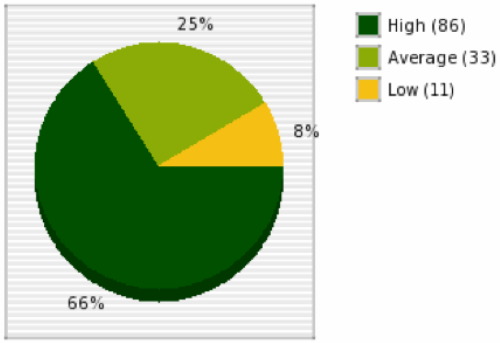
Distribution by Percent for 'Number'

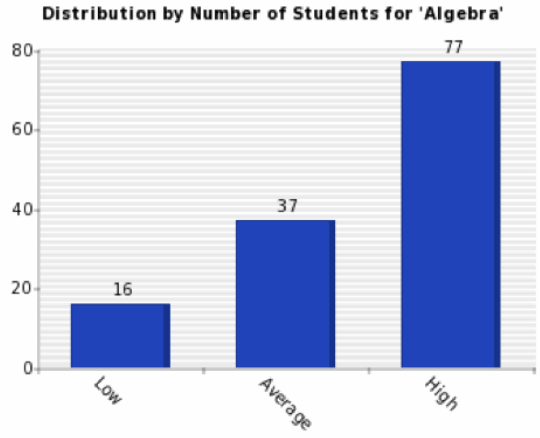


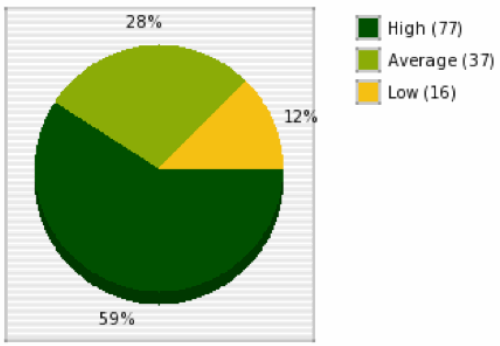

Distribution by Number of Students for 'Data'
80
60
40
20
0
22
35
73
Low
Average
High


Distribution by Percent for 'Data'
27%
17%
56%
High (73)
Average (35)
Low (22)


Distribution by Number of Students for 'Geometry'
100
80
60
40
20
0
11
33
86
Low
Average
High


Distribution by Percent for 'Geometry'
25%
8%
66%
High (86)
Average (33)
Low (11)


Distribution by Number of Students for 'Algebra'
80
60
40
20
0
16
37
77
Low
Average
High


Distribution by Percent for 'Algebra'
28%
12%
59%
High (77)
Average (37)
Low (16)

Current 6th grade

php reporting for users of: PowerSchool

Cape Elizabeth Middle School
Summary of NWEA Scores by Grade
Wednesday, March 10, 2010

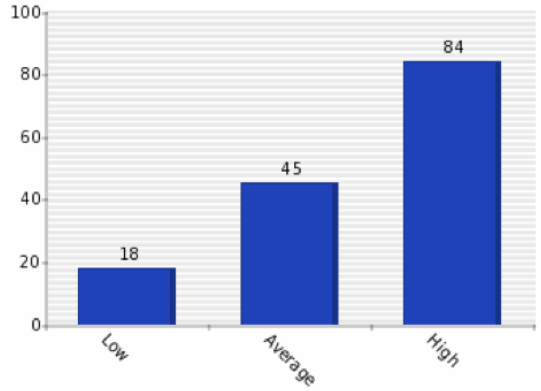
Start Page > Reports > PHP Report Menu >Summary of NWEA Scores by Grade

Zaharis, Dean

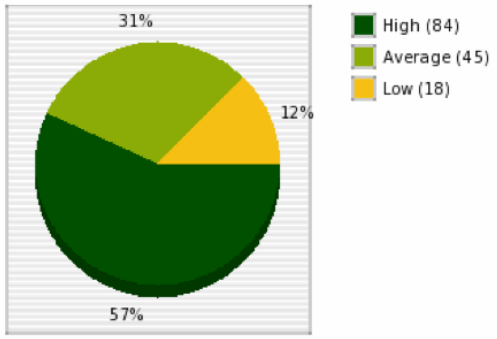
Class Of: 2016
Test: NWEA_Math_V4
Date: Spring 2009

Totals	Individual Math RIT Score	Number	Data	Geometry	Algebra
Low	18	23	25	18	19
Average	45	37	40	44	55
High	84	87	82	85	73

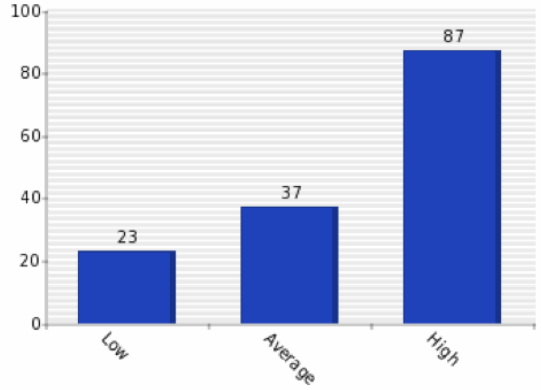
Distribution by Number of Students for 'Individual Math RIT Score'



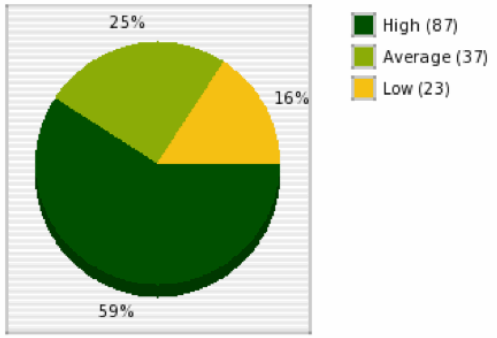
Distribution by Percent for 'Individual Math RIT Score'



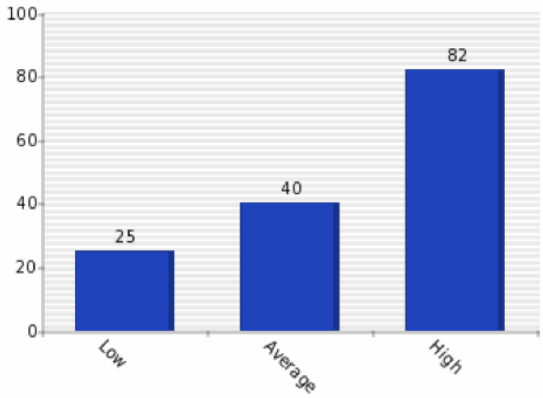
Distribution by Number of Students for 'Number'



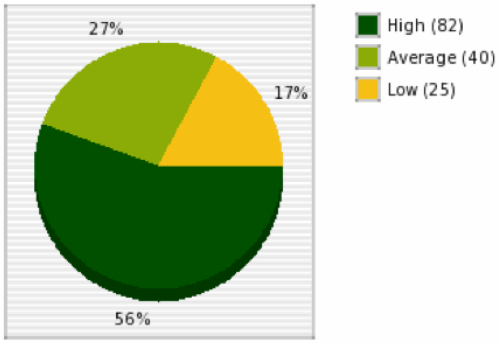
Distribution by Percent for 'Number'



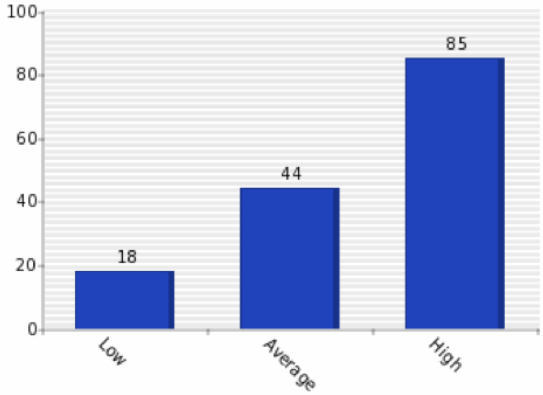
Distribution by Number of Students for 'Data'



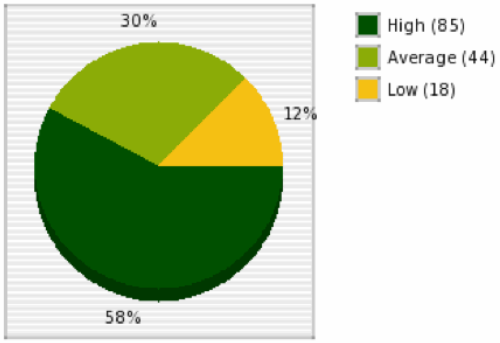
Distribution by Percent for 'Data'



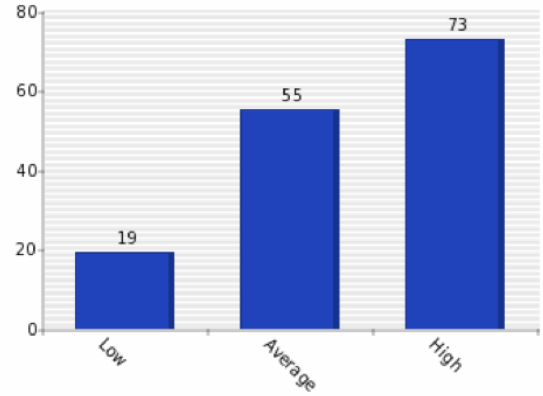
Distribution by Number of Students for 'Geometry'



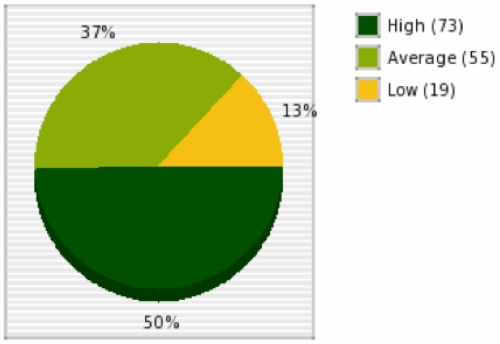
Distribution by Percent for 'Geometry'



Distribution by Number of Students for 'Algebra'



Distribution by Percent for 'Algebra'



Current 7th grade

php reporting for users of: PowerSchool

Cape Elizabeth Middle School
Summary of NWEA Scores by Grade
Wednesday, March 10, 2010

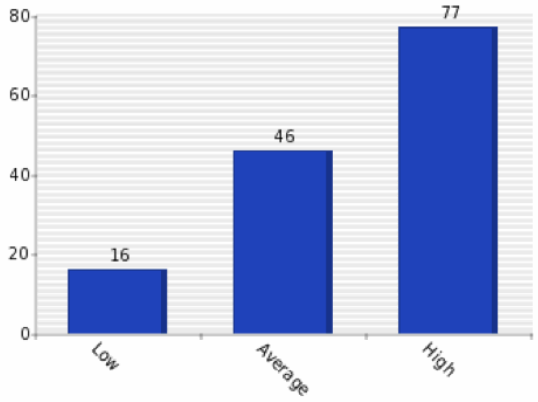
Start Page > Reports > PHP Report Menu >Summary of NWEA Scores by Grade

Zaharis, Dea

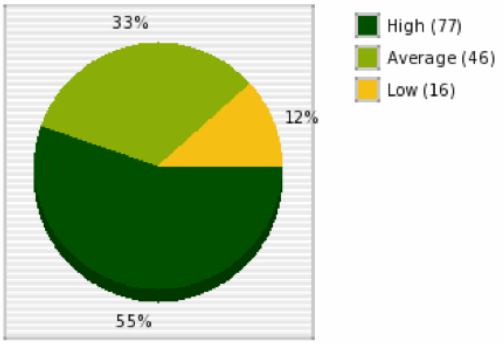
Class Of: 2015
Test: NWEA_Math_V4
Date: Spring 2009

Totals	Individual Math RIT Score	Number	Data	Geometry	Algebra
Low	16	15	13	21	18
Average	46	47	43	44	44
High	77	77	83	74	77

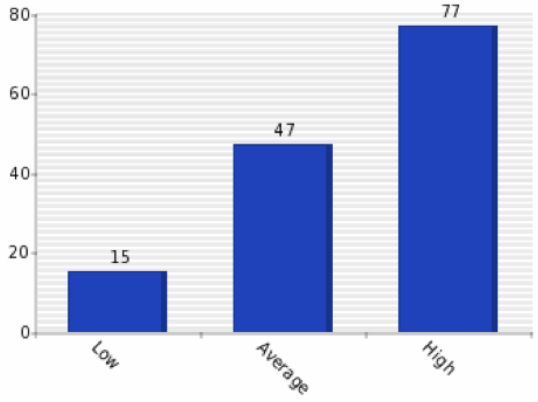
Distribution by Number of Students for 'Individual Math RIT Score'



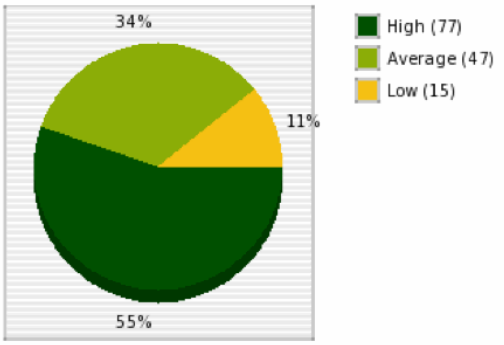
Distribution by Percent for 'Individual Math RIT Score'

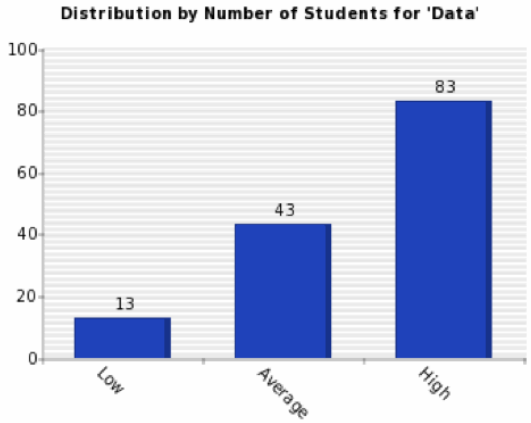


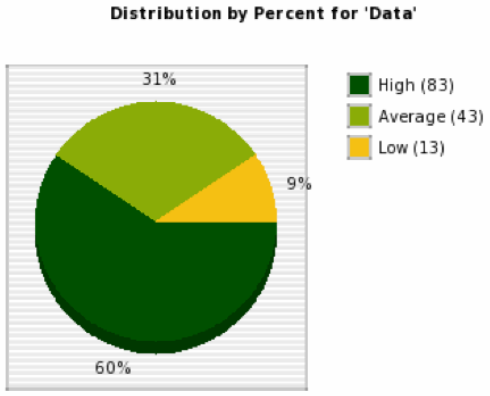
Distribution by Number of Students for 'Number'

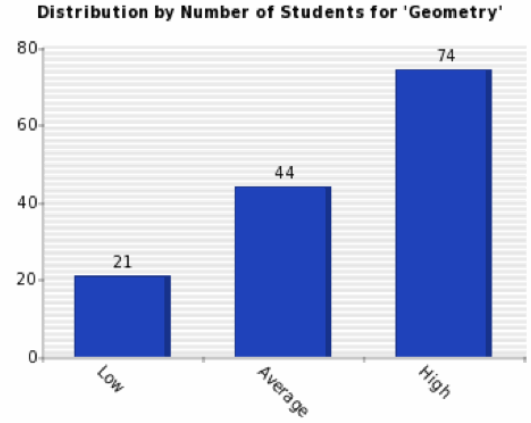


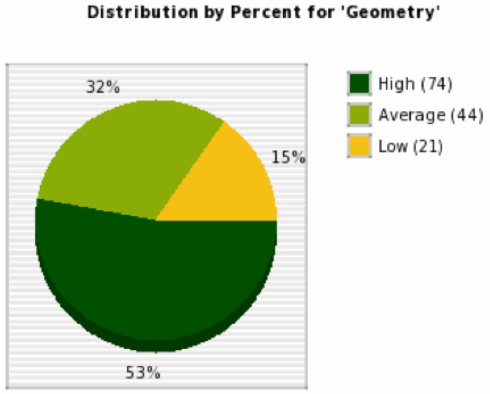
Distribution by Percent for 'Number'

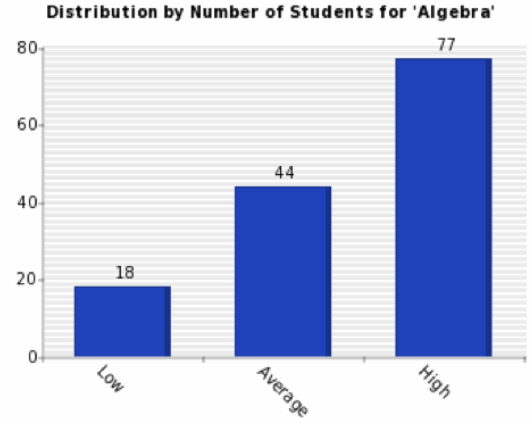


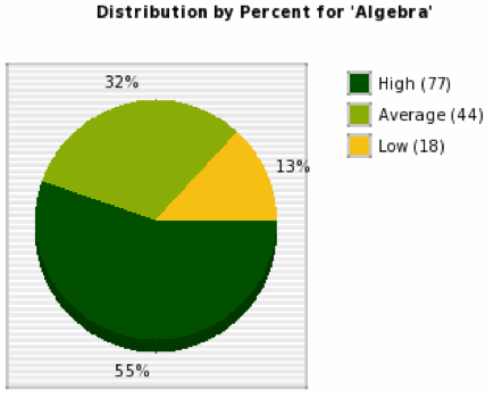

Distribution by Number of Students for 'Data'
100
80
60
40
20
0
13
43
83
Low
Average
High


Distribution by Percent for 'Data'
31%
9%
60%
High (83)
Average (43)
Low (13)


Distribution by Number of Students for 'Geometry'
80
60
40
20
0
21
44
74
Low
Average
High


Distribution by Percent for 'Geometry'
32%
15%
53%
High (74)
Average (44)
Low (21)


Distribution by Number of Students for 'Algebra'
80
60
40
20
0
18
44
77
Low
Average
High


Distribution by Percent for 'Algebra'
32%
13%
55%
High (77)
Average (44)
Low (18)

Current 8th grade

php reporting for users of: PowerSchool

Cape Elizabeth Middle School
Summary of NWEA Scores by Grade
Wednesday, March 10, 2010

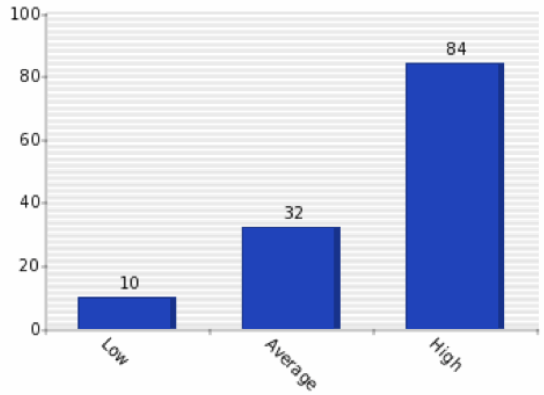
Start Page > Reports > PHP Report Menu >Summary of NWEA Scores by Grade

Zaharis, Dean

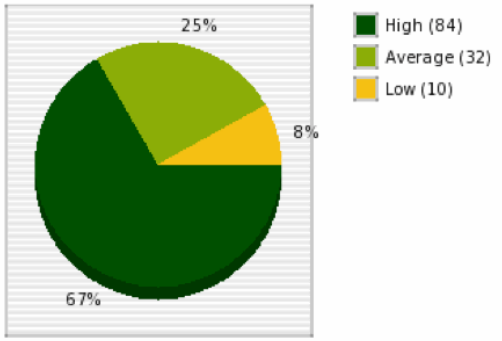
Class Of: 2014
Test: NWEA_Math_V4
Date: Spring 2009

Totals	Individual Math RIT Score	Number	Data	Geometry	Algebra
Low	10	18	10	13	12
Average	32	24	27	33	30
High	84	84	89	80	84

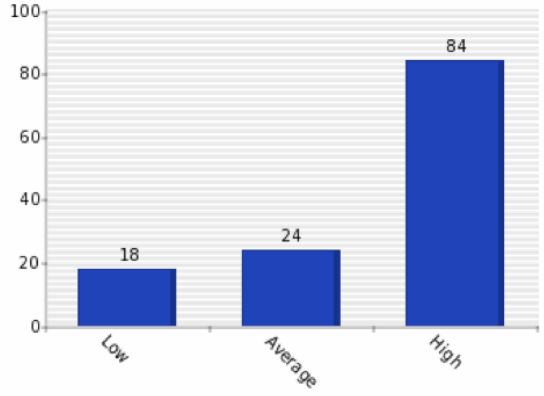
Distribution by Number of Students for 'Individual Math RIT Score'



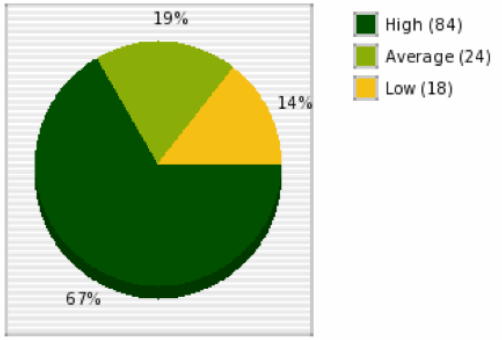
Distribution by Percent for 'Individual Math RIT Score'

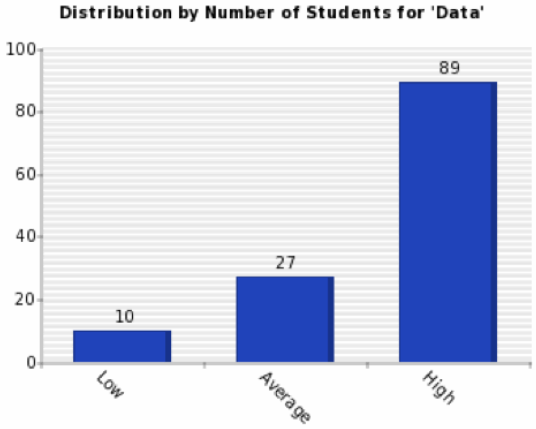


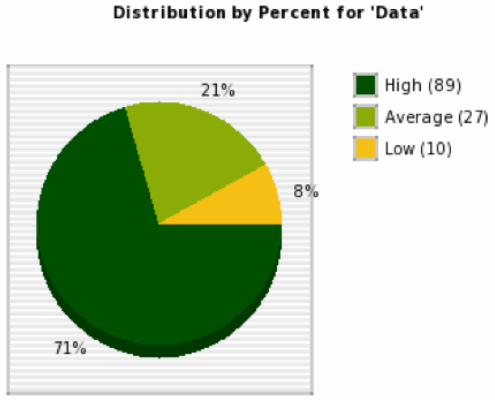
Distribution by Number of Students for 'Number'

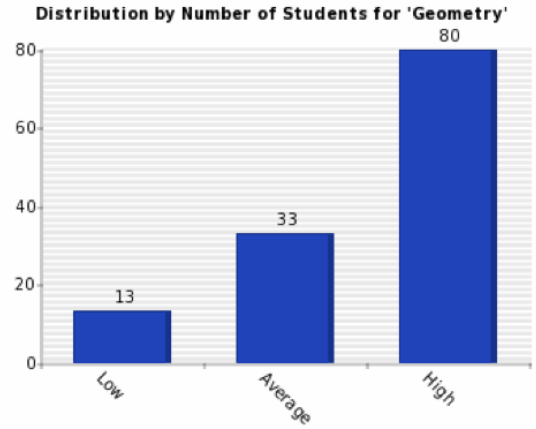


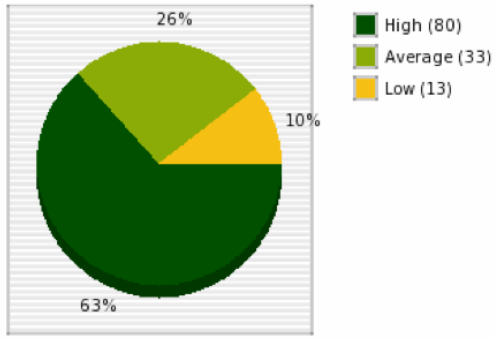
Distribution by Percent for 'Number'

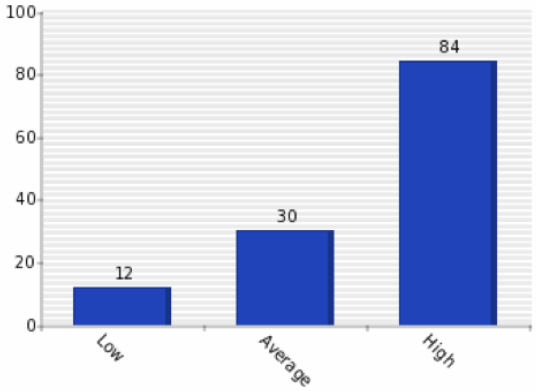


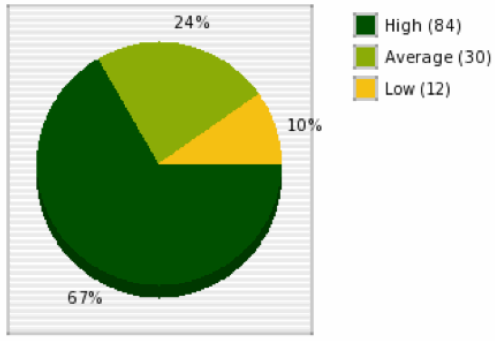

Distribution by Number of Students for 'Data'
100
80
60
40
20
0
10
27
89
Low
Average
High


Distribution by Percent for 'Data'
21%
8%
71%
High (89)
Average (27)
Low (10)


Distribution by Number of Students for 'Geometry'
80
60
40
20
0
13
33
80
Low
Average
High


Distribution by Percent for 'Geometry'
26%
10%
63%
High (80)
Average (33)
Low (13)


Distribution by Number of Students for 'Algebra'
100
80
60
40
20
0
12
30
84
Low
Average
High


Distribution by Percent for 'Algebra'
24%
10%
67%
High (84)
Average (30)
Low (12)