



# Mathesis

Volume 46, Issue 2

November 2013

## NHTM Plans Active Week in March 2014

### Upcoming Deadlines:

- December 15: Prevost and Evans nominations due.
- December 16: Proposals for NHTM Spring Conference Presentations due.
- January 1: Nominations for Balomenos award due.
- March 7: Early NCTM Conference Registration discount ends.
- April 1: Nominations for K-6 Presidential Award of Excellence in Mathematics and Science Teaching due.

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### Conference Program being Developed

The date and location for the 2014 NHTM Spring Conference, *Leading Us to the Pot of Gold—The Standards for Mathematical Practice*, have been finalized and the program committee is seeking proposals for presentations.

Please join fellow NHTM members at NHTI in Concord on March 17, 2014 for a full day of presentations, activities, and exhibits. Linda Gojak, NCTM President, will give a keynote address.

NHTM is looking for proposals of 1.5-hour workshops that emphasize the eight standards for mathematical practice found in the Common Core State Standards for Mathematics, along with one-hour presentations focused on the connections between the Standards for Mathematical Practice and the Standards for Mathemat-

ical Content.

Winners of the NHTM Fernand J. Prevost and Richard C. Evans Teaching Awards and Richard H. Balomenos Service Award will be announced at the conference. Descriptions of these awards and directions on how to nominate a teacher are available in the August Mathesis or on the NHTM website [nhmathteachers.org](http://nhmathteachers.org).

As usual, the conference will conclude with NHTM's business meeting where members will be apprised of the current and recent work of the organization, have the opportunity to make recommendations to the Board, and elect new members to the Board.

More details, as well as the full program will be announced in the January *Mathesis*.

### High School Contest Set for March 18

New Hampshire high school students will participate in the 42nd Annual NHTM State Mathematics Contest on Tuesday, March 18, 2014 at Plymouth State University. In case of inclement weather a snow date of Wednesday, March 19, 2014 has also been reserved.

Team coordinators should direct any questions regarding the contest to Stephen Latvis, New Hampshire State Mathematics Competition Coordinator, at [slatvis@windhamhighschool.org](mailto:slatvis@windhamhighschool.org). Good luck students!

# Art's Attic: Who Invented the First Computer?

By Art Johnson

It has been the consensus among mathematics historians that French mathematician Blaise Pascal (1623-1662) invented the first computer (If you disregard the abacus). Pascal's invention was called the Pascaline, and it performed addition and subtraction. Unfortunately for Pascal, his business sense did not match his mathematics ability. Instead of franchising out the sales and repair of his computer, Pascal insisted that all sales run through him. Any Pascalines that needed repairs had to be sent to Pascal himself in Paris. His computer was not a great financial success. (To see a Pascaline go to <http://www.thocp.net/hardware/pascaline.htm>.)

Next to develop a computer was German mathematician Gottfried von Leibniz (1646-1716), who invented a computer that would add, subtract, multiply, divide, and find square roots. He learned from Pascal's business mistakes and franchised his invention to those with the ability and inclination to succeed in commerce. Despite an improved computer and business model, Leibniz never became wealthy from sales of his device.

Some 200 years later Charles Babbage (1791-1871) designed what may be termed precursors to modern computers. Babbage's Difference Machine and the later Analytical Engine were far ahead of their times. The Difference Machine was designed to compute logarithmic and trigonometric values in addition to the four basic arithmetic functions. The Analytical Machine would go even farther and perform calculus computations. Because the machinists in England were unable to fabricate all the moving parts to the needed precision, neither machine was ever built. Some 100 years after Babbage's death the Difference Engine was built and ran exactly as Babbage had predicted. (To see Babbage's Difference Engine go to <http://www.computerhistory.org/babbage/>)

Now historians believe that the ancient Greeks may have invented the first analog computer more than 2000 years ago. Greek sponge diver Elias Stadiatos was diving for sponges off the island of Antiky-

thera when he discovered what he called 'a heap of dead women (statues), jewelry, pottery, fine furniture, bronzes and wine.' What escaped his notice were a few green, corroded clumps of metal. The green clumps composed an elaborate mechanical device that has come to be known as the Antikythera Mechanism. Despite the centuries of corrosion it was clear that these lumps of green metal must have been part of an intricate mechanism. How intricate would take nearly a century to discern.

Early attempts to determine just what kind of instrument this was focused on the few gears that were visible on the outside of the machine. There were actually some 30 separate gears that were visible, one of which had 223 teeth. As impressive as this workmanship was, it gave no hint as to its ultimate purpose. (See <http://www.ancient-origins.net/ancient-technology/antikythera-mechanism-0079> for pictures of the Antikythera Mechanism).

The mechanism was originally housed in a wooden box about the size of a shoebox. Some of the gears could be turned from the outside. To what purpose has been the subject of much speculation. A new technology, linear tomography has settled many of the arguments about the Antikythera Mechanism. This analysis involves moving an x-ray source, the recording film and the Antikythera Mechanism relative to each other. This enables scientists to focus on a specific area of the Antikythera Mechanism, at a specified depth. Simply put, scientists could now peer inside the Antikythera Mechanism to see what is hidden below the surface. The revealed gears were far more complex than thought possible by ancient peoples, displaying a type of technology that was thought to have been possible only since the 16<sup>th</sup> century.

What exactly does the Antikythera Mechanism do? In brief it could represent the then known solar system for any of several hundred years by winding an external gear and positioning the planets to match current positions. The accuracy of the planets and their motion around the sun show that the Greeks had moved beyond Aristotle's theory of an Earth-

*(Continued on page 4)*

# President's Message

By Greg Superchi

Hello mathematics educators! By now, the school year is in full swing for you and we are all, including the NHTM Board, getting so many good things done! As a matter of fact, we're gearing up for NHTM's annual Fall Dine & Discuss. As you may get this message after the event, I hope you were able to attend. Thanks go to all those who worked on and presented including Rich Andrusiak who chaired the event. Our keynote speaker was Judi Keeley who is the former state supervisor for mathematics in Rhode Island and is now a mathematics consultant. She was scheduled to speak about formative assessment from a perspective that many of us have not thought about. Supporting breakout sessions and fellowship by NHTM Board members connecting to Judi's keynote were provided after dinner. This is a yearly event that I know I certainly look forward to.

In September, we continued to celebrate NHTM's 50<sup>th</sup> year with a luncheon cruise on Lake Sunapee. The weather was fantastic and the fall foliage was unbelievable! Although it was a smaller group of us, it was nice to connect with both old and new friends from all over the state including Bedford, Claremont, and Pike. Thanks go to everyone involved including Amanda (Benware) Barton. Nice work! We hope to make this an annual, more informal, get together so keep your eyes open during the summer of 2014 for, perhaps, more information on our second annual fall foliage cruise!

I would like to take this opportunity to thank Judy Curran Buck for agreeing to take on the role of NHTM Regional Structure Coordinator. Judy and Cecile Carlton (your president elect!) will be working to continue to grow the structure and connect with more and more of the membership within their region hoping to bring NHTM events closer to your home. I would be remiss if I did not thank Katrina Hall for serving in the position since she has been on the Board. Thankfully, she will continue to serve us as Middle School Representative! In case you were wondering, there are still a couple of regions with no representative. Here's your chance to get involved in NHTM. Let us know if you are willing and able!

Moving to the spring, NHTM will hold its 51<sup>st</sup> Spring Conference at NHTI in Concord! We have

chosen St. Patrick's Day, March 17, to hold the event. I certainly hope the "luck o' the Irish" will be with us that day. We have tried to match the theme to the day and to a current hot topic – "Leading Us to the Pot of Gold – The Standards for Mathematical Practice." Included in the line-up of speakers will be Linda Gojak, President of the National Council of Teachers of Mathematics. This will mark the third year in a row that the current NCTM President has attended our conference! Betty Erickson and Roberta Kieronski are co-chairing the event and Rich Andrusiak is the program chair. Thank you ladies and Rich for your service and we look forward to the amazing conference we know you will put on!

The very next day, March 18, NHTM will sponsor the State Mathematics Contest. Although I personally do not like to have the contest and conference that close together, it worked out that way as we can hold both on campuses during spring break for little or nothing (thank you PSU and NHTI!). The contest will be held at Plymouth State University where 500+ students will attend. Yes, that 500+ students doing mathematics because they love it! Thanks goes to David Kent for his many years as Contest Coordinator (Bravo!). I would like to welcome Stephen Latvis of Windham High School as the new contest coordinator. Stephen coached and served the contest for many years. I, personally, was often on the "floor" he ran during the contest and I don't believe there was one anyone ran any better! Thank you, Stephen, for taking over this important position.

I may sound like a broken record, but I want to remind the membership that all the work above is done by volunteers just like you! It takes many people to get this done. I hope that each of you will look for opportunities to serve NHTM in the near future. It is people, just like you, that make this organization what it is. It is extremely rewarding as many doors are opened, new friends made, and tremendous personal and professional growth may occur because of your participation in our organization. Thank you to all of those who do and I look forward to meeting more of you as you serve in the future!

## *Post-Secondary Representative:*

# School Approval Standards for K-12 Mathematics Update

By Rich Andrusiak

For over one year, I've been updating you on the school approval standards for mathematics. If you have been reading my previous columns, you know that the NHTM board put together a committee of mathematics education leaders in NH and drafted a recommended set of standards. That draft was submitted to the NH Department of Education. Please see my previous columns for references to the research influencing the draft standards. You will also remember that the recommendation was based upon a 20-year trend in mathematics performance in the state of NH. That trend indicates that mathematics performance at high school drops rather drastically in comparison to performance at elementary and middle grades (based upon results on the National Assessment of Educational Progress (NAEP) and the NH state assessment – both NHEIAP and NE-CAP).

The state board of education is in the process of adopting a final proposal. The Department of Education has posted a working document based upon public feedback. For those standards that deal with the high school mathematics graduation requirements, I will provide a side-by-side comparison (see [page 5](#)) of the standards supported by the NHTM board and the standards in the working document. Please feel free to e-mail me and request the full document that was supported by the NHTM board. Pay particular attention to the language used (e.g., whether competency at a certain level is required, whether students simply need to be provided access to an opportunity, whether or not the statements reference any standards to define their intent).

You can find the proposed timeline for rulemaking and a working document based upon public feedback at <http://www.education.nh.gov/legislation/ed306review.htm>. Please feel free to write to me at [randrusiak@ccsnh.edu](mailto:randrusiak@ccsnh.edu) with your questions and comments.

## Art's Attic: The First Computing Machine

*(Continued from page 2)*

centered solar system. The relative positions of the planets to each other showed a careful observation of the heavenly bodies as well as detailed knowledge about their orbits, orbits that could not have been fully observed but were computed by mathematicians.

Who build the Antikythera Mechanism? No one is really sure. The cargo the ship was carrying suggests that the ship sank around 80 BCE. That locates the sinking in the lifetime of Poseidonius, an historian and mathematician who studied the movements of heavenly bodies within the solar system. Roman statesman Cicero mentions such an instrument 'recently constructed by our dear friend Poseidonius, which at each revolution reproduces the same motions of sun, the moon and the five planets.' Some suggest it could have been Hipparchus who provided the data for the Antikythera Mechanism, as suggested by the globe on Atlas's shoulder (See the previous Art's Attic for more on Hipparchus). Even Archime-

des gets into the act. Historians note that he had a small planetarium in Syracuse, and two such mechanisms were rescued from the city when it fell to Roman forces in 212 BCE.

Ultimately, it is not the *who* but the *what* about the Antikythera Mechanism that makes it so important. Housed in the National Archeological Museum in Athens, it is the first analog computer that uses dials, gears, astronomy theory and intricate handiwork to make one of the oldest and significant machines in history. The fact that it was on a conventional cargo ship indicates that it was a common, working device used for navigation. What I find most impressive is that no one in the Greek community of mathematicians/scientists even mentions such devices, meaning they were nothing extraordinary. Are there other mechanisms even more impressive? Perhaps so. We just need another sponge diver to find the evidence.

## Post-Secondary Representative: School Approval Standards Update

Document Supported by NHTM Board	Working Document Based on Public Feedback**
<p style="text-align: center;">Table 306-2*</p> <p>All students must demonstrate proficiency and substantial depth of understanding that is directly aligned to any one of the four model course pathways articulated in <i>Common Core State Standards for Mathematics Appendix A : Designing High School Mathematics Courses Based on the Common Core State Standards</i>.</p> <p>*Important Note: No specific credit requirement. Mastery can be competency based and must include proficiency demonstrated in alignment to one of the four model pathways described.</p>	<p style="text-align: center;">Table 306-2</p> <p>Mathematics that encompasses algebra, mathematical modeling, statistics and probability, complex applications of measurement, applied geometry, graphical presentation and interpretation, statistics and data analysis</p>
<p style="text-align: center;"><i>Pursuant to Ed.306.26 and Ed. 306.27, the local school board shall require that a Mathematics Program be provided for each K-12 student, and that each school provides planned learning strategies and opportunities to:</i></p>	
<p>Access a coherent curriculum focused on the Common Core Standards, quantitative literacy and statistical reasoning;</p>	<p>Access a coherent curriculum focused on demonstration of basic mathematics operations, algebra, mathematical modeling, statistics and probability, complex applications of measurement, applied geometry, graphical presentation and interpretation, statistics and data analysis;</p>
<p>Access quality interactive instruction as outlined in the CCSS Mathematical Practices through the use of sustained activities designed to enable all students to demonstrate mathematical proficiency using concepts and skills articulated in the Common Core State Standards for Mathematics;</p>	<p>Access quality interactive instruction through the use of sustained activities designed to enable all students to demonstrate mathematical competencies using concepts and skills articulated;</p>
<p>Access flexible paths that include courses that are sequential, integrated, or applied, or a combination of the 3 that require all students to complete mathematics each of their four years in high school demonstrating proficiency and substantial depth of understanding, through a focus on communication, reasoning and sense making, and mathematical modeling, that is directly aligned to any of the four model course pathways articulated in <i>Common Core State Standards for Mathematics Appendix A : Designing High School Mathematics Courses Based on the Common Core State Standards</i> (High School Level); and</p>	<p>Access flexible courses that are sequential, integrated, or applied, or a combination of the 3 that provide students with the opportunity to participate in a mathematics course or mathematics related course in each of the years they attend high school. Such engagement may occur through integration of mathematical graduation competencies in courses focused on content areas other than mathematics as long as mathematics competencies are clear expectations of the course; and</p>
<p>Access at least one developmental course preparing students for one model pathway and at least one course allowing students to go beyond one model pathway as articulated in the Common Core State Standards (High School Level).</p>	<p>Enable students to assess advanced concepts of algebra, trigonometry, and calculus that will support students to successfully engage in STEM related learning and careers.</p>

## *Elementary Representative:*

# Calling All Parents!

By Stephanie Wheeler

In my experience, elementary school parents are not only interested, but often very involved in their child's academic work. It is also my experience that many parents have strong opinions about the instruction their children are participating in at school. Maybe it's because we all have a shared experience called "elementary school" and therefore feel connected and empowered to have strong opinions about the teaching and learning going on at the elementary level. But the fact is, like all levels of education, elementary school now looks and feels different than it did for many of our elementary parents – myself included! One major change in the elementary curriculum involves not only the way we are teaching mathematics, but what we are expecting students to know and be able to do at the elementary level. As I see it, in order to best meet the needs of our students, we need to educate their most influential teachers – their parents!

Parent education nights can be a very effective way not only to educate parents, but to build support for the instructional strategies, methods and algorithms you are teaching their children. As teachers of mathematics, we all know that "math" elicits strong reactions that run the gamut from very positive to very negative. Parent education offers us the opportunity to tap into parents on both ends of the continuum.

What might a Parent Education Night look like?

Like you would do for your students, let parents know what the expected outcomes are

You will learn how to...

Teach parents some non-traditional algorithms their children are using

Partial sums, partial product, partial quotient

Give parents opportunity to "practice" and ask questions

Challenge parents to some mental math problems

Can you multiply  $35 \times 8$  in your head?

How did you do it? Did anyone else do it differently?

Use the Common Core State Standards and the upcoming Smarter Balanced Assessment to reinforce the need for and the power of student thinking, reasoning and communicating

Have parents log on to

[www.smarterbalanced.org](http://www.smarterbalanced.org) to view assessment items

Use the opportunity to promote fact fluency and recall

5 minutes of practice a day can make a difference

Mastering your multiplication facts "out of order" may help too

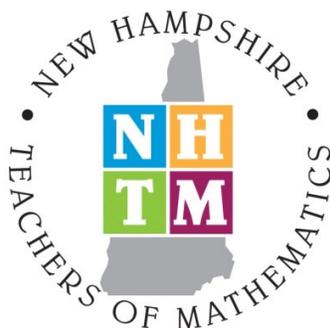
Parents want to feel connected to what and how their students are learning. What better way to foster a positive home-school connection than through parent education? For suggestions or ideas about how to organize your Math Parent Education Night, please feel free to contact me at [slwheeler3@aol.com](mailto:slwheeler3@aol.com). If you have some positive experiences to share regarding your parent education nights, I would love to hear from you!

## NHMathEd Listserv

Are you a member of the NHMathEd listserv?

This is a free service for Mathematics Educators throughout the state of New Hampshire. Messages relating to workshop opportunities, participation in projects, collaboration with fellow mathematics educators; and much more are posted through this service.

Use the link <http://listserv.plymouth.edu/mailman/listinfo/nhmathed> and follow the directions provided. Please consider joining today!



## 2014 Annual Spring Conference

### Leading Us to the Pot of Gold -- The Standards for Mathematical Practice

March 17, 2014

NHTI, Concord's Community College, Concord, NH

The NHTM 51<sup>st</sup> Spring Conference Program Committee is seeking speaker proposals for the annual spring conference.

NHTM is looking for presentations that emphasize the eight standards for mathematical practice found in the Common Core State Standards for Mathematics, along with presentations focused on the connections between the Standards for Mathematical Practice and the Standards for Mathematical Content. There are two formats for presentations: sessions (1 hour) and workshops (1.5 hours).

NHTM does not offer an honorarium to its speakers. However, one speaker for each session receives a complimentary registration to the conference, including meals.

An exciting program is in the works and mathematics educators from around the state and New England region are expected to attend. Proposal forms and directions are available at <http://tinyurl.com/pw467qw>.

Proposals can be submitted online, by email, or mail (see contact information below).

Should you have questions, please contact one of the program chairs.

**Rich Andrusiak**

*Program Chair*

*Professor of Mathematics*

*River Valley Community*

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## *Middle Levels Representative*

# Stop Giving the Answers

By Katrina Hall

This group of seventh graders is quickly learning that there are very few answers given in class. Ask a question and you get a question back. Ask if your answer is correct and you will be asked the same question. Have a different answer than your classmates? Be prepared to share.

Sharing the correct answers requires little thinking. In the typical classroom, a teacher may stand in front of the class and read the correct answers to students or even ask students to share their correct answers. Students correct their work by marking answers right or wrong and then ask for clarification on specific problems. Additional students may then be asked to present the correct process or at least a process, which works for the given situation. Take a few minutes to reflect on the level of mathematical discussion and thinking, which occurs when this process of sharing the correct answers is used. Are students thinking? Are they learning?

Instead of giving the correct answers, peruse the classroom and look for students who have the incorrect answers. Yes, the incorrect answers. Ask these students to share their work, processes, understanding and reasoning with the class. Now, facilitate a discussion. Look at the thinking used by the students. Ask students to explain their thinking. Ask students to look for errors in thought processes or calculations. Can they explain why this process did not work? Can students direct their peers to think of the process in a different manner? Was the individual on the right track but needed guidance for the next steps? Take some time to reflect on this process. Are students thinking? Are they learning?

Force discussions and thought in the classroom by pushing students out of their comfort zones. Allow them to come into class without answers. Start accepting incomplete processes with questions as to where to go next. Let's be clear. Blanks and question marks are not okay. Students must show some attempts and comments

as to where they were hitting a roadblock. And if the other extreme occurs where students are getting all the answers correct then they are not being challenged. Give students work that requires them to think beyond the rote skills and the skill range where they will earn 100%. Force students to challenge their mathematical thinking. This is where the mathematical discussion and learning will occur.

Assign tasks and activities which have different interpretations and perspectives. As students ask questions, require the class to come to a consensus. In other words, when students ask what a requirement means let the class to determine the answer. Don't give students your perspective or interpretation. Allow students to think about the mathematical context and discuss the best ways to approach the situation. Let students discuss their perspectives and reasoning. Is there just one? Is there only one right answer?

According to the Common Core State Standards Initiative (2012), mathematically proficient students make sense of problems and persevere in solving them. They look for entry points to solutions, make conjectures and develop a plan towards a solution. The Common Core State Standards Initiative (2012), describes mathematically proficient students as those who can listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments. This can happen when students are challenged beyond the provision of the right answers.

Challenge your students to think. Develop the mathematically proficient student. Stop giving the answers and instead give students the gift of learning.

Implementing the Common Core State Standards. (2012). *Common Core State Standards Initiative*. Retrieved October 30, 2013 from <http://www.corestandards.org>

# Playground Designs

## *An Activity for the Middle Grades*

Provide groups of students with the *Current Playground Design*.

Have students take turns identifying the fractional parts of each area of the playground. Direct students to record the fractional areas onto their individual *Current Playground Design*.

Note: Students may ask whether or not the fractions should be written as a fraction of the section or of the whole playground. This is an opportune time to lead a discussion. Allow students to discuss their question and come to a consensus as a group or as a class based on this discussion.

Give each group a copy of the *Future Playground Design Guidelines*. Have groups of students follow the *Future Playground Design Guidelines* to create the new playground design on graph paper. Although students are working as a group, each student should create a new playground design.

Note: Students will be asking many clarifying questions. Allow the students to ask the whole class for clarification. Allow students to discuss their views and understanding. You may decide the whole class will need to come to a consensus or allow individual groups to develop their own. However, students should be prepared to support their reasoning in their written explanations in addition to clarifying any assumptions they have made.

Students should then follow-up the design process by individually responding to the questions found at the bottom of the *Future Playground Design Guidelines*.

Display the completed playground designs and rationales.

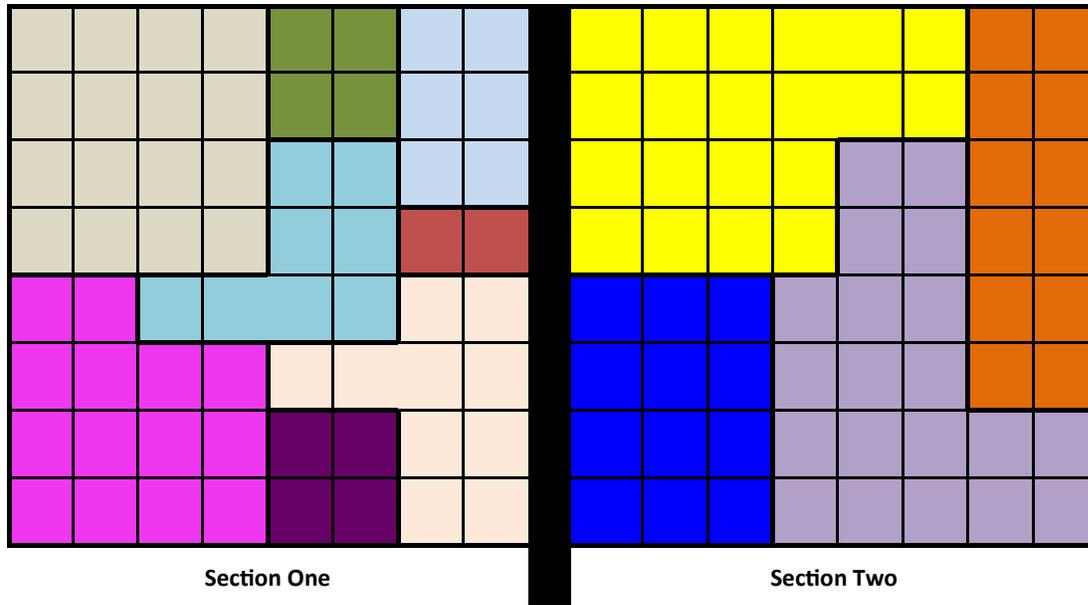
Have students examine the solutions of the groups. As students are looking at the works of their peers, ask them to provide feedback to their peers in the form of guiding questions. In other words, students should be writing questions that guide the playground designer to consider the accuracy of their work based on a given guideline.

Have students review the questions asked by their peers. Ask students to reflect on the playground development process including the feedback received by their peers.

Based on the Playground Problem developed by the Virginia Department of Education 2004.

*Mathematics Standards of Learning Enhanced Scope and Sequence* (2004). Retrieved from <http://www.doe.virginia.gov>.

# Current Playground Design



 = Swings

 = Grass Playing Field

 = Climbing Area

 = Flower Garden

 = Family Picnic Area

 = Hardtop Courts

 = Water Fountains

 = Slides

 = Vegetable Garden

 = Baseball Fields

 = Sitting Benches

 = Tennis Court

Based on the Playground Problem developed by the Virginia Department of Education 2004.  
*Mathematics Standards of Learning Enhanced Scope and Sequence* (2004). Retrieved from <http://www.doe.virginia.gov>.

## Future Playground Guidelines

The school has agreed to build a new playground and has hired your design team. The future playground should meet the following guidelines.

The twelve areas need to be combined into four larger areas.

The Tennis Court will be combined with one other area and be called the Field Games. This area will make up half of the two equal sections of land.

The Water Fountains will be combined with two other areas and be called the Primary Playground. This new area will be equal to  $\frac{13}{32}$  of one of the two sections.

The Swings area will be increased in size to equal one half of a section. This new area will be called the All-Sports Zone.

The rest of the land in that section will be added to the Sitting Benches. This will now be named the Lunch Area.

You will be able to walk through each of the four new areas of the playground without having to cross another area.

Each individual member should:

Create a design of the future playground, which outlines each of the four new areas and the fraction of the total playground, each represents.

Write an explanation to explain how your future playground design meets the expectations of the school.

Include any suggestions or changes you would make if you did not have to follow their suggested guidelines.

Based on the Playground Problem developed by the Virginia Department of Education 2004.

*Mathematics Standards of Learning Enhanced Scope and Sequence* (2004). Retrieved from <http://www.doe.virginia.gov>.

## NHTM 50th Celebration Cruises Along



New Hampshire Teachers of Mathematics members enjoyed a cruise and luncheon on Lake Sunapee, September 29, 2013. The one-and-a-half hour private cruise featured beautiful scenery, great fall weather, delicious food, and of course lively discussion! Check your e-mail for announcements regarding other NHTM events.

*Photo by A. Barton*

## Nominations Sought for NHTM Board

Each year NHTM Officers and Members of the Council complete their terms and elections need to be held. We are having a call for nominations for the office of Secretary and for Council members including Middle Level and Secondary Level representatives and the ATMNE representative. Information about the candidates and a ballot will be sent out to current members in January.

Please consider nominating a member, in good standing, who is interested in a mathematics leadership role or self-nominate by completing the Call for Nominations. Read through our [Constitution](#) for further information about the responsibilities for the offices and then contact Cecile Carlton, NHTM President –Elect at [Cecile.carlton@comcast.net](mailto:Cecile.carlton@comcast.net). Election ballots will be mailed in January

The **Secretary** is elected to a two-year term and keeps minutes of the meetings of the Executive

Board and of the annual business meeting of NHTM. In addition, s/he is responsible for all official notices of NHTM and their distribution and for maintaining official records of NHTM.

The **Middle-Levels** and **Secondary Representatives** serve three-year terms. They attend all Executive Board meetings; prepare/secure articles for the NHTM newsletter as directed by the Executive Board of NHTM and assume other duties that may be assigned by the Executive Board of NHTM.

The **ATMNE Representative** holds a three-year term and represents NHTM at all meetings of the Board of Directors of ATMNE, report on these meetings to the Executive Board of NHTM, and assume other duties as may be required by the Board of Directors of ATMNE or assigned by the Executive Board of NHTM.

## Last Call to Nominate for NHTM 2014 Teaching and Service Awards

The Richard H. Balomenos Memorial Award, Richard C. Evans Distinguished Mathematics Educator Award and the The Fernand J. Prevost Mathematics Teaching Award nomination period is open. Information about each award, guidelines for each award and how to submit nominations are below. Please consider nominating a deserving teacher. Nomination forms and applications can be found on the NHTM website at [www.nhmathteachers.org](http://www.nhmathteachers.org).

### Richard H. Balomenos Memorial Award

The Richard H. Balomenos Memorial Award was established by the Executive Board of NH-ATMNE in 1987, to remember and honor a former colleague, educator, and friend. Richard Balomenos and his wife, Georgia, died tragically in an automobile accident in December 1986. As both teacher and administrator at the University of New Hampshire for almost 25 years, Richard had a profound influence on mathematics education in the state of New Hampshire. The award is presented annually to a New Hampshire mathematics educator who has shown outstanding or meritorious service or leadership to the mathematics education community on a statewide basis.

If you would like to nominate someone for this award, please send his/her name and a 1-2 page letter describing contributions to the state of New Hampshire in the field of mathematics education to Greg Superchi, at [gsuperchi@yahoo.com](mailto:gsuperchi@yahoo.com) or at Greg Superchi, 159 Jim Noyes Hill Road, Landaff, NH 03585.

All nominations must be received by January 1, 2014.

### 2014 Richard C. Evans Distinguished Mathematics Educator Award

In December 2006, Dr. Richard Evans retired from Plymouth State University after serving for more than 40 years as a mathematics educator. The extent of his work in the State of New Hampshire is enormous. It is difficult to find a mathematics teacher in the State who has not been affected by his work. Dick has an unsurpassed passion for mathematics education and has dedicated his life to improving mathematics education for all in the State of New Hampshire.

The intent of this award is to highlight that passion, creativity and innovation in the teaching of mathematics to all students. The recipient of this award will represent Dr. Evans philosophy, passion and knowledge of mathematics education. Those with 5 years or more of experience teaching mathematics at

any level from Pre-K to 16 may be nominated.

Please consider nominating a Pre-K to 16 mathematics educator for the 2014 Richard C. Evans Distinguished Mathematics Educator Award given by the New Hampshire Teachers of Mathematics. ~Nomination forms and applications are due by December 15th.

Nominations and questions should be sent to:

Stephanie Wheeler -  
NHTM Elementary Representative  
75 Alice Drive  
Penacook, NH 03303  
or emailed to  
[stwheeler@mv.k12.nh.us](mailto:stwheeler@mv.k12.nh.us)  
[slwheeler3@aol.com](mailto:slwheeler3@aol.com)

### The Fernand J. Prevost Mathematics Teaching Award

Nominees are being sought for the annual Fernand J. Prevost Mathematics Teaching Award. NHTM is presenting the award in recognition of the contribution that Ferd has made to the mathematics educators of New Hampshire during his thirty years as the state mathematics consultant. The award is being given to a beginning teacher in her/his first, second, third, fourth, or fifth year who meets the following criteria which exemplify the characteristics which Ferd has brought to his teaching:

- \* commitment to good mathematics
- \* confidence that children can learn
- \* a spirit of self reflection and professional curiosity
- \* caring and concern for colleagues
- \* a willingness to explore, to learn, and to grow as a teacher of mathematics
- \* a willingness to share mathematical and pedagogical activities with others

The recipient will receive a plaque of achievement, a \$250 prize, and a one year membership to NHTM. The presentation of the award will be made at the NHTM Spring Conference.

Nominations are due by December 15, 2013 and should be sent to:

Rich Andrusiak  
River Valley Community College  
1 College Drive  
Claremont, NH 03743  
[randrusiak@ccsnh.edu](mailto:randrusiak@ccsnh.edu)  
603.542.7744 x5437

# ATMNE Conference in Killington – Gets Down to the Core

By Rob Lukasiak, ATMNE Representative

On October 24<sup>th</sup> – 25<sup>th</sup>, nearly 400 educators attended the ATMNE (Association of Teachers of Mathematics in New England) Fall Conference at the Killington Grand Resort in beautiful Killington Vermont.

The theme of the conference was “Getting to the Core” with a focus on *Problem Solving, Common Core, STEM, Technology, and Differentiation*. Thursday’s luncheon keynote was delivered by Jason Zimba who was the lead author of the Common Core State Standards in Mathematics. Jason provided an overview of the history of the Standards and the instructional shifts they require.

The focus of Friday’s breakfast keynote was “Assessing the Common Core State Standards in Mathematics – What Do You Need to Know?” The speakers were Michele Mailhot from the Maine Department of Education and Haley Freeman from Partnership for Assessment of Readiness for College and Career (PARCC).

The Balomenos lecture was delivered by Tim Whiteford of Saint Michael’s College who was this year’s Balomenos award winner. The lecture was followed by a reception that featured a “Taste of Vermont” which included a delicious sampling of a variety of Vermont products and foods.

The recipient of this year’s Reverend Stanley J. Bezuska, SJ, Lifetime Service Award for Teaching and Learning was Professor Kenneth Gross of the University of Vermont.

Believe it or not skiing season at the “Beast of the East” was officially open on the Thursday of the conference. This is accomplished on one part of the mountain thanks to the snow making capacity at Killington which can cover 80 acres, 1 foot deep, in 1 hour!

Kim Knowlton was one of several speakers at the NHTM Dine & Discuss event earlier this month.

Photo by A. Barton



## News from NCTM:

# Conferences, Workshops, and e-Tools

By Annie Wallace, NCTM Representative

Registration is now open for the NCTM Annual Meeting and Exposition is being held in New Orleans this year from 9-12 April 2014. The theme is Big Ideas in the Big Easy! The conference includes more than 700 sessions, workshops, and bursts with focus strands including the following :

- Number and Operations
- Social Justice
- Teaching Computational Fluency with Understanding
- 10-Minute Tasks
- Principles to Actions: An Urgent Agenda for School Mathematics
- Teachers Leveraging Technology

(for featured presentations and information <http://www.nctm.org/conferences/content.aspx?id=39874>)

This year there will be two pre-conference sessions *Using Formative Assessment for Student Learning* and *Multi-Tiered Systems of Support: What are Effective Interventions and Assessments?* For more information you may go to <http://www.nctm.org/neworleanspreconf/> .

NCTM will also be offering a chance for professional development and warmth with their *Cutting to the "Common Core" Interactive Institute Series* in Orlando this coming February (the 14-15<sup>th</sup>). There are institutes for the Prek-grade 5, Grades 6-8, Grades 9-12, and an Institute for School Leaders. (<http://www.nctm.org/profdev/default.aspx?id=398#2014CCII>).

In this age of social networking and digital connections, NCTM has kept current. You may connect and keep updated with math education news via rss feeds, Facebook, Twitter and LinkedIn. NCTM also keeps us up to date with the *NCTM Summing Up* a twice monthly newsletter and *NCTM SmartBrief*, a daily math education news brief. All can be subscribed to through the NCTM home page <http://www.nctm.org/> .

Remember too that NCTM is a good resource for lessons, ideas, and math learning <http://www.nctm.org/resources/default.aspx?id=230> . Although membership (there is also an e-member option) allows for greater access to these resources, some are accessible to non-members as well. For high school there is a Reasoning and Sense Making Library of tasks aligned to the Common Core Math Standards (<http://www.nctm.org/rsmtasks/>). There are also some free interactive math games from NCTM. The NCTM mobile apps can be found for Apple iOS, android and Google play devices <http://www.nctm.org/nctmmobile> . *NCTM Illuminations* and *Figure This* are also nice resources for lessons and problems open to all. They can be accessed at <http://illuminations.nctm.org/> and <http://figurethis.org/index.html>.



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

*Membership Works. Let us help you get results that work for you.*

Join NCTM Today!  
[www.nctm.org/membership](http://www.nctm.org/membership)



# From the desk of the Membership Chair...

As of November 2013

	SY:	SY	SY	SY	SY	NHJEM		Up-to-date
	Current until Dec. 2013	13-14	14-15	15-16	16-17	2013	2014	Total
<b>Individual</b>	238	170**	34	2	2	13	2	
<b>Institutional</b>	1	4						
<b>Totals</b>	238	174	34	2	2	13	2	

\*\* Includes 6  
Honorary Life-  
time Members

*Membership renewals have been coming in both online and through the mail. There is still time to renew! You may renew your membership online, use the application form in this issue, or go to the website for a renewal application form.*

*Mail to: Gretchen Scruton, NHTM Membership Chair, 44 Greenough Rd. Plaistow, NH 03865*

## NHJEM Memberships

The New Hampshire Joint Elementary Membership (NHJEM) is for elementary teachers in NH. A \$50 annual membership fee provides you with most of the membership benefits of four organizations (NHTM, New Hampshire Council of Teachers of English, New Hampshire Council for the Social Studies, and New Hampshire Science Teachers Association). Note that the NHJEM membership does not include ATMNE benefits. Check out the link on our website to join NHJEM and consider recommending NHJEM to your colleagues that teach at the elementary level.

The following NHTM members contributed to our scholarship fund:

*Kristin Bertel*

*Charles P Geer*

*Teresa Magnus*

**Thank you for your generosity! Additional donations towards our scholarship fund may be made with membership registration or at our upcoming Annual Spring Conference.**

*Have a wonderful Thanksgiving Holiday! If you would like to check on your membership status please email me at [Gretchen.Scruton@gmail.com](mailto:Gretchen.Scruton@gmail.com)*

# NHTM Executive Board

## Officers

<b><u>President</u></b>	Greg Superchi, Lisbon Regional School	<a href="mailto:gsuperchi@yahoo.com">gsuperchi@yahoo.com</a>
<b><u>Secretary</u></b>	Andrea Drake, Oyster River High School	<a href="mailto:adrake@orcsd.org">adrake@orcsd.org</a>
<b><u>Treasurer</u></b>	Kellie Gabriel, Nashua High School South	<a href="mailto:kgab@comcast.net">kgab@comcast.net</a>

## Council

<b><u>Elementary School Rep</u></b>	Stephanie Wheeler, Jewett Street School and Wilson Elementary School	<a href="mailto:swheeler@mansd.org">swheeler@mansd.org</a>
<b><u>Middle Levels Rep</u></b>	Katrina Hall, Hollis Brookline Middle School	<a href="mailto:katrinaleighhall@gmail.com">katrinaleighhall@gmail.com</a>
<b><u>Secondary Representative</u></b>	Michelle Fox-Bushaw, Groveton High School	<a href="mailto:m_fox@sau58.org">m_fox@sau58.org</a>
<b><u>Post-Secondary Rep</u></b>	Richard Andrusiak, Dept of Mathematics, River Valley CC	<a href="mailto:randrusiak@ccsnh.edu">randrusiak@ccsnh.edu</a>
<b><u>President-Elect</u></b>	Cecile Carlton, Mathematics Consultant	<a href="mailto:cecile.carlton@comcast.net">cecile.carlton@comcast.net</a>
<b><u>School Administrative Rep</u></b>	Donald R. West, Kearsarge Regional School District	<a href="mailto:dwest@kearsearge.org">dwest@kearsearge.org</a>
<b><u>ATMNE Representative</u></b>	Rob Lukasiak, Mathematics Consulting Services	<a href="mailto:rlukasiak@comcast.net">rlukasiak@comcast.net</a>
<b><u>NCTM Representative</u></b>	Annie Wallace, Hampstead Middle School	<a href="mailto:anniewallace@hotmail.com">anniewallace@hotmail.com</a>
<b><u>Membership Committee Chair</u></b>	Gretchen Scruton, Timberlane Middle School	<a href="mailto:gretchen.scruton@gmail.com">gretchen.scruton@gmail.com</a>
<b><u>Newsletter Editor</u></b>	Teresa Magnus, Dept. of Math & Comp Sci, Rivier University	<a href="mailto:tmagnus@rivier.edu">tmagnus@rivier.edu</a>
<b><u>Media &amp; Public Relations</u></b>	Amanda Barton, Sunapee Middle High School	<a href="mailto:benwarea@gmail.com">benwarea@gmail.com</a>
<b><u>Historian</u></b>	David G. Kent, Hopkinton High School (Retired)	<a href="mailto:dg_kent@mcttelecom.com">dg_kent@mcttelecom.com</a>
<b><u>Webmaster</u></b>	Matt Treamer, NCED Services	<a href="mailto:matt@ncedservices.org">matt@ncedservices.org</a>

Please visit <[www.nhmathteachers.org](http://www.nhmathteachers.org)> for more detailed Board information.

## *Professional Development and Conferences*

### National

Joint Mathematics Meetings	Baltimore MD	15 - 18 January 2014
NCSM 46th Annual Conference	New Orleans LA	7 - 9 April 2014
NCTM 91st Annual Meeting & Exposition	New Orleans LA	10 -12 April 2014
T3 Annual Conference	Las Vegas NV	7 - 9 March 2013
ICTCM 25th Annual Conference	San Antonio TX	20-23 March 2013

### State

Christa McAuliffe Technology Conference	Manchester NH	3 - 5 December 2013
NHTM Annual Spring Conference	Concord NH	17 March 2014
41 <sup>st</sup> annual State Mathematics Contest	Plymouth NH	18 March 2014

*Mathesis* is the newsletter of the New Hampshire Teachers of Mathematics. It is published four times a year: August, November, February, and May. The mission of the New Hampshire Teachers of Mathematics is to provide vision and leadership in improving the teaching of mathematics so that each student is ensured quality mathematics education and each teacher of mathematics is ensured the opportunity to grow professionally.