

Volume 47, Issue 3

February 2015

Mathesis

Online Voting New to NHTM

Upcoming Deadlines:

- February 18: Proposals for ATMNE Fall Conference Speakers due.
- March 6: Early bird registration ends for 2015 NCTM Conference in Boston.
- March 31: Nominations for Fr. Stanley J. Bezuszka, S.J. Award for Lifetime Service due to ATMNE.
- April 1: Applications for Presidential Award for Excellence in Mathematics and Science Teaching (7-12) due.
- May 1: NHTM Scholarship Applications due.

Inside this issue:

<u>Art's Attic</u>	2
<u>President's Message</u>	4
<u>Elementary Rep</u>	7
<u>Secondary Rep</u>	8
<u>Middle Levels Rep</u>	10
<u>Post-Secondary Rep</u>	11
<u>High School Contest</u>	11
<u>NCTM News</u>	12
<u>NHTM Board Candidates</u>	13
<u>Membership</u>	16

By Greg Superchi

At the 2014 Summer Retreat, the NHTM Board voted to conduct our yearly election via the Internet. Using the online polling service, Survey Monkey, NHTM members *whose memberships are current* will be sent an email with a link that will allow members to vote. We are working to ensure security and ease of use, but ask that you are patient as this will be our first year. There are bound to be lessons to learn when something is done for the first time.

For those wondering why we would choose to change from paper ballots to an online method, there are several reasons. These include cost, making accessibility and the process easier for everyone, and, we hope, more ballots cast. Would you believe that only about fifteen percent of the membership vote?

An Internet link to the ballot will be sent to email addresses (the same ones used for ***Mathesis*** and other association communications) the week of February 23rd. Current members will have until Noon on March 25, 2015 to vote. This is the same day as the Spring Dinner Conference. The results of the election will be announced that evening, just as in the past. Candidates and their biographical information are listed in this publication.

If for some reason you do not receive an email with a link to the online voting ballot *and know that your membership is current*, please contact Matt Treamer at treamer@gmail.com directly after the week of February 23rd. If you have any questions about the status of your membership, please contact Gretchen Scruton, Membership Chair, at gretchen.scruton@gmail.com right away. Thank you very much for your patience and understanding as we continue to modernize and, hopefully, improve services for you!

NHTM Spring Dinner Conference

March 25, 2015, 4:00 –8:00 p.m., Holiday Inn, Concord

Art's Attic: Al-Biruni

By Art Johnson

Abu Rayhan al-Biruni (973-1048) is another Persian mathematician who is essentially unknown to Western mathematics students. He lived most of his life near the Aral Sea in western Asia, near a region now known as Karakalpakstan. During his lifetime there was much civil unrest with one ruler after another seizing control of the area where Al-Biruni was living. For the most part he was not directly involved in this constant state of flux, serving one administration after the other.

Al-Biruni began his studies under the famous Persian astronomer Abu Nasr

Mansur, and by 990 he had determined the latitude of Kath, where he studied with Mansur. By 995 he wrote *Cartography*, which was a critique of the various schemes used by others to project a hemisphere unto a plane. In 995 al-Biruni left Kath in advance of civil war.

He fled to an area near modern day Teheran, where he lived in poverty for a time, without any patron to support his studies and explorations. Soon he was on the move again, and by 1000 he was in the city of Gurgan, where he was supported by a local prince. His movements during this time were chaotic but we know where he was because he wrote about moon and sun eclipses as well as other astronomical observations.

By 1004 al-Biruni was back home in Kath, supported by a series of rulers who were patrons of the arts and sciences. Al-Biruni was able to re-

establish his working arrangement with his old mentor Abu Nasr Mansur, and they collaborated on a number of scientific works during the next years. This ended in 1017 when the city was again conquered, this time by Yamin-ud-Dawla Abul-Qasim Mahmud ibn Sebuktegin who took both men with him when he left for his homeland.

As it turned out, Mahmud supported al-Biruni's work, and he made a number of observations that helped him compute the latitudes of many cities within Mahmud's kingdom. Mahmud's support was not unconditional, however, and it appears that al-Biruni

was essentially a prisoner, although well-treated one. Mahmud undertook series of invasions of India (fifteen in all), and al-Biruni was along for every one of them. His famous work *India*, is the result of these forays. In this massive work, al-Biruni describes the religion and philosophy of India, along with astronomy, astrology and the calendar.

Al-Biruni was amazingly well-read in Indian literature, delving into chronology, geography, mathematics, medicine, religion and weights and measures. In 1030 Mahmud died and his two eldest sons fought a protracted war over the right to succession. Although al-Biruni had no interest in civil matters he was careful not to give any dedication in *India*, in case he backed the honored son.

Despite frequent moves and all the civil un-

(Continued on page 3)



Teachers exploring mathematics problems together at the 2014 Spring NHTM Meeting.

Art's Attic: Al-Biruni

(Continued from page 2)

rest, al-Biruni produced an impressive collection of works. He wrote around 146 books (only about one-third survive) totaling 13,000 pages. Besides his work in astronomy he wrote about theoretical arithmetic, combinatorial analysis, irrational numbers, ratio theory, geometry, conic sections, stereographic projections, trigonometry and spherical triangles.

One of al-Biruni's most impressive achievements was determining the radius of the earth to be 6,339.6 km, a result not achieved in Europe until the 1600s. In his own words, he did this without 'walking across hot, dusty deserts.' Instead of siting the sun simultaneously from two

different locations (as had Eratosthenes and mathematicians who followed for the next 1300 years), al-Biruni found the angle from the top of a mountain to the sun, and from the top of the mountain to the horizon and to the plain below. He then used these data to compute the circumference and then the radius of the earth.

What protected al-Biruni during all these changes in location, rulers, and associated branch of religion was his lack of prejudice towards any one sect of Islam. His thinking is best displayed by his reply to a religious leader who criticized him for using an instrument that had Byzantine months engraved on it. Al-Biruni replied, "The Byzantines also eat food. Best we do not imitate them in this!"

President's Message:

STEM Task Force Report, NCTM, PD Opportunities, Events & Other Resources

By Cecile Carlton

As we maneuver through the winter months, teachers find themselves in the middle of the school year – planning lessons, preparing assessments, grading student projects as well as working to keep current in the craft of teaching not to mention trying to stay warm. You may even stop in the midst of all this work and think ...why am I doing this? Of course it's your love. You entered this profession due to your passion for learning and wanting to teach students to see the beauty and value in knowing and doing mathematics. Teachers' roles include helping students become well-educated contributors to our global society as well as contributors in their local community. And our role is to give you connections to keep current within the mathematics community to continue to sharpen your tools.

On January 13, 2015, Governor Maggie Hassan's STEM Task Force Report was released. The report, entitled "Pathways to STEM Excellence: Inspiring Students, Empowering Teachers and Raising Standards," outlines eight recommendations along with implementation strategies for each. The strategies are designed so that educators can focus on local approaches that are aligned with each district's priorities, resources, and existing educational initiatives while incorporating business and higher education as partners.

Recommendations are grouped in three areas: Strengthening STEM Foundations, Inspiring Students, and Empowering Teachers and include:

- Creating more opportunities for hands-on learning experience in science courses,
- Encouraging "Personal Learning Plans" that enable students as early as middle school to progress on a STEM educational and career pathway,
- Expanding curriculum options to include coding and other pathways that enhance students' STEM mastery and broaden career possibilities,
- Creating "early college" programs and academies to support excellence in student STEM attainment at advanced levels,
- Increasing the availability of competitions and capstone experiences for students,

- Engaging and mentoring girls for STEM careers,
- Increasing STEM proficiency of teachers and developing resources for teachers to enhance the transmission of STEM learning, and
- Supporting teachers' efforts to embed STEM learning from the earliest grades in a variety of curriculum.

NHTM would like to thank Caroline Herold, Middle Level Teacher at Lurgio Middle School in Bedford, who represented the New Hampshire Teachers of Mathematics. You can read the full report at <http://www.governor.nh.gov/commissions-task-forces/stem/documents/stem-01-2015-final-report.pdf>.

NCTM's Diane Briars recent message provides insights on identifying curriculum materials and a case for why it matters! Adoption of curriculum materials is one of the most important decisions a teacher, school, or district can make. While state standards describe what students are expected to learn and be able to do, what is taught in classrooms—the implemented curriculum—is heavily influenced by textbooks and other instructional materials. The instructional materials affect lesson content, depth and duration of instruction for particular topics, and topic sequence. So, while we may talk about curriculum materials as just "resources," the fact is that they strongly influence classroom instruction—for better or worse. Read more at <http://www.nctm.org/about/content.aspx?id=43510>.

New Hampshire has a lot of discussion pro and con for the CCSSM. At our Spring Conference meeting I would like to have NHTM support NCTM's position and publish a position statement on our web site. The context of NCTM's position statement is as follows:

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

Supporting the Common Core State Standards for Mathematics

The widespread adoption of the Common Core State Standards for Mathematics (CCSSM) presents

(Continued on page 5)

President's Message

(Continued from page 4)

an unprecedented opportunity for systemic improvement in mathematics education in the United States. The Common Core State Standards offer a foundation for the development of more rigorous, focused, and coherent mathematics curricula, instruction, and assessments that promote conceptual understanding and reasoning as well as skill fluency. This foundation will help to ensure that all students are ready for college and careers when they graduate from high school and that they are prepared to take their place as productive, full participants in society.

The National Council of Teachers of Mathematics (NCTM) is committed to helping educators interpret and understand the Common Core State Standards. The Council supports educators' efforts to develop and put in place the associated comprehensive and coherent school, district, and state systems of instruction and assessment. Instruction and assessment that are aligned with these standards must be rooted in and promote principles of access and equity. When properly implemented, the Common State Standards will support all students' access to, and success in, high-quality mathematics programs. Such programs lead to knowledge of mathematics content and reasoning skills that enable students to apply mathematics effectively in a myriad of careers and in everyday life.

The Common Core State Standards are a significant component of systemic improvement in mathematics learning, but on their own they are not sufficient to produce the mathematics achievement that our country needs to be competitive in the global economy of the 21st century. Other factors are critical to realizing the potential of the Common Core:

Substantial opportunities for ongoing professional development to ensure that all teachers understand and are prepared to implement the Common Core State Standards for Mathematics and that all administrators and policymakers understand teachers' needs

Accommodations in teacher evaluation systems to allow time for the profession and institutions to adjust and adapt to the Common Core State Standards before evaluation systems include accountability for student achievement as one element of a valid, multifaceted teacher evaluation

Ample funding for education, including funding for preschool education, to ensure that all students enter kindergarten with basic knowledge essential for school success

Funding for research and implementation of Common Core assessments to ensure that these assessments meet the goal of measuring conceptual understanding and reasoning, as well as procedural fluency

Adequate state funding to ensure that all students have access to Common Core assessments in formats that allow them to demonstrate their proficiency in all aspects of mathematics

Most important, all stakeholders must acknowledge that systemic improvement takes a number of years, and a long-term commitment to supporting the Common Core State Standards is necessary, even if initial assessment results do not show substantial improvements in student achievement.

Finally, for the Common Core State Standards to have long-term, positive effects on mathematics education, they must be dynamic. They must be updated periodically to reflect both emerging research on students' learning and practitioners' experiences with the current standards. NCTM is committed to working with other stakeholders to develop and implement a transparent, research-based process and realistic timetable for CCSSM's improvement over short, medium, and long terms to best support high levels of mathematics learning by all students.

With Boston hosting NCTM's Annual meeting in Boston this April, NHTM will hold a SPRING DINNER MEETING on March 25th 2015 at the Holiday Inn in Concord New Hampshire in lieu of an all-day conference. Shawn Towle, Eastern 1 Region Representative for NCTM Affiliate Services Committee, will present a session on strategies identified as effective teaching practices connected to NCTM's *Principles to Action*. Plan to join us for a delicious meal, worthwhile PD, awarding our NH Mathematics Teaching Awards as well as conducting our Annual Business meeting as required by NHTM's constitution. See more information about the event in this

(Continued on page 6)

President's Message

(Continued from page 5)

issue and on our web site www.nhmathteachers.org.

At our December 3, 2014 Executive Board meeting, a motion was made to change By-Law 7 dealing with the Elections. The section from our Constitution follows:

Section 7 Elections

The Nominations Committee will consist of three members, one of which will be the immediate Past-President or the President-Elect as chairperson. A call for nominations with the position's job description will be published in the early and the late fall/winter newsletter. The Nominations Committee will use the nominations from the call and other sources to form a ballot by January 15. The ballot will consist of two nominations for each office plus a space for write-ins. Each nominee that appears on the ballot will have submitted written consent to the Nominations Committee. The ballots will be printed with brief descriptions of the nominees and mailed to the membership. The ballots will be returned either by mail or by depositing them into a ballot box at the annual business meeting of NHTM to be held in the spring. A plurality will determine the election. The Nominations Committee will be responsible for counting the ballots and for announcing the new officers at the annual business meeting. The Nominations Committee will notify all nominees of the elections' results. In the event of a resignation from an elected or appointed office of the NHTM Board, the president will appoint a successor to serve the remainder of the term. This will be done with the approval of the Board by simple majority.

The change was made to the underlined section and it will read as follows: "*The ballots will be composed with brief descriptions of the nominees, will be posted on the NHTM website, and sent to the membership. The ballots will be cast via the Internet and the results shall be announced at the annual business meeting of NHTM to be held in the spring.*"

Information on the voting procedure changes and the candidates can be found in this *Mathesis* issue. All current NHTM members will be sent information – do check that your dues and e-mail address are up-to-date.

In the last issue we identified the regions with NHTM's Regional Structure (see

<http://nhmathteachers.org/NHTM-Regional-Structure> to find the contacts in your region); the Central Region had a meeting on January 26th at the Merrimack Valley Middle School in Penacook NH with a focus on delving into NCTM's *Principles to Action*. Other regions should be planning professional development as well. Contact your region's coordinator to suggest topics and activities of interest.

For those who know me, I can go on and on. But I cannot wrap up this section without providing some short resources that I have come across. (There are always more teaching resources to share – but I will expand upon them in the next issue or post them to the web site.) Here are a few tidbits in closing:

You Cubed has a new website. There are some great tasks here! <http://fb.me/6nktrUokf> .

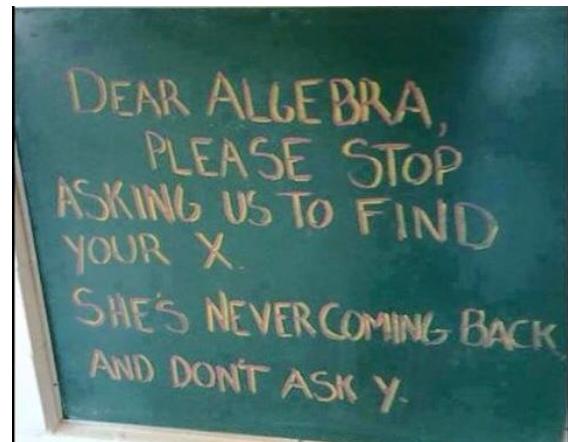
Check out [MLC Free Math Apps](#) (K-5).

For elementary level: a Math Club that started out with grade level teachers was eventually adopted by the entire school – teachers focused on having students improve their mathematical fluency by setting up the Math Club. Learn more at this site:

[Calling All Kids for the Math Club](#) TOMT article. Pdf and
<https://sites.google.com/site/octmcorestandardsresources/number-clubs>.

Take care all and please mark your calendars and join us on March 25th in Concord NH. Go to www.nhmathteachers.org to register!

And I close with a photo I saw on Facebook...



Elementary Representative

The Smarter Balanced Assessment Is Coming... Are We Ready?

By Stephanie Wheeler

At the time of this writing, the Smarter Balanced Assessment Testing Window is set to open for New Hampshire's 3rd and 4th graders in just about six weeks. At my two schools, we have been trying not to worry about what we don't know about the test (it feels like a lot) and focus on how we can support our students in being prepared to navigate the technology to show all that they do know and understand in math and language arts.

I was recently in a 4th grade classroom where the teacher and a fellow educator had split the group in two. Each group of students was working on the SBA Practice Test (found at www.smarterbalanced.org). One group was working at the 3rd grade level and the other group at the 4th grade level. Using the Practice Test as the venue to teach how to navigate the technology, the teachers were able to:

- Differentiate their instruction to meet the needs of their learners
- Support the students in working on a multi-step, rigorous problem
- Support the students in communicating their multi-step solution
- Model how to navigate a split screen to find important information
- Encourage the use of scrap paper to support calculations and record important information

Throughout this process of preparing for the SBA, I have been debriefing with teach-

ers and I have found that this is a very stressful process for teachers and also for many students, but given the opportunity to access the practice test, students have been engaged and invested in the experience. Moreover, given the opportunity to access the practice test, students can efficiently navigate the technology.

I think it is worth stating that a teacher who is consistently utilizing the 8 Mathematical Practice Standards will have students that are versed in how to tackle a rigorous problem that may require:

- Perseverance
- Reasoning abstractly
- Constructing an argument
- Modelling
- Using appropriate tools
- Precision

I can't say for sure, but I feel pretty confident that students exposed to the SBA Practice Test and materials will feel less stressed and be more prepared to tackle the SBA. A few years back, I think "teaching to the test" got a bad rap. I have always been a proponent of the idea that if a test is assessing appropriate mathematical knowledge and understanding, then why not use the test to help teach the students? What do you think?

Secondary Representative

“Floodlights” Activity Incorporates Mathematical Teaching Practices

By Michelle Fox

In my November Mathesis article, I discussed the eight Mathematical Teaching Practices outlined in the NCTM publication *Principles to Actions* that have been designed to provide a framework for strengthening the teaching and learning of mathematics. To recap, the eight practices are:

Mathematical Teaching Practices

1. Establish mathematics goals to focus learning.
2. Implement tasks that promote reasoning and problem solving.
3. Use and connect mathematical representations.
4. Facilitate meaningful mathematical discourse.
5. Pose purposeful questions.
6. Build procedural fluency from conceptual understanding.
7. Support productive struggle in learning mathematics.
8. Elicit and use evidence of student thinking.

The activity that I picked to discuss in this article is aligned to and lends itself easily to the NCTM’s eight teaching practices. Kim Knighton and I used this activity in the NHTM Dine and Discuss presentation we did

this fall. This activity can be used in a variety of different ways, and addresses similarity in triangles and proportional reasoning.

Floodlights

Background Information:

Eliot is playing football.

He is 6 feet tall.

He stands exactly half way between two floodlights.

The floodlights are 12 yards high and 50 yards apart.

The floodlights make two shadows of Eliot in opposite directions.

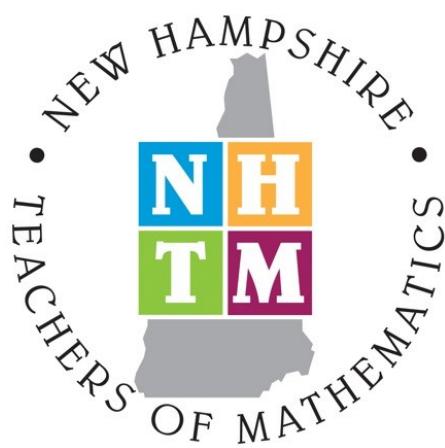
Procedures:

Draw a diagram to represent the situation. Label your diagram with the measurements given.

Find the total length of Eliot’s shadows. Explain your reasoning in detail.

Suppose Eliot walks in a straight line towards one of the floodlights. Figure out what happens to the total length of Eliot’s shadows. Explain your reasoning in detail.

The entire activity packet can be found at:
<http://map.mathshell.org/materials/download.php?fileid=1257>.



You are cordially invited to attend
The New Hampshire Teachers of Mathematics'
Spring Dinner Conference

Deepening Our Understanding of How to Plan for and Structure Productive Discussions

March 25, 2015 at Holiday Inn, Concord NH

4:00-8:00pm

Highlights include: the awarding of the annual NHTM Mathematics Teaching Awards, Keynote presentation by Shawn Towle, Eastern 1 Region Representative for NCTM Affiliate Services Committee, who will address strategies identified as effective teaching practices, the annual NHTM business meeting, and a chance to connect with other dedicated math educators.

More information and registration via www.nhmathteachers.org

Middle Level Representative

Reflecting on the Week

By Katrina L. Hall

As I sit today wondering how to inspire readers, I find my mind straying away from the task at hand. I should be writing about the upcoming NCTM Annual Meeting coming to Boston, the anxiety teachers are feeling in regards to the Smarter Balanced Assessment, the continuing pressure on the continuance of the CCSSM, the middle school math contest, the recent state STEM task force report, and the question of whether STEM should become STEAM. Dr. Magnus provided so many suggestions but I just can't focus on these topics. My mind keeps reflecting on the lessons of the week.

Eighth grade classes have been discussing relations and functions. They have ventured into determining if a relation is a function from a set of ordered pairs, and even via the vertical line test. A quick assessment and yes, they are getting it. We move on to identifying domain and range. A quick assessment and yes, they are getting this too. Continuous and discrete graphs? That's a piece of cake too! These children are mathematical whizzes but then we move onto evaluating functions and they fizzle. Why? Students continue to struggle with the order of operations and manipulating integers. Even with the use of a calculator students struggle. How does one move on from this gap in understanding so as to lead the student towards success at the next level? A lack of mastery of previous content has become our roadblock.

Moving on, I reflect on the Algebra students. As a collaborative project, students are working on the case of the missing student. The excitement in the students' eyes as they encountered

this mystery and learned that this would take the place of a traditional quiz was priceless. As I watched my students scattered throughout the room, I see their excitement in using math to solve the mystery. Students are collaborating, working cooperatively and managing themselves just as they would in a real-world task. As the teacher, I find myself walking around the room listening to conversations and smiling. Is this what STEAM is all about?

The week of teaching and learning had its highs and lows. Of course, I love the highs but I wouldn't change the lows. As an educator, I take the lows as the opportunity to extend my learning as a teacher of mathematics. I reflect and look for ways to not only make the learning experience stronger for my students but also better understand the gaps in their learning. It is the gaps that provide me with the opportunity to create new lessons and bring about the "aha" moments in the classroom. Yes, the highs are wonderful and I love the adrenaline it creates but the lows inspire me to be more. What inspires you?

Get Ready to Celebrate!

Pi Day falls on a Saturday this year, but it's still worth celebrating. In fact, since the current year is abbreviated '15, this year's Pi Day falls on 3/14/15 and if you remember to celebrate at 9:23:56 you can recognize the first ten digits of π .

Here are a few sites with ideas for celebrating the big day:

- <http://www.nctm.org/resources/content.aspx?id=2147483830>
- <http://www.piday.org/2008/2008-pi-day-activities-for-teachers/>

Post-Secondary Representative

NHTM Mathematics Major & Mathematics Education Scholarships High School and College Applicants

By Rich Andrusiak

The New Hampshire Teachers of Mathematics provides a \$1000 scholarship for a graduating high school senior and a \$1000 scholarship for a college student who will obtain junior or senior status in the 2015-2016 academic year.

The high school scholarship will be awarded to a graduating senior who will be attending an accredited college or university in the fall and plans to major in mathematics or mathematics education with the intent of becoming a mathematics educator. The selection team will consider academic achievement, financial need, extra-curricular activities, and community and school service.

The college scholarship will be awarded to a student preparing for certification to teach middle school or secondary mathematics, or elementary education. Eligible candidates will be enrolled in a middle or secondary mathematics certification program or elementary education certification program. Preference will be given to students attending a New Hampshire institution of higher education. The selection team will consider academic achievement, financial need, and will look for evidence of promise of a teacher of mathematics.

In January, I e-mailed information about these scholarships to high schools and institutes of higher education across NH. Additional information, along with the on-line application, can be found at <http://www.nhmathteachers.org/> by following the resources drop-down menu. The application deadline is May 1, 2015.

If you have any questions, please contact me at r.andrusiak@ccsnh.edu.

State High School Mathematics Competition in March

By Steve Latvis

New Hampshire Teachers of Mathematics and the Plymouth State University Mathematics Department invite high schools to form one 10-member mathematics team and to join us for our 43rd annual competition this year on Tuesday, March 17, 2015 at Plymouth State University (with a snow date of Wednesday, March 18th – still at Plymouth State University). Teams will have the opportunity to meet with other students from throughout the state in a day of exciting, challenging, competitive mathematics exercises in six different categories: Team, Recreational Mathematics, Algebra I, Geometry, Algebra II, and Advanced Mathematics.

The Team category involves all 10 members of the team separated into two groups of five. One of the four team category questions will require each group of five students working together to submit an expanded, detailed written response. That particular response will be judged on the style of solution, the coherence of the explanation and the organization of the correct solution requiring teams to present more than the correct answer to receive maximum credit for this question!

Teams must register by February 19. For more information including guidelines on team composition, calculator use, time of competition, payment, and registration procedures, visit <http://www.nhmathteachers.org/event-806459>. Please direct questions to slatvis@windhamhsd.org or whsmathteacher@gmail.com.

NCTM News

By Annie Wallace

As everyone probably knows the 2015 Annual Meeting and Exposition is just around the corner. There is still time to register at the early bird rate (March 6th is the deadline). Registration and rates can be found at <http://www.nctm.org/conferences/content.aspx?id=42063>. If you are not currently a NCTM member, the bonus with your full conference registration is a [one-year Full Membership](#) with NCTM. This is always helpful when looking for lessons, tasks, articles and more to use in your classroom and for your own learning.

The program schedule is found at <http://www.nctm.org/bostonprogram/>. Here you can browse through and see what you are interested in. If you are tech savvy, begin your online planner (<http://nctm.confex.com/nctm/2015AM/webprogram/start.html>). I found this to be a very handy tool in the conference last year. Even if you are not tech savvy, it is very easy to operate and may make finding workshops and presentations that best fit your interests and focus areas easier.

Supporting Teachers ... Reaching Students ... Building Futures -- The Mathematics Education Trust (MET) offers grants and scholarships to teachers and future teachers to support their learning and improvement of mathematics teaching and learning. A list of grants and scholarships can be found at <http://www.nctm.org/resources/content.aspx?id=198#68>. The deadlines are either May 4th or November 7th --- take a look and see if there is anything that fits what you are already thinking about. Easy to follow directions are available with each and the guidelines as to who or what is eligible are clear. This is a nice way to help make your own learning possible or to get the funding to develop or offer something for others!

Every time I explore the NCTM site I am finding new additions (or they may have been there and I am just noticing them). This time I have discovered that they now have a [Jobs Online](#) (<http://nctm-jobs.jobtarget.com/home/>) where jobs are posted and you can post your resume and other job resources are available to help. There is a page titled [Reflections](http://www.nctm.org/eresources/reflections/about.htm) (<http://www.nctm.org/eresources/reflections/about.htm>) where video-based, professional development is offered. Here the site's components are designed to assist teachers in reflecting on the mathematics they teach, and as a tool to systematically observe, analyze, critique, and improve classroom practices. Currently the focus is on the algebra strand in grades 3 – 8. Interested in knowing how the IRS is catching cheaters on tax returns or how pandemics spread.... the new [Math Here and Now](#) (<http://www.nctm.org/resources/content.aspx?id=1710>) has some tasks to help you answer these questions.

Stay warm and I hope to see many of you at the 2015 Annual Meeting and Exposition in Boston during April 15-18!

**SHINING THE
LIGHT ON LEARNING**
A VISION FOR MATHEMATICS LEADERS!



Before the NCTM Conference this April, take advantage of the NCSM Annual Conference and/or the NCTM Research Conference. Both take place April 13-15, 2015 in Boston!

For information see
www.mathedleadership.org
and www.nctm.org,
respectively.



NHTM 2015 Election

Biographical Information about the Candidates

*Voting ballots will be cast online via the Internet and will be emailed to members the week of February 23rd. Voting shall close at **12 Noon on March 25, 2015**, the day of the NHTM Spring Dinner Conference and results will be announced at this event.*

Nominee for President-Elect:

Annie K. Wallace

Annie actively serves on the board as the NCTM Representative where she has had the pleasure of interacting and working with math educators from all over the United States, as well as from other countries. Believing that all students can acquire and use mathematics, her experiences serving NHTM and NCTM have helped Annie to support the learning and teaching of mathematics in others along with her own development in the field. Building on her experiences in business administration, her own children's development and working as an EMT, Annie earned her M.Ed. in Math Curriculum and Instruction from Gordon College in Wenham, MA and began her career as a math teacher and Facilitator in Merrimack, NH. Here, among other opportunities, she helped develop, as well as participate in, the Spring-Board to Success summer program to support at-risk youth transition from the middle school to the high school environment. In further support of this type of opportunity, Annie co-wrote a grant to help obtain funding for the STEM Star Camp held at Keene State College this past summer.

Annie is now the Math Facilitator and teacher at Hampstead Middle School, where she works in grades 5 – 8, instructing and supporting students, teachers and administration along with coaching the math team. She also acts as a tutor to elementary through high school students and is an adjunct at NHTI - Concord in the Teacher Education Conversion Program. Annie is active on and has had the privilege to serve within a variety of programs, teams, committees and PLCs throughout New Hampshire in supporting mathematics education and learning. She also participated in a federally funded research project on establishing a model for online professional development. Annie has presented workshops for SERESC and NHTM's Dine and Discuss. Always willing to further her education and to strengthen student learning, understandings, applications, and appreciation of mathematics, Annie would be honored to continue to serve the NHTM community as their President-Elect.

Nominees for NCTM Representative:

Terri Magnus

Terri has been teaching mathematics and mathematics education at Rivier University for seventeen years. She has served the NHTM Board as Post-Secondary Representative (2007-2010) and Mathesis Editor (2010-present). She has directed the Rivier University M.A.T and B.A. Programs, advised and supervised prospective secondary mathematics teachers, taught elementary teachers in the Intel Mathematics program, presented at NHTM, ATMNE, NCTM, and MAA conferences, and

(Continued on page 14)

Candidates for NHTM Board

(Continued from page 13)

participated in NHDOE standards revision committees. Terri is a proponent of the CCSSM mathematical practices, employing them in her college courses and demonstrating how prospective and current teachers can do the same. She has enjoyed serving on the NHTM Board and relishes the opportunity to participate in a new capacity.

Sharon McCrone

Sharon is a Professor of mathematics education and mathematics at the University of New Hampshire in Durham. She has been a member of the faculty at UNH for the last 7 years and before that was a member of the faculty at Illinois State University for 10 years. Sharon works with mathematics pre-service teachers for grades K-12 in both mathematics content and methods courses. She stresses investigations, conceptual understanding and reasoning in all of her courses and conducts educational research of student learning in these areas.

Sharon was the lead author of NCTM's *Focus in High School Mathematics: Reasoning and Sense Making in Geometry*, and she freely admits that geometry is her passion. Sharon has been a member of the NCTM for 20+ years, and has presented at more than 15 state, regional, and national NCTM conferences. Sharon has served (and continues to serve) NCTM in various capacities such as referee for all of its journals; contributing author for *Navigating Through Reasoning and Proof in Grades 9-12* and for *Mathematics Education in the United States – A Capsule Summary Fact Book for ICME Conferences 2008 and 2012*; and reviewer of various other publications. She is now looking forward to serving the NHTM as the NCTM representative.

Nominees for Elementary Representative:

Amy Gregoire

Amy serves as the math specialist at Bow Memorial School. She currently provides math intervention to students, co-teaches with teachers, runs math labs, and serves as a professional resource for those teaching mathematics. Prior to this position she worked at Bow Elementary School and has worked at the elementary level for 21 years. Throughout her teaching career, Amy has served as the co-chair of her school's math leadership team, chair of the math adoption committee, and has provided professional development for teachers. In addition, she has presented Family Math at the NHTM conference. She is an active member of the district math leadership team and is currently serving on Bow's District data team. Amy is also a member of the New Hampshire College and Career Ready Standards Training Corps through the Department of Education and the NEA. She provides workshops on the Common Core for her region. Amy earned her Bachelors degree from Boston College and her Masters degree in Math Education from Lesley University. Amy would be honored to serve the NHTM community as their elementary representative.

Jessica Jacques

Jessica is the Mathematics Specialist for the Merrimack Valley School District which serves the communities of Boscawen, Loudon, Penacook, Salisbury, and Webster, NH. She primarily works with

(Continued on page 15)

Biographies of 2015 NHTM Board Candidates

(Continued from page 14)

the five elementary schools supporting teachers in the implementation of a more hands-on approach by providing resources to support the math curriculum, modeling lessons for teachers, working with small groups of students targeting specific standards, and providing professional development opportunities for staff to develop a deeper understanding of number sense. Prior to acquiring this position, Jessica graduated from Keene State College with a Bachelor of Science in Elementary Education and Middle School Math Education with a minor in Mathematics; she accepted a middle school position with Merrimack Valley Middle School in 1997. Jessica has taught grades 6, 7, and 8 at the middle school for seventeen years, coached the math team for ten years, and has always been an active leader in the building math department, especially as the school transitioned to the Common Core State Standards and standards-based grading. During this time, she also earned her Masters of Education in Mathematics K-8 at Plymouth State University. Jessica continually seeks out opportunities to continue her expertise as a professional in order to improve math instruction, understanding, and student growth. She would be honored to take on a more active role with NHTM and serve as the NHTM elementary representative.

Nominees for Treasurer:

Kellie Gabriel

Kellie is the Mathematics Department Head Teacher at Nashua High School South. In this role she teaches $\frac{1}{4}$ of the day, leads the math department in curriculum redesign with an emphasis on performance based assessments. She supports teachers as the high school transitions to a competency based assessment and standards-based grading. She has led the development of PLCs and helps sustain these groups by promoting the collegial expertise within the department. Currently she leads the effort to implement protocols for all departments to look at student work, to calibrate rubrics and in the validation a performance assessment.

Kellie is passionate about engaging students in the learning process and enjoys creating activities and helping teachers do the same. Kellie strongly believes her colleagues motivate her to be a better teacher and leader. She is particularly proud of the accomplishments of the math team; six consecutive years placing first in the SMASH League and the momentum continues. She is awed by their accomplishments and inspired by their passion for mathematics.

Kellie would like to continue to be a member of the NHTM Executive Board as the Treasurer for another term.

Jeanine King

Jeanine teaches mathematics at Hanover High School. This is her 17th year teaching at Hanover and before that she taught at Kearsarge Regional High School for 12 years. In 1999, she received the *Presidential Award for Excellence in Mathematics and Science Teaching*. She is particularly interested in teaching students that struggle with learning mathematics and has sought out professional development opportunities in that area to enhance her teaching. She has participated in the INTEL Mathematics Program, and was a member of the NH State Task Force on Mathematics Instruction. In 2010, she participated in the NECAP Item Review Committee. She is excited about the opportunity to serve on the NHTM Board.

From the Desk of the Membership Chair

As of January 2015

	Lapsed Members	Current Members	NHJEM	Up-to-date Total
			2015	
Individual	135	269**	1	
Institutional		3		
New FREE 1 yr. Mem-		13		
Totals	135	285	1	286

** Includes 8 Honorary

Please continue to spread the word about NHTM's offer for FREE one-year NHTM membership to undergraduate students, pre-service teachers, first year teachers, Pre-K – 6 teachers who have not held a NHTM (or NHJEM) membership previously, and experienced teachers in their first year of teaching in NH. The free one-year membership will also make the member eligible to receive the "reduced rate" at the NHTM Spring Professional Development offering for that membership year. Proof of eligibility for the membership will need to be forwarded to the membership chair via email or the mail.

Memberships now run one calendar year from the start of your membership rather than one full school year. Please take the time to go online to www.nhmathteachers.org to check on the status of your membership. Once you log in you will have access to see the date that your membership is current through as well as access to view or update any of your personal information. If you have any questions please feel free to email me at Gretchen.Scruton@gmail.com.

NEW MAILING ADDRESS for MEMBERSHIPS & RENEWALS

Membership renewals or new memberships may also be mailed to:

Gretchen Scruton
195 Ten Rod Road
Rochester, NH 03867

Explore the Standards for Mathematical Practice in Action!

Leadership Resources

Explore EDC's (<http://mathpractices.edc.org>) for Illustrations of the Standards for Mathematical Practice. Illustrations include 1) a mathematics task and student dialogue that exemplify what student mathematical thinking aligned with the standards looks like when connected to mathematical content, 2) teacher reflection questions and a mathematical overview for teacher learning and 3) student materials related to the dialogue for classroom use. These illustrations may be used in professional development settings as well as for individual learning and reflection.



NHTM APPLICATION/RENEWAL FORM

New memberships and Renewals are for one year from the date of sign up. (ie. Sept 1st 2015- Sept. 1st 2016)

OF MATH

Name: <Please Print Clearly>	____ 1st Yr Teacher	
Home Address:		
City:	State:	ZIP:
School:	SAU #:	
School Address:		
City:	State:	ZIP:
Home Phone:	School Phone:	
E-Mail (1):	E-Mail (2)	
<input type="checkbox"/> Check here if to receive NHTM information via e-mail	<input type="checkbox"/> Yes you can share my e-mail information with ATMNE our regional Math organization	
Preferred mailing address: <input type="checkbox"/> Home <input type="checkbox"/> School		
Grade Level:	<input type="checkbox"/> Teacher	<input type="checkbox"/> Intern <input type="checkbox"/> Student <input type="checkbox"/> Retiree
E MS HS Post Sec <input type="checkbox"/> Other:	NCTM Member? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Individual:	<input type="checkbox"/> New	<input type="checkbox"/> Renewal
1 Year @ FREE**		\$ _____
1 Year @25.00 or		\$ _____
2 Years @ \$45.00		\$ _____
*Full time students and retirees 1/2 price for NHTM dues <paid yearly>		
Institutional/School	<input type="checkbox"/> New	<input type="checkbox"/> Renewal
1 Year \$35.00		\$ _____
**Must send proof of eligibility to NHTM Membership Chair for FREE 1-Year Membership [Gretchen.Scruton@gmail.com or 195 Ten Rod Rd. Rochester, NH 03867]		
Additional donation for the NHTM Scholarship Fund.		

Total Amount Enclosed: _____

Checks **must** be sent with all **Purchase Orders**. Enclose one check *payable to NHTM*

Return this form with check to:
Gretchen Scruton, Membership Chair
195 Ten Rod Road
Rochester, NH 03867

Seen on NHMathEd listserv...

Have You Subscribed Yet?

Since the NHTM Mathesis is only published quarterly, mathematics teachers in New Hampshire are encouraged to subscribe to the NHMathEd listserv to receive timely notices regarding workshops, NHDOE announcements, and other news related to mathematics education in New Hampshire and the surrounding region. To subscribe, visit <http://listserv.plymouth.edu/mailman/listinfo/nhmathed>. Here are some of the recent postings:

- The NH Impact Center invites you to participate in a free informational workshop: How will the Smarter Balanced assessment affect your school? What can and will it be used for? How will it be implemented? Presentation by Dr. Scott Mantie, NH State Lead for Smarter Balance and Administrator of NH's Bureau of Assessment and Accountability, Tuesday, February 17, 4-6 p.m. If interested, e-mail Samantha Bergeron, sgbergeron@mail.plymouth.edu by February 12.
- ATOMIM is excited to host the next ATMNE Fall Conference: "Make Your Teaching Distinctively Different—Show Us Your Moxie!" The conference will be held on October 29 & 30, 2015, at the Holiday Inn by the Bay in Portland, Maine. Join Don Balka, Diane Briars, Dan Meyer, and Greg Tang and submit your speaker proposal form by February 18, 2015 to be considered for the program. As teachers, we learn best when we learn from each other. Encourage your colleagues to present with you. It's a wonderful experience and math teachers are the best, most understanding audience. Really. Submit your speaker proposal form via <<https://docs.google.com/forms/d/1Dw-YV04xLSSjlxdsMCBrW6bTv1vJTpxAwY-HA3cnmw/viewform>> by February 18, 2015 to be considered for the program. If you have questions or concerns about the proposal form, feel free to contact Darlene Ulrickson, dulrickson@msad53.org. If you have questions about the conference, feel free to contact Pam Rawson, pamela.rawson@gmail.com.
- Thursday, March 12, Osama Ta'ani, Wixson Professor of Mathematics at Plymouth State University, is giving a lecture titled, "Practices for Better Mathematics Teaching for Prospective Teachers" at the Silver Center—Smith Recital Hall, Room 116 from 4:00-5:30 p.m. Confirm your attendance by replying to the Office of the President , psu-presidentsoffice@plymouth.edu or (603) 535-2210.
- Shawn Towle, the NCTM Affiliate Services Committee Representative for E1 writes: There are some great discounts available for groups headed to the NCTM Annual Meeting in Boston this April. NCTM offers a normal discounted registration for 5 or more individuals. In addition, there are additional discounts available for groups starting at 12 or more. They start at \$19 off per person and increase as the group size increases. For these deeper discounts, you will need to have one contact person for the group. Groups need not be from a single school or district. If you would like to take advantage of this deeper discount on conference registration, you should send a note to nctmannualmeeting@showcare.com..There are no discounts on one day registrations.
- Moody's Mega Math Challenge, a modeling contest that challenges teams of 3-5 high school juniors and seniors to research, solve, and write a report on a real-world problem applying mathematics, is scheduled for February 28 or March 1. Registrations are due February 20 and more information can be found at <http://m3challenge.siam.org>.Recent contests have asked participants to develop and provide a cost-benefit analysis and give recommendations for a recycling program or to plan a school cafeteria menu that complied with Michelle Obama's "Healthy, Hunger-Free Kids' Act," providing enough calories to meet students' daily needs and tastes while meeting budget restrictions. Top teams compete for a \$20,000 grand prize.

NHTM Executive Board

Officers

<u>President</u>	Cecile Carlton, Mathematics Consultant	cecile.carlton@comcast.net
<u>Secretary</u>	Andrea Drake, Oyster River High School	adrake@orcisd.org
<u>Treasurer</u>	Kellie Gabriel, Nashua High School South	kgab@comcast.net

Council

<u>Elementary School Rep</u>	Stephanie Wheeler, Salisbury and Webster Elementary School Principal, Merrimack Valley School District	slwheeler3@aol.com
<u>Middle Levels Rep</u>	Katrina Hall, Hollis Brookline Middle School	katrinalleighhall@gmail.com
<u>Secondary Representative</u>	Michelle Fox, Groveton High School	m_fox@sau58.org
<u>Post-Secondary Rep</u>	Richard Andrusiak, Dept of Mathematics, River Valley CC	r_andrusiak@ccsnh.edu
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<u>School Administrative Rep</u>	Donald R. West, Kearsarge Regional School District	dwest@kearsarge.org
<u>ATMNE Representative</u>	Rob Lukasiak, Mathematics Consulting Services	r_lukasiak@comcast.net
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<u>Webmaster</u>	Matt Treamer, NCED Services	matt@ncedservices.org

Please visit <www.nhmathteachers.org> for more detailed Board information.

Professional Development and Conferences

National

T ³ Annual Conference	Fort Worth TX	13-15 March 2015
ICTCM 25th Annual Conference	Las Vegas NV	12-15 March 2015
NCSM 47th Annual Conference	Boston MA	13-15 April 2015
NCTM 92nd Annual Meeting & Exposition	Boston MA	15-18 April 2015
MAA Mathfest	Washington DC	5-8 August 2015
AMATYC 40th Annual Conference	New Orleans LA	19-22 November 2015
Joint Mathematics Meetings	Seattle WA	6-9 January 2016

State & Regional

NHTM Spring Dinner Meeting	Concord NH	25 March 2015
41 st Annual State Mathematics Contest	Plymouth NH	16 or 17 March 2015
ATMNE Fall Conference	Portland ME	29-30 October 2015

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 shall be to provide vision and leadership in improving the teaching and learning of mathematics so that each student is ensured quality mathematics education and each teacher of mathematics is ensured the opportunity to grow professionally.