



Mathesis

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August 2016

President's Message

By Annie Wallace

Thanks to a mild winter and Blizzard Bag Days, my school year with students ended sooner than in past years. I welcomed the extra week of summer thinking that I would have time to relax as well as complete all I had on my to-do list in getting ready for the new school year. Now it is August, the new school year is fast approaching and I think that my to-do list has grown rather than having anything crossed off. I am not sure where the long restful summer has gone, but, as with every year, I am looking forward to the start of school, new classes, students, seeing colleagues, and the return to the routine of the week.

With the new school year we welcome in our newest board members, Natalie LaFlamme (Secretary), Sharon McCrone (Post-Secondary Representative), and Stefan Fritz (Media and Public Relations). Welcomes can also mean good byes, and here I would like to thank Amanda Barton (Media and Public Relations), Andrea Drake (Secretary), and Rich Andrusiak (Post-Secondary Representative) for their

many years of service, expertise and dedication to NHTM and mathematics education in New Hampshire. Amanda brought us into the world of Twitter, Facebook, and a stronger online and cyberspace presence, allowing NHTM to keep in touch with everyone more fully. While Amanda kept us in touch with the here and now, Andrea quietly and thoroughly recorded our happenings, so that our works and accomplishments have a history. Rich is one of the most passionate people I know in fighting for every student to have a strong mathematics education and to be fully prepared for any type of further education, training, and/or career. I greatly value his willingness to face issues head on and to work hard in the pursuit of excellence.

As I begin my tenure as your NHTM President, I would like to sincerely thank Cecile Carlton for her past two years of service as NHTM's President and pass on my appreciation as she begins the new year as Past-President.

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President's Message

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Cecile is an extraordinary person who is superbly organized, always on top of things and has a staggering amount of energy. Along with being a strong mentor, Cecile is one of New Hampshire's and New England's finest mathematics educators and leaders. I am truly fortunate to have her continued guidance during this year, as I begin to take off the training wheels.

Like myself, I am sure that your year is usually extremely busy, so below are some local happenings and resources to be aware of to put on your calendars and/or take advantage of:

- **October 20th-21st, 2016, ATMNE Conference: Vote with Math—Developing Informed Citizens Through Mathematics!**

This year NH is hosting the annual ATMNE (Association of Teachers of Mathematics in New England) Fall conference at the Radisson Hotel in Manchester.

I have been fortunate this summer to meet two of the three featured speakers, Matt Larson (current President of NCTM) at the NCTM Affiliate Leaders Conference and Tom Reardon (Fitch High School/Youngstown University -- He also collaborates on learning activities for TI --- the most recent being STEM Behind Football <https://education.ti.com/en/us/stem-behind-sports/stem-behind-sports>) at Phillips-Exeter Academy's annual Anja S. Greer Conference on Mathematics and Technology in June. Both men have a wealth of information to share and are well worth learning from.

I look forward to hearing and learning from the third featured speaker, Peg Smith, as we have used *5 Practices for Orchestrating Productive Mathematics Discussions*, which she co-authored with Mary Kay Stein, in our math PLC at school. I feel that it is also one of those must have books for one's professional library.



ATMNE Members with NCTM President, Matt Larson, at NCTM Affiliates Leaders Conference this summer in Las Vegas, NV. NHTM members pictured Annie Wallace (NHTM President), Elisabeth Johnston (NHTM Newsletter Editor), and Judy Curran Buck (ATMNE President).

President's Message

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Along with these great featured speakers, there is a wealth of opportunities for learning from colleagues from all over New England. Cecile has provided more information on this upcoming conference in this edition and reminds us, that with any big event, any time that you can help out (if you are willing to volunteer a couple of hours there is a place to check when you register or you can sign-up on the website <http://www.nhmathteachers.org/>) would be great. I do hope to see everyone at the Radisson in Manchester on the 20th and 21st of October for learning, visiting with friends and fun!

- **Presidential Awards for Excellence in Mathematics and Science Teaching (PAESMT)**

Think about those outstanding middle and high school math teachers that you know and nominate them for this award (odd years for secondary and even years for elementary). Don't be shy -- nominate yourself! Nominations can be submitted beginning in the middle of October. Details on the qualifications and application process are included in this issue of the Mathesis. More information will also be available at the ATMNE Conference in Manchester. Think about it... we have some extraordinary math teachers in NH and it is wonderful to have them move forward towards being recognized nationally.

- **Free one-year NHTM memberships**
Beginning with the 2014-15 school year, NHTM has offered a one-year

free membership to undergraduate students, pre-service teachers, first year teachers, and experienced teachers in their first year of teaching within New Hampshire. The free one-year membership will also make the member eligible to receive the "reduced rate" at NHTM events for that membership year. Proof of eligibility for the membership will need to be forwarded to the membership chair, Gretchen Scruton via email, membership@nhmathteachers.org, or paper mail, 195 Ten Rod Road, Rochester, NH 03867, by the applicant, before exercising any membership benefits.

- **Do pass this information on to the teachers in your school and district.**

Read more about resources, membership, and professional development opportunities for you and your colleagues by visiting our website: <http://www.nhmathteachers.org/>. We also support several scholarships, recognitions and the State Mathematics Contest for high school students and MathCounts© for Middle School students. If you are not currently a member, please consider becoming one.

For elementary teachers, NHTM recognizes that you serve your students in all subject areas and offer two different membership opportunities that may be more economical for you than an individual membership. These are:

- **School Memberships**

An elementary school (Grades 6 and below) may join NHTM through a school membership which will allow

President's Message

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staff members to attend NHTM sponsored events at the membership rate. The named contact person will receive all publications.

➤ NH-JEM Memberships

If you teach at the elementary level, the New Hampshire Joint Elementary Membership (NH-JEM), may be for you! 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 NH-JEM membership does not include ATMNE benefits.

- **Revised NH Model Math Competencies for HS and new Model Competencies for K-8**

Many people have worked over the last year to revise the HS model math competencies and to create model math competencies for K-8, which were recently approved by the NH State Board of Education. These may be helpful as many districts are developing performance/competency tasks as another way for students to show their understandings and ability to apply the mathematics that they have learned. As Carol Ann Tomlinson and Jay McTighe state in their book, *Integrating Differentiated Instruction and Understanding by Design* (ASCD, 2006),

“A photo album typically contains a number of pictures taken over time in different contexts. When viewed as a whole, the album presents a more accurate and revealing ‘portrait’ of an individual than does any single snapshot within” (p. 60). These NH Model Math Competencies, found at http://education.nh.gov/innovations/hs_redesign/competencies.htm, may be a valuable tool as you create an “assessment photo album” of your students in order to meet their needs more fully in your classroom.

As I close, I want to give my deep appreciation to all of those who teach math at the elementary level. I had the opportunity (or as my principal puts it, a chance to stretch my comfort zone) to teach a class of 5th graders, who had great challenges with mathematics this past year. The strategies and tools you have, that I had to learn are amazing and I thank everyone who helped me out. I am also thankful for all of the elementary and early elementary workshops I attend at last year's ATMNE Conference in Portland, ME, and to the presenters who continued to share and help me after the conference. I hope that during this school year that I will continue to learn more and hope that we can all have opportunities to share and learn more about what goes into the development of the foundational skills in mathematics that I may have taken for granted (or did not even know about) at the secondary level.

My best to everyone and Welcome Back to School!



Elementary Representative

Purposeful Questioning and the Ever Changing Roles of Assistants in the Mathematics Classroom

By Amy Gregoire

Over the past several years there has been a shift in the way teachers teach mathematics. The environment where the teacher taught a skill in front of the class and then the students practiced independently has shifted. The mathematics classroom is now one of exploration, reasoning, problem solving, and students justifying their thinking to their peers. The teacher's role has become that of a facilitator who brings it all together for students in the end.

Over the summer I had the opportunity to participate in professional development conversations with many of my math colleagues. We discussed the importance of purposeful questioning. We recognized the importance of asking questions that make students' understanding and learning visible, which will in turn move their learning forward. During these conversations, we realized that although our practice and role has shifted, this is not something we necessarily have articulated to the assistants who work in our classrooms on a daily basis. We realized that our assistants are wonderful resources that are being underutilized. We discussed how to go about helping assistants understand the shift that has taken place, why it has taken place, and how they can best help a student within the classroom. Often times there might be some people who are uncomfortable with the math that is being taught in the classroom or just simply do not know how to help the students without leading them too directly to the correct answer.

We determined that training should be provided to all the assistants in our school. We decided the best format might be for me, as the math specialist, to provide a training session to all of the assistants. My first step would be to survey the teachers, to make sure to address the teachers' needs within the training session. One area of focus would be on questioning. In order to model how to facilitate learning, I would give the assistants a problem to work on, first individually and then in small groups. During this time I would rotate to the different groups and ask probing questions. I would then debrief to ask them how they felt about the problem and what kinds of questions I asked to help them persevere and make their thinking visible. I would also provide a card with a list of general questions that can be asked of students, when they are working on a problem.

The following is a list of potential questions to include on the card:

- In your own words, can you describe what the problem is asking?
- What do you already know? What do you need to know?
- What do you understand so far?
- What parts of this problem make sense to you?
- What in this problem doesn't yet make sense to you?

Elementary Representative **Purposeful Questioning and the Ever Changing Roles of Assistants in the Mathematics Classroom**

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- How might we decide which approach makes more sense?
- What are some math ideas we've worked on before that could help you with this new idea?
- How might you prove that _____ is the solution?
- What does your equation have to do with the situation in the problem? What do these numbers represent?
- Why do you think your strategy works? Does it work all the time?
- What do you notice or wonder about _____?
- What do you mean by _____?
- I'm not sure I understand. Can someone else comment on what she's saying?
- Is your answer reasonable and how do you know?

In addition to the general questions, which could be used across the board, we also discussed the idea of teachers preparing particular probing questions for assistants to use for specific tasks that would be more directly related to content and skills.

I would love to get some feedback. What skills do you feel are most important for assistants to have? Does your school provide training to assistants and if so, what kind of training is provided? Feel free to e-mail me at agregoire@bownet.org.

NEW RESOURCE FROM NCTM ---ARCs

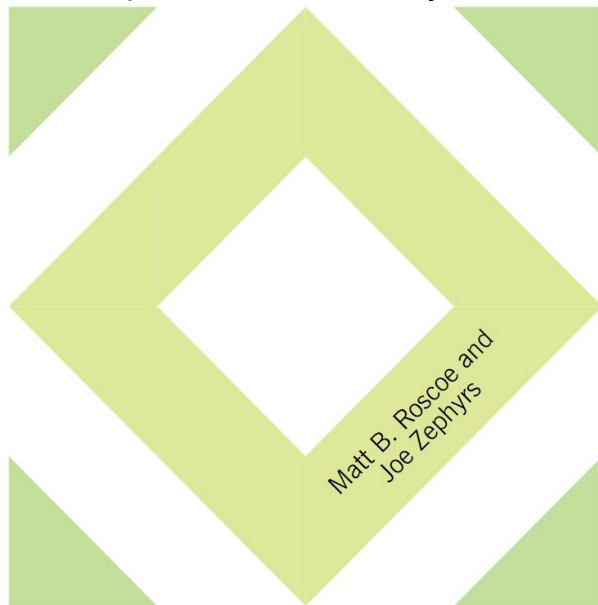
What are ARCs?

ARCs are **A**ctivities with **R**igor and **C**oherence. Each ARC is a sequence of 2 - 4 lessons that:

- [Support *Principals to Actions*](#)
- *Addresses a specific math topic*
- *Scaffold effective teaching*
- [Support the 8 Standards of Mathematical Practice](#)
- [Demonstrate the 5 Practices for Orchestrating Productive Mathematics Discussions](#)
- Integrate the wide range of NCTM resources such as:
 - Illuminations
 - Student Explorations in Mathematics
- Includes community features that offer opportunities for social interaction.

Find out more and explore at: <http://www.nctm.org/ARCs/>

Reprinted from NCTM's journal *Mathematics Teaching in the Middle School*



QUILT BLOCK

Geometric transformations have long been topics of middle school mathematics. Generations of middle school students have learned to reflect, rotate, and translate geometric objects. Historically, though, the mathematics of “movement” might have been considered a departure from other more central middle-grades geometric content areas, such as measurement, congruence, and similarity. But in the era of the Common Core State Standards for Mathematics (CCSSI 2010), the study of reflection, rotation, and translation have been given special importance. Consider the introduction to the high school geometry domain in the Common Core State Standards for School Mathematics (CCSSM):

The concepts of congruence, similarity,

and symmetry can be understood from the perspective of geometric transformation. Fundamental are the rigid motions: translations, rotations, reflections, and combinations of these, all of which are here assumed to preserve distance and angles (and therefore shapes generally).

Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes. (CCSSI 2010, p. 74)

The document makes it even more explicit in the next paragraph, describing the approach to congruence, in which “two geometric figures are defined to be congruent if there is a sequence of rigid

MTMS Quilt Block Symmetries

(CONTINUED FROM PAGE 7)

motions that carries one onto the other” (p. 74). Like congruence, the study of similarity in high school also rests on students understanding transformation by defining similarity as a sequence of rigid motions followed by a dilation, which “lead[s] to the criterion for [angle-angle] triangle similarity” (p. 74). These passages make it clear that one crucial element of students’ success in high school geometry is a firm understanding of transformation, which must be acquired in the middle grades.

One difficulty associated with teaching transformations in the middle grades is the facilitation of inquiry-based learning environments in which students explore and investigate properties of transformations in objects of their own creation. The study of transformation is a fertile setting in which students can make sense of problems, reason abstractly,

construct viable arguments, and look for structure, all practices that are encouraged in the Common Core’s Standards for Mathematical Practice (2010). In addition, the study of transformations has long been associated with tools of inquiry (witness the use of patty paper, the Mira™, and interactive geometry software). But few are the opportunities where student-generated examples are the focus of mathematical investigation. To this end, we created a series of mathematical tasks that provided students with the opportunity to construct understandings of transformation through an investigation of quilt block symmetries. The following is a description of these tasks and a demonstration of their use in an eighth-grade classroom.

THE SETUP

Imagine that you are a quilt maker. Each quilt you construct is composed of individual quilt blocks, which are squares that are filled and colored.

Interested in reading more? Find the full article at nctm.org—[Quilt Block Symmetries](#)

NH STATE MODEL MATHEMATICS COMPETENCIES

These competencies are approved by the State Board of Education for statewide use.

[2016 revised HS Mathematics Competencies](#)
[Mathematics K-8 Competencies](#)

Post-Secondary Representative

By Sharon McCrone

Summer is a great time for reflecting on one's work from the previous school year, learning new things, and looking ahead to the upcoming school year. This summer I had a great opportunity to reflect on my past school year while learning about the teaching of mathematics in other countries when I travelled to the 13th International Congress on Mathematical Education in Hamburg, Germany. This conference, held every four years under the auspices of the International Commission on Mathematical Instruction, brought together mathematicians, mathematics educators and school teachers of mathematics from over 100 countries.

At the conference I was able to share my own practice in teacher preparation and learn about best practices and new ideas about how others around the world prepare teachers. For instance, teacher educators from Hungary described their focus on "thinking like a mathematician" through problem solving and problem posing. This is a theme for students studying all levels of school mathematics as well as for the teacher candidates.

Discussion sessions on "professional vision" or "teacher noticing" had participants talking about formative assessment of students during a lesson. The discussion leader asked us to reflect on three main aspects of noticing in the classroom: (1) what a teacher attends to, (2) how a teacher interprets students' spoken words, gestures, or written work, and (3) the nature of the teacher's response. Researchers, teacher educators, and practicing teachers all engaged in this discussion. This was another interesting topic for me, which raised questions about my own teaching, and how I might incorporate these ideas into teacher preparation. A researcher from New Zealand (formerly of the Ukraine) challenged me to consider not only what a teacher should notice but also what students notice when they encounter a mathematical situation. He claims that teachers should be tasked with finding ways to help students notice the larger mathematical context. For instance, if given an exercise, such as finding the area of a right triangle with a hypotenuse of 6 and the altitude to the hypotenuse of a length of 8, students often quickly respond with 24 square units, when they should first consider the existence of such a triangle. In this case, no such triangle exists. John Mason, a great researcher in mathematics education from the UK (now living in Australia) reminded us all that we, as teachers, should not be only listening for the mathematics that we want to hear our students discussing. We also need to be listening to all that our students have to say about the mathematics.

Teaching mathematics with technology was another popular theme at the conference. Although I did not attend many sessions in this topic, I did engage in informal discussions about technology with colleagues from various countries. A few teachers I met from Australian middle schools, said they use technology in the classroom to inspire students to discover new mathematical ideas for themselves.

Post-Secondary Representative

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Mar Moreno, a researcher and teacher educator from Spain, shared her philosophy. She mentioned that many teachers see a new technology and try to figure out how they can use it in the teaching of mathematics. In other words, the technology shapes the teachers' (and students') thinking of mathematics. She says it should be the other way around. The mathematics we teach and what students learn should shape the technological tools we use in the classroom.

As you can see, the conference gave me much to consider in planning my practice for the coming school year. I hope the ideas I have shared will help others to be reflective of their practices as well.

And for any teachers or teacher educators who want to find out more about attending this conference in the future, be sure to check out the National Council of Teachers of Mathematics website over the next few years. NCTM offers travel grants to US teachers and college faculty to attend the ICME conferences. This summer, sixty teachers were awarded these grants, almost a third were middle or high school mathematics teachers. The next ICME conference will be in Shanghai, China in 2020.



NHTM Board Members at the annual summer retreat planning for 2016-2017.

NCTM Representative **Preparing for the School Year**

By Terri Magnus

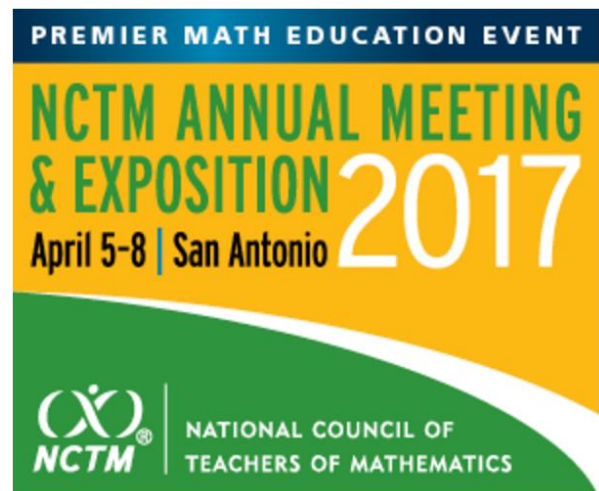
For teachers, August is a time of preparation for the upcoming year. NHTM and NCTM offer a lot of resources to help you in getting back into the teaching mindset and prepare for your classes. Check out the NCTM catalog at <http://www.nctm.org/Publications/Books/> to see the wide variety of offerings. If you come to the ATMNE Conference in October, you'll have the opportunity to buy NCTM books at a discount, even if you don't belong to NCTM. Our two ATMNE keynote speakers, Matt Larson and Margaret "Peg" Smith, are also NCTM authors. If you like their talks—which I'm sure you will—come to the NCTM Bookstore and check out their books,

Two of our board members, President Annie Wallace and Mathesis Editor Elisabeth Johnston just returned from the NCTM Affiliate Leadership Conference, *Leadership: Inspire Affiliates & Individuals to Take Action* in Las Vegas. I look forward to hearing what they learned from NCTM leadership and other affiliate leaders. Many of our recent initiatives such as the regional structure, website development and free membership for new teachers were inspired or guided by interactions at previous Affiliate Leadership Workshops.

Consider attending the NCTM Innov8 Conference, November 16-18, 2016. The theme, *Engaging the Struggling Learner*, is one from which every mathematics teacher could gain insights. This working conference is designed "to support mathematics teachers and teams in

identifying, analyzing, and planning for instruction and intervention." Participants will work as a team to address challenges they face in their schools and bring back an action plan to implement. There will also be keynotes, math circles, Twitter sessions, book talks, innovation lounges, and more. See <http://www.nctm.org/innov8/> for more information or to register. You can come as a team or be introduced to other teachers in your grade band and geographical area.

The closest regional conference this year is in Philadelphia, October 31-November 2. If you want to visit a different part of the country, you could attend the Phoenix Regional Conference, October 26-28. Information on these conferences can be found at <http://www.nctm.org/philadelphia/> and <http://www.nctm.org/phoenix/>, respectively. Each of these sites also provides a justification toolkit for convincing your administration that your school benefits from your attendance at these conferences. Of course, you may want to convince your administration that they should send you to the NCTM Annual Conference in San Antonio, April 5-8. Plan now to get the permission and funding.



NCTM Representative **Preparing for the School Year**

(CONTINUED FROM PAGE 11)

Of course, NCTM also offers many other professional development resources that you can access in your own home or school. Memberships include a subscription to the journal of your choice. On the NCTM website <http://www.nctm.org/Conferences-and-Professional-Development/Professional-Development-Resources/>, members can find resources for the classroom and resources for professional development.

Classroom resources such as Illuminations, Student Explorations in Mathematics, and Activities with Rigor and Coherence are designed to be used with students, while professional development resources, such as the *Principles to Actions Toolkit*, encourage teachers to reflect on their practice and how they can become more effective teachers. These grade-band specific professional learning modules, ideal for groups of teachers to discuss, are based on NCTM's *Effective Teaching Practices and Guiding Principles from Principles to Actions: Ensuring Mathematical Success for All*.

Will you be joining us? ATMNE2016 will soon be here!

By Cecile Carlton, ATMNE2016 Co-Chair

NHTM is host to ATMNE 2016 – Early Bird Registration ends on September 15th, 2016. You can register after that date of course, but if you can, take advantage of the registration now.

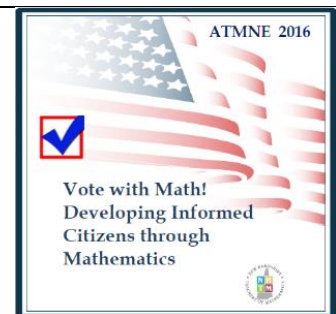
Go to <http://atmne2016.org> and register and get all the details about the conference. Share the information with your colleagues – there is a discount for groups of people (5 or more) from the same district – check it out.

The program information is all laid out as well. We have over eighty sessions with speakers from around New England and beyond. In this exciting election year we look to connect with the notion that New Hampshire is first in the nation in primaries, over 100 years starting off the election year. Our own New Hampshire mathematician will be the featured Balomenos Lecturer this year. Dr. Richard C. Evans will speak about **Using Data Wisely Leads to Informed Citizens**.

In order to make informed decisions about issues confronting this country, informed citizens need to analyze reliable data related to those issues and recognize a correlation does not prove causation. We will explore some data related to issues for this election year.

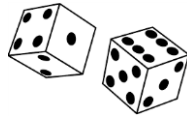
So plan to join us in Manchester, New Hampshire on October 20 and 21, 2016 at the Radisson Hotel. If you have any further questions, feel free to contact me at pastnhtmpresident@nhmathteachers.org – I can also answer registration questions.

Have a great school year and join us in October!



Elementary Representative **Activity- Race to One Hundred**

By Amy Gregoire



This game provides students an opportunity to practice addition, subtraction, multiplication and division as they try to reach 100 on a number chart. The game can be modified by adding more dice or using dice with more than 6 sides. Students will have fun playing as well as making up their own rules for a new game. *This game is from youcubed.org.*

Number of Players: 2

Materials:

- two dice
- one hundred chart
- two markers
- pencils and scratch paper

Directions:

- Each player takes turns rolling the two dice. Markers are placed at zero.
- Player 1 may choose to calculate the sum, difference, product or quotient of the two numbers displayed on the dice.
- Player 1 then moves their marker to that number on the chart.
- Player 2 takes their turn.
- For player 1's second turn they determine the sum, difference, product or quotient. This number is then added to the number under their marker and the marker is moved to this sum.
- Play ends when one player reaches one hundred.
- If a player rolls and computes a number that cannot be added to the last number without going over 100, they lose their turn.
- If player 1 reaches 100 first, player 2 finishes the round to see if they can tie the game.

Variation

Players can choose to include a negative number, achieved through taking the difference of two numbers where the number subtracted is greater than the starting number.

91	92	93	94	95	96	97	98	99	100
81	82	83	84	85	86	87	88	89	90
71	72	73	74	75	76	77	78	79	80
61	62	63	64	65	66	67	68	69	70
51	52	53	54	55	56	57	58	59	60
41	42	43	44	45	46	47	48	49	50
31	32	33	34	35	36	37	38	39	40
21	22	23	24	25	26	27	28	29	30
11	12	13	14	15	16	17	18	19	20
1	2	3	4	5	6	7	8	9	10

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TEACHERS OF MATHEMATICS

INSPIRING TEACHERS. ENGAGING STUDENTS. BUILDING THE FUTURE.

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<http://www.nctm.org/Membership>



Presidential Awards for Excellence in Mathematics and Science Teaching

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the nation's highest honors for teachers of mathematics and science (including computer science). Awardees serve as models for their colleagues, inspiration to their communities, and leaders in the improvement of mathematics and science education. <https://paemst.org/>

NOMINATIONS OPEN FALL 2016

Nominations for mathematics and science teachers of grades **7-12** will open in Fall of 2016.

Who may nominate? Anyone!

- Principals
- Teachers
- Parents
- Students
- Members of the general public

NH PAESMT Coordinator:
Donna Dubey, NH DOE Mathematics-
Assessment Coordinator
Donna.Dubey@doe.nh.gov

APPLICATIONS OPEN FALL 2016

Applications for mathematics and science teachers of grades **7-12** will open in Fall of 2016.

Who may apply?

For the 2017 cycle, any secondary (Grades 7 – 12) math, science or computer science teacher.

Applicants must:

- Teach math or science in a public or private school
- Hold at least a bachelor's degree from an accredited institution
- Be a full time employee of their school/district AND teach students at least 50% of the time
- Have a minimum of 5 years of full-time K-12 math or science teaching experience prior to academic school year
- Teach in one of the 50 states or the four US jurisdictions
- Be a US citizen or permanent resident
- Not have received the PAESMT award at the national level in any category before.

When nominations and applications open, PAESMT can let you know!


Contact them at info@paemst.org

Secondary Representative

By Michelle Fox

Well, here it is...August. The month most of us realize that school is starting in a month (or less) and we have a new crop of anxious, excited, and ready-to-learn students that will be walking into our classrooms. We hope that they all love math as much as we do! In a perfect world, all students, parents, and community members would value mathematics education because it is one of the most universal, applicable, and important subjects that a person should learn! And, I just happen to love math! But, unfortunately, it is still socially "acceptable" to be bad at math. You don't hear people go up to their friends or neighbors and complain about not being able to read or write very well. But being bad at math is something people are always willing to share with anyone who will listen. The idea that just because your mom or dad or grandmother or grandfather was "bad" at math, does not mean that it is something that you inherit. One of my biggest goals as a mathematics educator is to instill the love of math into each and every student that walks in my classroom or at least get them to realize that everyone CAN do math! It is something that takes hard work and dedication, yes, but it is accessible to all. So, as the first day of school approaches, and you and I both know that it is going to happen, ready yourself for the students who proclaim, "I am bad at math." Be ready to rock their world with the mathematics we all know and love and prove that they can learn it!

8 Habits of Math Teachers Who Value PRODUCTIVE STRUGGLE



- 1 Call on students who may not have the correct answer**
Then guide students in the process of questioning their thinking
- 2 Praise students for perseverance in problem solving, not for being smart**
They'll be more motivated to face challenging problems
- 3 Display work that shows creative problem solving, not the highest scores**
Students will learn to value the struggle toward a learning goal
- 4 Provide non-routine problems that can't be solved with a memorized formula**
This challenges students to make sense of the problem then figure out the math needed to solve it
- 5 Give students informative feedback**
Provide context to help students course correct toward the solution
- 6 Don't give easier work to struggling students**
This gives the message that some students can't handle challenging work
- 7 Allow students time to ask questions and tinker with ideas**
Slowing down the learning process optimizes retention
- 8 Encourage having a growth mindset**
Remind students that everyone has the ability to be mathematical problem solvers

To learn more, go to mindresearch.org/blog and search "productive struggle."

MIND Research Institute

To learn more, go to mindresearch.org/blog and search "productive struggle."

Click link for [full size poster](#).

ATMNE 2016



Vote with Math!

Developing Informed Citizens through Mathematics

Conference Co-Chairs:

Laurie Boswell

laboswell@gmail.com

Cecile Carlton

Cecile.carlton@comcast.net

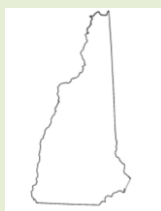
Program Co-Chairs:

John Donovan

jdonovan@holderness.org

Kim Knighton

kknig@profile.k12.nh.us



October 20-21, 2016

Radisson Hotel

Manchester, NH



August 2016

Dear Educators,

We would like to raffle off baskets at the ATMNE Conference which is being hosted by NHTM on Oct. 20-21. The proceeds would go towards the NHTM Scholarship Fund. Each year two scholarships are presented to students who are majoring in mathematics or mathematics education: one to a high school senior and another to a college student.

We are hoping you might be willing to put together and donate a basket with a theme of Mathematics, Politics, and/or Made in New Hampshire. You might be able to get businesses and/or parents to donate items to make up these baskets. For those elementary schools willing to do this, we would give their school a School Membership to NHTM. For a Middle or High School, we would give an Individual Membership to NHTM.

If you have questions or are willing to donate a basket; please contact Roberta Kieronski at robertak@unh.edu or Betty Erickson at 123bme@comcast.net. All baskets need to be completed by Tuesday, Oct. 18, 2016 and delivered to Roberta Kieronski at 15 Redwing Rd. Concord, NH or UNHM at 88 Commercial St. Manchester, NH. Thank you for considering this request .

Sincerely,
Roberta Kieronski and Betty Erickson

PS – Please respond to Roberta or Betty by September 15th, 2016 if you plan to participate so they can plan for the raffle event.

NHTM Basket Raffle at the ATMNE Conference Oct. 20-21, 2016

Name _____

Address _____

Phone number _____

Email _____

School _____

Type of basket (please circle all that apply) :

Mathematics

Politics

Made in New Hampshire

Please describe the contents of your basket _____

Names of businesses or individuals who donated to your basket _____

All baskets need to be completed by Tuesday, Oct. 18, 2016 and delivered to Roberta Kieronksi at

Home: 15 Redwing Rd. Concord, NH

or

Work: UNHM at 88 Commercial St. Manchester, NH

Update from Membership Chair

By Gretchen Scruton

FREE NHTM Membership Offer for 2016-2017 School Year

NHTM continues to offer free one-year NHTM memberships to undergraduate students, pre-service teachers, first year teachers, PreK-6 teachers who have not held a NHTM (or NHJEM) membership previously, and experienced teachers in their first year of teaching within New Hampshire. The free one-year membership will also make the member eligible to receive the "reduced rate" at the NHTM Dine & Discuss and Spring Conference (which typically is set just high enough to cover meals) for that membership year. Proof of eligibility for the membership will need to be shared with the membership chair, via email or USPS, by the applicant, prior to receiving any membership benefits.

Please send proof of eligibility to Gretchen Scruton at Gretchen.Scruton@gmail.com, membership@nhmathteachers.org, or mail to: **Gretchen Scruton, NHTM Membership Chair, 195 Ten Rod Road, Rochester, NH 03867.**

Update from Membership Chair

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Please RENEW & Invite Colleagues to Join NHTM

Now is the time to renew! We hope to see you at the Fall ATMNE conference on October 20th – 21st! You will need a current NHTM membership to register for the Fall ATMNE conference. You can use your email address to log into our website, <http://www.nhmathteachers.org/page-1718760>, to check the status of your NHTM membership. Our membership is currently at 271 members with 115 memberships ready to renew. Reminders have been emailed to all members when it is time to renew your membership. Let NHTM be your state level professional conduit that extends your networking with mathematics colleagues. Enhance your effectiveness, mathematical expertise, and teaching skills. This is the perfect time of year to invite a colleague to join NHTM, especially if you know someone who would qualify for a free one-year membership to NHTM. Contact Gretchen Scruton, Membership Chair if you have any further questions: Gretchen.Scruton@gmail.com or membership@nhmathteachers.org.

Individual Membership in NHTM provides you with:

- Mathesis (newsletter) – includes current happenings in math education, Common Core resources, interesting articles and math activities
- Reduced rates at NHTM sponsored events
- Membership in ATMNE (the Association of Teachers of Mathematics in New England) including its two publications, the ATMNE Newsletter and the New England Mathematics Journal, and reduced rates at ATMNE conferences. Note that the ATMNE Newsletter has gone GREEN – be sure your email is up to date in our database.
- In-Service Education Forums on current Math Ed initiatives – Regional PD offerings, networking

What Your Membership Supports:

- Scholarship programs for graduating high school seniors who will pursue mathematics related college studies and for college students enrolled in mathematics education programs
- State Mathematics Contest for high school students and MATHCOUNTS for middle school students in New Hampshire
- Student Recognition program – for students who have demonstrated creativity, interest, or talent in the study of mathematics
- **Mathematics Educator Recognition Programs:**
 - **Richard H. Balomenos Memorial Service Award**
 - **Presidential Awardees (PAESMT)** at the elementary and secondary levels
 - **Fernand J. Prevost Mathematics Teaching Award** – for outstanding teacher of mathematics in their first, second, or third year of teaching

Update from Membership Chair

(CONTINUED FROM PAGE 19)

- **Richard C. Evans Distinguished Mathematics Educator Award** – for distinguished mathematics teacher/educator who works actively with students and/or teachers for five or more years at any level (PreK-16)
- Recognition of NHTM math educators with 25 or more years of NHTM membership
- Lifetime Honorary Memberships

Please continue to explore our website at <http://www.nhmathteachers.org> throughout the school year for updated membership information, mathematical resources, and professional development opportunities.

Stay Informed!



- NHTM New Hampshire
Teachers of Mathematics



- @NHTM1964

Nominate a NH Math Educator for a NHTM Award

NHTM encourages its members to nominate mathematics teachers for the Fernand J. Prevost Teaching Award, the Richard C. Evans Distinguished Educator Award, and the Richard H. Balomenos Memorial Award. Nomination forms and applications for each of these awards can be found on the NHTM website www.nhmathteachers.org. The descriptions and instructions for each of these awards are described on the following pages.

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 through fifth year** who meets the following criteria which exemplify the characteristics which Ferd has brought to his teaching:

- commitment to good mathematics
- confidence that all 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

(CONTINUED FROM PAGE 20)

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.

The 2017 Prevost Award Nomination Form is found by clicking [here](#) or obtained by sending a request to

Nominations are due by December 15, 2016 and should be sent to:

Michelle Fox

NHTM Executive Board Secondary Representative

Groveton High School

65 State Street

Groveton, NH 03582

or can be obtained by sending a request to secondaryrep@nhmathteachers.org

View the 2017 Prevost Award Nominee Cover Form by clicking [here](#).

View the 2017 Prevost Award Nominee Application Procedure by clicking [here](#).

Richard C. Evans Distinguished Mathematics Educator Award

At the March 2007 New Hampshire Teachers of mathematics Annual Conference, the Richard C. Evans Distinguished Mathematics Educator Award was announced to honor and thank Dr. Evans for his years of service in mathematics education. The intent of this award is to highlight 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. Dr. Evans has indicated that he would like to be involved in the selection process and awarding the honor at the annual spring conference. The award is presented annually at the spring conference. Nominees are being sought for this year.

Qualifications for the Award

The recipient will:

- Be an experienced teacher or someone who works actively with teachers or students with 5 or more years' experience teaching mathematics at any level (Pre-K to 16).
- Be enthusiastic, knowledgeable, and passionate as a person, teacher, and leader reflecting the character traits as demonstrated by Dr. Evans.
- Demonstrate thinking and reasoning abilities that use models to make mathematics meaningful to students.

(CONTINUED FROM PAGE 21)

- Portray a dedication and organized focus for his/her teaching inside and outside the classroom.
- Actively demonstrate an unsurpassed passion for mathematical process to include problem-solving, reasoning, proof, communication, connections and representations.
- Apply knowledge of standards- and researched-based instructional and assessment strategies in his/her classroom with a true commitment that all children can learn mathematics
- Offer collegiality to fellow mathematics educators through sharing of information, serving as a mentor, offering professional development support, engaging in professional learning communities, serving on school, district or state professional groups, or through other opportunities to enhance the culture and climate of an educational community.
- Be involved with the mathematics educational community through membership and participation in district, regional, state, or national mathematics organizations. His/her involvement has led to significant impact on the mathematics education of students, fellow teachers, administration, parents, or other community members.

More specific information is provided in the links below:

- To View 2017 Evans Award Details click on [Award Details](#)
- To view 2017 Evans Application Procedures click on [Application Procedure](#)
- To view 2017 Evans Application Cover Sheet click on [Cover Sheet](#)
- To view 2017 Evans Nomination Form click on [Nomination Form](#)

Completed Nomination Form is due by December 15, 2016 and should be sent to:

Amy Gregoire

NHTM Elementary Representative

35 Tonga Drive

Bow, NH 03304

or emailed to agregoire1@comcast.net or to elementaryrep@nhmathteachers.org

Completed Nomination Packets are due no later than January 15, 2017. If you have questions, you may contact Amy Gregoire at agregoire1@comcast.net or 603-591-8339.

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Richard H. Balomenos Memorial Service Award

The Richard H. Balomenos Memorial Service Award was established by the Executive Board of NHTM 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.

To nominate a deserving individual for this award send the nomination information explaining why this individual merits this recognition, the name and contact information of the person making the nomination to the current President of NHTM no later than January 1, 2017 by e-mail to: nhtmpresident@nhmathteachers.org or mail the information to:

Annie Wallace
c/o 3 Old Danville Rd.
Brentwood, NH 03833

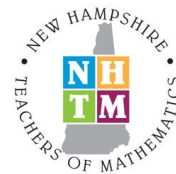


Upcoming Deadlines

- Conferences Proposals for NCTM's Research Conference- September 4th
- Early Bird Registration for ATMNE 2016- September 15th
- Early Bird Registration for NCTM's Regional Conferences
 - September 30th- Phoenix
 - October 7th- Philadelphia
 - October 14th- St. Louis- Innov8
- Information for November Mathesis- November 1st
- Prevost and Evans Award Nominations- December 15th
- Balomenos Award Nominations- January 1st



Save the Date
October 20, 21, 2016
ATMNE Fall Conference
Radisson Hotel
Manchester, New Hampshire



We welcome you to join us to



Vote with Math!

Developing Informed Citizens through Mathematics!
on October 20-21, 2016.

Featured Presenters

Matthew R. Larson, NCTM President

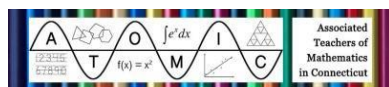
Margaret 'Peg' Smith, NCTM author

Tom Reardon, Technology Guru

Balomenos Lecturer -Richard C. Evans
plus many, many more

Sessions and Workshops for all interest.

Check out our website at <http://atmne2016.org>



NHTM Executive Board

<http://www.nhmathteachers.org/page-1715832>

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Webmaster Matt Treamer NCES			

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

Professional Development & Conferences

National

42 nd AMATYC Annual Conference	Denver, CO	November 17-20, 2016
Joint Mathematics Meetings	Atlanta, GA	January 4-7, 2017
ICTCM 28th Annual Conference	Chicago, IL	March 9-12, 2017
T3 Annual Conference	Chicago, IL	March 10-12, 2017
2017 NCSM Annual Conference	San Antonio, TX	April 3-5, 2017
NCTM Annual Meeting & Exposition	San Antonio, TX	April 5-8, 2017

Regional

ATMNE Fall Conference	Manchester, NH	October 20-21, 2016
NCTM Regional Conference	Phoenix, AZ	October 26-28, 2016
NCTM Regional Conference	Philadelphia, PA	October 31- November 2, 2016
Innov8 Conference	St. Louis, MO	November 16-18, 2016

State

43 rd Annual State Mathematics Contest	Plymouth, NH	March, 2017
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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.