

# Math Murmurs



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*The Official Newsletter of the Association of Teachers of Mathematics in Massachusetts  
an affiliate of the National Council of Teachers of Mathematics*

## A Message from the President, Steve Rattendi

Is teaching a profession you are born into or is it a profession that you grow into? There is quite a bit of talk these days about the “growth mindset.” I think the concept absolutely applies to our students as much as it applies to our selves. Teaching is something we can grow into, and we can continually improve our practice by learning from each other and from our own daily successes and failures in the classroom.



Who has helped you grow as a teacher? There are many teachers in my school that have had a huge influence on my teaching. There are others from outside of my school, even as far back as my own

days as a student, who have positively impacted what I do everyday. There are also plenty of students from my past and present that have affected how I teach.

I am sure you can also call to mind such individuals in your own life. One of the many things I need to improve upon is acknowledging what others have done for my growth. As you are reflecting on those that have helped you grow as a teacher,

I encourage you to find a time to thank them. If they are colleagues in your building, go see President’s message continued on page 2

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### Dates to Remember

- March 13, 2015**  
Nominations Due  
Father Bezuszka Achievement  
for Mathematics Teaching
- March 13, 2015**  
Nominations Due  
Hall of Fame  
for Mathematics Educators
- March 13, 2015**  
Nominations Due  
ATMIM Student Scholarships  
for High School Seniors

- April 15-18, 2015**  
NCTM Annual  
Conference and Exposition  
Boston, MA  
Early Bird Registration  
Ends March 6th  
Regular Registration  
Ends April 14th

- October 29, 2016**  
ATMNE Conference  
Portland, ME

## 2015 NCTM Annual Meeting & Exposition

# Save the Date

## April 15–18, 2015

### Boston Convention & Exhibition Center Boston, MA

**MARK YOUR CALENDAR**

NCTM’s Annual Meeting & Exposition brings together the most influential leaders and accomplished practitioners in mathematics education for three-and-half days of high-quality professional development that you can’t afford to miss.

Conference sessions will focus on the latest trends, technologies, and topics facing the profession, and with access to more than 700 sessions, you will leave this conference with the information, strategies, and tools that you can immediately use to improve the quality of education for students in the classroom.

Conference topics addressed will include the following\*:

- Assessing the Common Core State Standards for Mathematics
- Problems Worth Solving
- Supporting Students as Learners
- Supporting Teachers as Learners
- Integrating Mathematics with Other Disciplines

**WHO SHOULD ATTEND?**

- Pre-K–12 teachers
- Math teacher educators
- New and soon-to-be-teachers
- Math coaches and specialists
- Math researchers
- School and district administrators

Plan ahead to attend the 2015 NCTM Annual Meeting & Exposition.

Learn more at [www.nctm.org/boston](http://www.nctm.org/boston) and follow us on

## Nominate a Graduating Senior for an ATMIM Scholarship

submitted by Alison Mello

This spring the Association of Teachers of Mathematics in Massachusetts will award a monetary award of \$500 and certificate of recognition to several members of the graduating class from Massachusetts schools. The awards will be determined on the basis of outstanding achievement or service in the field of mathematics. Each student must be nominated by a member of the mathematics department of his or her school. There is an award specifically for a senior at a vocational, technical, or agricultural school and another to be given to a high achieving girl in the memory of Anne Elliot Smith (a mathematics teacher at Buckingham, Browne and Nichols, a member of the ATMIM Board and a 1985 Presidential Award winner).

Each secondary school in Massachusetts is strongly

encouraged to nominate a student in each category. Please pay particular attention to the category for which you are nominating a candidate as the judges cannot change categories. A committee consisting of board members and other teachers of mathematics will independently review all applications and determine the award recipients.

**Nominations must be received by March 13, 2015.**

Nomination forms are available electronically on the ATMIM website under "Scholarship:" <http://www.atmim.net>

If you cannot send the completed form electronically, or if you have questions, please contact Sheri Flecca or me at [atmimscholarship@gmail.com](mailto:atmimscholarship@gmail.com).



**TOY THEATER**

Interactive Early Learning Activities

Visit [toytheater.com](http://toytheater.com) and see if it can help in your classroom.

## A Common Core Resource for Parents

Submitted by Joe Caruso

The website below is written by Prof D. Sinha and Instructor T. Bevans both at the University of Oregon -- It is called Tools for Common Core Standards and is at (the long address)

<http://commoncoretools.me/2014/11/21/common-core-math-parent-handouts-by-tricia-bevans-and-dev-sinha/> (Cut and paste to your browser and hit enter. When you get to the webpage, click on the link near the bottom for "A Grade-by-Grade View for Parents".)

### President's message continued from page 1

them. If they are no longer an immediate part of your circle, then send them a note or a card. Let them know how much they have affected you and your growth, and, consequently, the growth of students you have touched in your years as teacher.

Furthermore, consider nominating one of them for an ATMIM teaching award. One of these is the Massachusetts Mathematics Hall of Fame. This award is a lifetime achievement award, acknowledging individuals that have greatly contributed to Mathematics Education in the Commonwealth. The second award is the Reverend

Bezuszka Achievement Award for Mathematics Teaching and Learning. This one honors a teacher with 15+ years of experience and demonstrated excellence in stimulating students in their learning of mathematics. The criteria for both awards as well as the names of past recipients are posted on [www.atmim.net](http://www.atmim.net).

I hope you will nominate a teacher you know, and, at a minimum, extend a thank you to those that have and still are helping you improve your practice.

## Report on January 8 ATMIM Winter Conference

How Students Learn and How Teachers Teach Using a Brain Based Model

submitted by Nancy Johnson

On Thursday, January 8th, about fifty math and special education educators gathered at Hopedale Jr.-Sr. High School to learn more about brain based learning. The keynote speaker, Dr. Patricia Davidson, first engaged the audience with simple everyday activities related to bring awareness: that our brains act differently when we fold our arms; put our arms into our jackets; or take off our shoes. Dr. Davidson clearly demonstrated the importance of how students learn and related this to how teachers need to individualize how they

teach in order to reach all learners.

After the keynote, participants separated into two breakout sessions, one facilitated by Dr. Davidson for the upper and middle grade teachers and the other by Dr. Ellen Boisselle, a mathematics specialist, with the Learning Disabilities Program in the Department of Neurology at Boston Children's Hospital for the elementary grade levels. Teachers received more age appropriate information regarding the delivery of content to diverse learners.

An exceptional dinner hosted by the Hopedale Food Services including entrees for all appetites was appreciated by the attendees. Following the dinner, Dr. Davidson, entertained a wonderful variety of questions, graciously sharing her expertise.

The evening was very informative, informal, and collegial. We listened and collaborated. Everyone went home a little bit more knowledgeable in brain based learning.

## NCTM Annual Conference Coming to Boston

The NCTM Annual Conference will be held in Boston this April. The site will be the Boston Convention Center and the dates are Wednesday April 15 through Saturday April 18, 2015. The Boston Conference has historically attracted math teachers in numbers that far exceed the average for Annual conferences held in other cities. Save the dates and make your plans now.

### Opening Session

Wednesday, April 15, 5:30 p.m.–7:00 p.m.

Elizabeth Green, Author and cofounder, CEO and editor-in-chief of Chalkbeat

Building a Better Teacher: How Teaching Works (and How to Teach It to Everyone)

Iris M. Carl Equity Address

Friday, April 17, 11:00 a.m.–Noon

Freeman Hrabowski, President of UMBC (The University of Maryland, Baltimore County)

Mathematics Education for the 21st Century: Creating a Climate of Success

### Closing Session

Saturday, April 18, 12:30 p.m.–1:30 p.m.

Mike North, Host / Producer, Discovery Channel Math, The Language of a Creative Genius

### Featured Speakers include:

Penny Noyce

Linda Ruiz Davenport

All three writers of CCSSM:

Philip Daro, William MCCallum and Jason Zimba

Any many more that will comprise over 700 sessions and workshops, such as:

Andy Clark - Anne Collins - Linda Dacey - Sol Garfunkel - Steve Leinwand - Margaret Kenney -- Hank Kepner - Jim Matthews - Jim Rubillo & Greg Tang

### For more information visit [www.nctm.org](http://www.nctm.org)

If you've attended before, you know how worthwhile this experience will be.

If this will be your first time, you're in for an exciting time. Registration pries are steep and we hope your districts will help.

# The Massachusetts Hall of Fame for Mathematics Educators

During the 2000-01 academic year, the Board of Directors of the Association of Teacher of Mathematics in Massachusetts voted to create the Massachusetts Hall of Fame for Mathematics Educators to honor outstanding colleagues in their midst. Charter members were inducted in 2001. New members are selected from a group of nominees by members of the Hall of Fame.

## Requisites

1. The educator has been involved in mathematics education in Massachusetts for a minimum of 20 years.
2. The educator has a distinguished record as a teacher of mathematics in Massachusetts.
3. The educator has made an extraordinary contribution to the advancement of mathematics education.

## Criteria for Evaluating Nominees

Describe the impact the nominee has had on schools, school systems, or universities by:

- A. Introducing or participating in the development of new programs, or modifying existing programs in mathematics education.
  - B. Conducting workshops and giving presentations locally, regionally or nationally...
  - C. Authoring published mathematics or mathematics education articles, books or programs.
  - D. Providing services to professional organizations.
- Demonstrating leadership in mathematics education at the state, regional, or national level. (Previous mathematics education awards or citations received by the nominee should be listed here.)
- F. Demonstrating a continual search for knowledge.

Note that to be eligible for nomination, a nominee need not have achieved outstanding work in all of the above categories.

## Nomination Requirements

Nominations are encouraged and should come from mathematics educators across the state. Nomination materials must include the following:

- Name, address, phone, and email address of the nominee.
- A two-page detailed description (provided by the nominator) of the ways in which the nominee meets the criteria cited above.
- The nominee's detailed, annotated resume.
- Two reference letters in addition to the detailed nomination.
- Posthumous and emeritus nominees are accepted.

Nomination and reference letters should be sent to the Hall of Fame Committee via email to Joseph Caruso at [jcaruso@framingham.edu](mailto:jcaruso@framingham.edu) or [jlhospital101001@aol.com](mailto:jlhospital101001@aol.com) by Friday, March 13, 2015.

Hall of Fame Committee  
c/o Joseph Caruso  
Framingham State University  
100 State Street  
Framingham, MA 01701

## Interview with Dr. Patricia S. Davidson

submitted by Joan Martin

Where are you from? I grew up on a one-family farm in a small town in Vermont where my teachers, Grades 1 - 8, taught two grades in the same room. I saw a great deal of differentiated instruction (long before this term was coined) and was constantly asked by my teachers to help classmates who were struggling to understand the work. Because of this early interaction with students, I decided by third grade that I wanted to be a teacher, but wasn't sure in what grade or field. In every grade, I also did a great deal of enrichment and many interesting projects on my own, beyond the required curriculum. These experiences helped me learn how to do independent work for my honors thesis, doctoral dissertation, and many years of brain research.

What led you to the field of mathematics? My mathematics teacher in high school had to teach both math and English classes. As a result, the geometry course was taught by the High School Principal, not well trained in math. He had surgery in October of my Junior year, and when a substitute teacher couldn't be found for the geometry course, I was asked to teach it. When he came back after his recovery, he wanted me to finish out the year as the teacher, since the students "knew so much." Hence I was launched at the age of 15 in a career as a mathematics teacher!



What is/was your favorite topic to teach and why? I enjoyed my first experience teaching geometry at the high school level. I continue to enjoy the subject because it requires important logical reasoning and provides so much integration between algebraic and spatial reasoning. Also, after completing my doctorate degree (that involved my working with mathematician Edwin Moise, also known for his work in high school geometry), I enjoyed teaching the Non-Euclidean and Projective Geometry courses at the college level for many years. However, I really like teaching all ages of students and all topics in mathematics, and this feeling goes back to my early days. When I was completing my

practice teaching for the Master of Arts in Teaching Degree at Harvard and interviewing for my first teaching position, one superintendent of schools asked me bluntly if I taught students or mathematics. I said that I did both, but if I had to pick either one, it would be students. Hence, it is no surprise to me that my research area has centered on brain research, how students learn, and how to teach in ways that fit different learning profiles. In my retirement, I am still tutoring 10-15 students each week from Grades 2 – University for math support, enrichment, or acceleration. Helping students learn and enjoy mathematics is still my biggest joy in life.

Tell us about a memorable teacher. The late Professor Donald Ballou (Ph.D. from Harvard) was head of the mathematics department at Middlebury College and my teacher for three semesters of calculus and the senior seminar, plus being my advisor for an independent study and honors thesis in mathematics. He became my model for teaching. He prepared every lesson diligently, enjoyed teaching, took a personal interest in each student, involved our classes in challenging problem solving activities, encouraged us to make our own discoveries, and appreciated unique strategies and solutions to problems. His goal, which became my goal as a teacher, was to teach for understanding, whatever strategy it might take. Prof. Ballou helped me see that teaching can serve as a way to grow as a person, along with the students. After my fifty happy years of teaching, I am still excited about learning and growing as I search for better and better ways to teach students.

## News from NCTM

submitted by Susan Weiss

NCTM ANNUAL MEETING in Boston April 15-18, 2015.

There are some discounts available for group registrations so districts can send more teachers. If you would like to inquire, send a note to: [nctmannualmeeting@showcare.com](mailto:nctmannualmeeting@showcare.com)

You will likely get an answer within a day or two and you may use the response as a bid/quote for registration.

### ILLUMINATIONS

NCTM Illuminations is designed to provide standards-based resources that improve the teaching and learning of mathematics for all students. These NCTM resources include 108 online activities, 607 standards-based lesson plans, and 724 links to mathematics resources on the web. If you haven't visited the Illuminations section in a while, you may find that it's worth your time to take a look and see all of the new resources available.

Illuminations has free mobile apps, Pick-a-Path, Deep Sea Duel, Okra's Rescue, Equivalent Fractions, and Math Concentration, and more.

If you join Illuminations on Facebook or Twitter! You'll get Brainteasers, links to interesting articles, and more!

### NCTM OFFERS ONLINE CORE MATH TOOLS TO TEACHERS

Did you know that NCTM has a wealth of information and offerings for mathematics teachers, especially for those who are also members of NCTM? One is the dynamic suite of Core Math Tools, housed on the NCTM website.

Core Math Tools requires Java and is a downloadable suite of interactive software tools for algebra and functions, geometry and trigonometry, and statistics and probability. The tools are appropriate for use with any high school mathematics curriculum and compatible with the Common Core State Standards for Mathematics. Core Math Tools can be saved on a computer or USB drive, making it possible to use without Internet access. Files can be saved and reloaded by students and teachers.

## New Board Members

submitted by Steve Yurek

ATMIM is pleased to welcome three new members to our Board of Directors:

**Min-Jen Taylor** is a pre-K teacher at the Heath Elementary School in Chestnut Hill. Min-Jen has presented at several ATMIM Conferences in collaboration with many area teachers, and has already served as Registrar for our recent Spring Conference.

**Michelle Lippens** teachers at the Peabody Elementary School in Cambridge and has also presented at ATMIM conferences. She currently serves as the Publicity Chair and is responsible for keeping our social media accounts updated

**Filiberto Santiago-Lizardi** is a middle school teacher for the City of Boston and serves ATMIM members as an at-large representative. Filiberto is a former recipient of the Fr. Stanley Bezuszka Award.

While not a new member to the Board, **Nancy Johnson**, from Hopedale Jr-Sr HS has assumed the role of President-elect. The position became vacant when the previous office holder moved to North Carolina. Nancy had served as chair of the Scholarship Committee and has chaired or co-chaired both our Spring and Winter Conferences and has hosted the DESE workshop on DDM preparation.

Elections are coming and we will need to fill vacancies of 2 Directors and also President-elect.

Giving back to your profession, to your colleagues and to your students can be a truly fulfilling experience. Please consider nominating someone (and that someone could also be you) that you can see as a future leader in Massachusetts.

# Problems to Ponder

Submitted by Polina Sabinin

Questions are taken (with permission) from Bezuszka, S. & Kenney, M. (2001) Number Treasury<sup>2</sup>. Dale Seymour Publications. Parsippany, NJ.

## Elementary School

1. An honest number in a language is a number whose meaning is the same as the number of letters in the word for that number. In English, “four” represents as many objects as there are letters in the word four. In fact, four is the only honest number in English. In Spanish, “cinco” is an honest number. Undertake an extensive search for honest numbers in as many languages as possible. Prepare a chart with your class that displays the honest numbers found. Do all languages you examined have at least one honest number?

2. Honest numbers in a language have an interesting property as the following example illustrates.

Choose a number: 2020

Write it in words: two thousand twenty

Count and record the number of letters: 17

Write it in words: seventeen

Count and record the number of letters: 9

Write it in words: nine

Count and record the number of letters: 4

Write it in words: four

If you continue, 4 and four keep repeating

This number trail has 4 numbers and ends in the honest number 4.

Using the English language, apply this process to other numbers in English.

What do you notice?

3. Choose another language in which you know how to count and which has an honest number. Apply the process described in #2 to several numbers in this language.

What do you notice?

## Middle School

4. How many numbers in the interval 1 through 1000 inclusive have at least one 6?

5. A printer is setting type on a book that has 964 pages.

a. How many 4s occur in the total page numberings?

b. How many 6s occur in the total page numberings?

c. How many 9s occur in the total page numberings?

6. A printer is analyzing the typesetting for a book and realizes that 1056 digits will be used to number the pages. The book will also have 5 unnumbered pages. If the numbered pages start with 1, how many pages are in the complete book?

## High School

A perfect number is a positive integer that equals the sum of its proper divisors. A proper divisor of a number is any divisor of the number excepting itself. The first perfect number is 6.  $6 = 1 + 2 + 3$

7. All perfect numbers found to date are even and can be expressed by a formula given by Euclid:  $2^{n-1}(2^n-1)$ , where  $2^n-1$  is prime. The formula does not produce a perfect number for all n. Determine which values of  $n = 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12$  give perfect numbers. List the corresponding perfect numbers.

8. The perfect numbers 6 and 28 can be written as sums of powers of 2.  $6 = 2 + 4$  and  $28 = 4 + 8 + 16$ . Write 496 and 8128 as sums of powers of 2.

9. Use the fact that geometric series  $1 + 2 + 2^2 + \dots + 2^{n-1} = 2^n - 1$  to show that all perfect numbers  $2^{n-1}(2^n-1)$  are sums of powers of 2.



29 Everett Street  
Cambridge, MA 02138  
877.4LESLEY  
[online.lesley.edu/ATMIM](http://online.lesley.edu/ATMIM)

## Lesley University 2nd Annual Summer Math Institute

From July 29 through July 31, 2014, Lesley University sponsored its 2nd annual Summer Math Institute at its Porter Square Campus in Cambridge, with a focus on topics for Middle and Secondary School Teachers. The Theme was Problem Solving Using the Structure of Mathematics and attracted presenters and participants from 8 states. The Keynote Speakers were Anne Collins from Lesley University and Jim Matthews from Siena College in Loudonville, NY. For each of the 3 days there were 2 Middle School and 2 Secondary School, morning workshops that lasted for 2½ hours. Each of the 4 presenters repeated their workshop after lunch so that each participant had the opportunity to experience in the afternoon what their colleagues had experienced in the morning. The experience was intense and the comments were positive. This summer the conference will run July 28-30.

### Answers to Problems to Ponder

1. No. There do not appear to be honest numbers in Indonesian, French, Polish, Swahili.
2. All number trails end in 4.
3. Answers will vary.
4. 271 numbers
5. a)297,b)291andc)251
6. 393 pages
7. For  $n = 2, 3, 5, 7$ , the formula gives the perfect numbers 6, 28, 496, 8128.
8.  $496=256+128+64+32+16$  and  $8128=4096+2048+1024+512+256 + 128 + 64$
9. Using substitution  $2^{n-1}(2^n-1) = 2^{n-1}(1 + 2 + 2^2 + \dots + 2^{n-1}) = 2^{n-1} + 2^n + 2^{n+1} + \dots + 2^{2n-2}$  which are all power of 2.



## Technology: Excellent Website for Math

Submitted by Susan Weiss

I just discovered a great website <http://www.mathsisfun.com/index.htm> for grades K-12. There are many interesting activities and games on this website. I am going to highlight just a few for lower grades but you should go to the website and try them out yourself.

For Number skills, I suggest:

<http://www.mathsisfun.com/numbers/index.html>. I found the skip counting explanations and samples easy to follow and on a good level for many lower grade students. The video is a review of skip counting on a hundred chart. You will see even skip counting by 25 and counting backwards. At the end of the page there is a skip counting game which allows you to

begin at larger numbers and skip count by different numbers.

For wonderful games, try:

<http://www.mathsisfun.com/games/index.html>

I really enjoyed 4 In A Line! There were different levels to challenge any student including ones for grades 1 and 2.

If you love worksheets, there are even worksheets to help set up problems that your students will want to use. Each time I go to the website I find more interesting ideas. On the bottom of the home page, there are two excellent links to both tools and links to other math resources. Share the link with other teachers. <http://www.mathsisfun.com/index.htm>