Program Book

NCTM REGIONAL CONFERENCE & EXPOSITION
Richmond • November 12–14

www.nctm.org/richmond
THOUSANDS OF
STANDARDS-ALIGNED
MATH ACTIVITIES

Enhance your math curriculum with our free, ready-to-use, standards-aligned classroom activities for middle grades through high school. Activities include student worksheets and teacher notes to support standards.

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Some speakers on this program have elected to print their e-mail addresses as a means for individual correspondence with conference attendees. Unsolicited commercial e-mail or unsolicited bulk e-mail, whether or not that e-mail is commercial in nature, is expressly prohibited. Any use of e-mail addresses beyond personal correspondence is not authorized by NCTM.

National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 20191-1502; Telephone (703) 620-9840; Fax (703) 476-2970; E-mail nctm@nctm.org; Web www.nctm.org

Printed in U.S.A.
Welcome to the NCTM 2014 Richmond Regional Conference & Exposition! In addition to attending a wonderful conference, please take time to enjoy the many things Richmond has to offer: historic attractions, world-class food, and outdoor adventures on the James River or Brown’s Island. During the evening, venture into the Shockoe Slip and eat at one of its historic restaurants or stroll along the Canal Walk. Take time to visit the home of Edgar Allan Poe or one of the many museums such as the Virginia Museum of Fine Arts, the Museum of the Confederacy, or the Virginia Holocaust Museum. No matter if your interest is mathematics, food, culture, or adventure—Richmond will have something for you!

Carolyn Williamson  
Program Committee Chair  
The Carmel School  
Ruther Glen, Virginia

Ian Shenk  
Volunteer Committee Chair  
Hanover County Public Schools  
Ashland, Virginia
Program Information

The NCTM 2014 Regional Conference & Exposition officially begins with the Opening Session, starting at 5:30 p.m. on Wednesday. Presentations on Thursday and Friday begin at 8:00 a.m. each day and are scheduled concurrently throughout the day.

We have made every attempt to provide adequate seating for participants at the Regional Conference & Exposition. The room capacity for each presentation is listed on all meeting room signs. For your safety and due to fire regulations, only those with seats will be allowed to stay in meeting rooms.

Please remember:

• All meeting rooms will be cleared between presentations.
• All seats are available on a first-come, first-served basis.
• Reserving spaces in line or saving seats is not permitted.
• In compliance with fire codes, sitting on the floor or standing is not permitted.
• As a courtesy to the speakers and your colleagues, please silence your cell phone during all presentations.

New and Preservice Teachers Workshop

Wondering how to manage your classroom, work with parents, find engaging lessons, and handle homework—all while keeping your sanity? You’re not alone! A must for every new teacher, this interactive workshop is your chance to ask questions on topics of your choice. Plus, you will connect with other new and early-career teachers. If you are in the first five years of teaching or are seeking certification, come get resources, materials, and fun prizes to encourage you and give you insight along your journey.

Thursday and Friday
9:45 a.m.–11:00 a.m.
E21A (Greater Richmond Convention Center)

Regional Conference Overview & Orientation

Whether you are new to NCTM or a seasoned veteran, every conference has something new for everyone! Hosted by members of the Board of Directors, this session will help you to maximize your overall conference experience. Learn what’s new or discover something you’ve missed in the past, how to navigate presentations, use the Conference App, and network with other attendees. Meet other first-time attendees and join up with conference mentors who share your particular interests!

Thursday and Friday
7:15 a.m.–7:45 a.m.
E10AB (Greater Richmond Convention Center)

Types of Presentations

All presentations are open to all conference participants. Admission is on a first-come, first-served basis. Reserving spaces in line or saving seats is not permitted.

Sessions (60 minutes) are set theater style and represent a common format where the speaker relates his or her ideas to an audience.

Gallery Workshops (75 minutes) are set with round tables for hands-on work and have additional gallery seating around the perimeter of the room. The gallery participants will receive the print materials and observe the workshop in a fashion similar to that of a classroom observer.

Bursts (30 minutes) are set with round tables and have additional gallery seating around the perimeter of the room. These concise presentations focus on a specific topic or idea. The goal is information sharing, conveyed quickly and succinctly.

Exhibitor Workshops (60 minutes) are set theatre style for at least 100 people. Exhibitors showcase their products and services away from the Exhibit Hall. Look for the symbol indicating exhibitor workshops in the program book.

Grade Bands

To assist attendees in finding appropriate presentations to attend, each presentation lists the presentation’s target grade-band audience. The grade bands are:

• Pre-K–2
• Grades 3–5
• Grades 6–8
• Grades 9–12
• Higher Education—university- and college-level issues including both two-year and four-year institutions
• Preservice and In-Service—content and techniques for providers of preservice teacher education and professional development for practicing teachers, supervisors, specialists, coaches, and mathematics educators
• General Interest—Issues of interest to multiple grades and audiences
• Research

Program Updates

Don’t forget to pick up your copy of the Program Updates, which includes speaker and presentation updates, and additional exhibitor workshop listings. Program Updates are available in the Registration Foyer.
Focus Strands

COMMON CORE STRAND

The Common Core State Standards are having an impact on most states in the United States. Regardless of whether a state is adopting the Common Core or not, all teachers are committed to teaching the Common Core subjects by using the best pedagogy available. Venture beyond assessment guided by multiple-choice exams, and attend these sessions focused on best practices and sound ways to adjust instruction by making connections through the Common Core that will lead to sustained student success. Look for the symbol above for sessions that will elaborate on content and pedagogy involved in teaching the Common Core State Standards.

Strand Speakers
Alan P. Maloney, 33
Anna E. Bargagliotti, 37
Francis (Skip) Fennell, 43
Lisa Anne Palacios, 56
Lina Sanchez-Leal, 113
James Larocco, 136
Oliver F. Jenkins, 143

DIVERSE LEARNERS STRAND

Diverse learners include students who are culturally, intellectually, and socially diverse. The sessions in this strand will highlight ways to use a variety of instructional techniques based on research. By targeting specific cultural needs and learning characteristics, teachers will begin to recognize specific barriers to learning mathematics and determine ways to close the achievement gap. Look for sessions marked with the symbol above to learn how to use best practices to teach math for understanding, although it may be learned differently in a diverse classroom.

Strand Speakers
Ana Lado, 150
Jessica Pfeil, 182
Marilyn Zecher, 190
Rebecca J. Darrough, 191
Charles P. Funkhouser, 234
Melinda Griffin, 241
Beth Kobett, 251
Susan James, 263
Marilyn L. Zecher, 277

ELEMENTARY STRAND

Elementary mathematics in the 21st century is no longer the arithmetic-driven curriculum of the past. Sessions in this strand explore various ways that mathematics content taught in the early years can be integrated into a continuum of learning. Sessions will offer a variety of strategies and activities that promote innovative teaching strategies based on sound pedagogy. Look for the symbol above for topics that include successful strategies using hands-on activities, formative assessments, and technology geared toward early learners.

Strand Speakers
Stuart J. Murphy, 6
Latrenda Knighten, 15
Kim Sutton, 29
Ruth Harbin Miles, 42
Brenda P. Barrow, 101
Jean B. Crawford, 123

STEM STRAND

This strand focuses on how the critical role that science, technology, engineering, and mathematics (STEM) education plays can be supported through innovative classroom strategies. The inclusion of science and engineering applications in core mathematics is the target of these sessions.

Strand Speakers
Christina Farrell, 5
Kristine A. Vester, 44
Marilyn Suiter, 76
Donald Goodman, 104
Tammy Worcester Tang, 115
Mike Long, 134

TECHNOLOGY STRAND

The role of technology in the mathematics classroom continues to evolve. Discussions that originally revolved around the use of calculators have broadened to include the use of computers, tablets, and SMART boards. Select sessions marked with the symbol above to learn how virtual manipulatives, video, and virtual classrooms are providing teachers with an abundance of ways to use technology to enhance their classrooms. Topics will include many ways that technology is helping students see meanings and relationships in mathematics in ways that improve understanding.

Strand Speakers
Kara K. Carpenter, 160
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Tom Reardon, 192
Chip F. McNamara, 203
Ann Kong, 255
Mandy Collier, 258
William C Tozzo, 281
Sue M. Garner, 289
Program Information

Principles to Actions: Ensuring Mathematical Success for All

NCTM’S NEW SIGNATURE PUBLICATION

NCTM continues its tradition of mathematics education leadership by defining and describing the principles and actions that are essential to strengthen mathematics learning and teaching for all students. Principles to Actions offers guidance to teachers, specialists, coaches, administrators, policymakers, and parents. Building on NCTM’s Principles and Standards for School Mathematics, this document presents six updated Guiding Principles for School Mathematics and eight essential Mathematics Teaching Practices.

Be sure to check out these sessions that address one or more of the teaching practices and/or guiding principles for mathematics education described in Principles to Actions.

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Tips for a Rewarding Regional Conference & Exposition

- Access available speaker handouts at www.nctm.org/plan.
- Become familiar with the layout of the Greater Richmond Convention Center and Richmond Marriott Downtown by reviewing the floor plans on pages 80–84.
- Visit the NCTM Bookstore for the latest NCTM educational resources and Member Services to learn more about how NCTM can help you professionally and pick up free resources.
- Stop by the Information Booth for information on the local area.
- If attending the conference with colleagues, attend different presentations and share your learned knowledge after the conference.
- Silence cell phones during presentations.
- Be safe! Remove your name badge when you leave the conference facilities at the end of the day.

Registration and Access to Presentations

You must wear your badge to enter all presentations and the NCTM Exhibit Hall. Please be aware that the fee for a replacement badge is $10.

By registering and attending an NCTM conference, meeting, or other activity, participants grant NCTM the right to use their likeness or voice as recorded on, or transferred to, video, photographs, websites, electronic reproductions, audio files, and/or other media of such events and activities.

For Your Child’s Safety

Due to the size and nature of the NCTM 2014 Regional Conference & Exposition, this event is not an appropriate setting for children under 16 years of age. Children under age 16 will not be permitted in the Exhibit Hall. We appreciate your understanding and cooperation. Children 16 years and over will need to register as nonteaching guests. To register a nonteaching guest, please visit Registration.

Information Booth

The NCTM Information Booth will be in the B15 and Marshall Street Lobby of the Greater Richmond Convention Center. Friendly staff can answer your questions about Richmond. They will also assist you with directions and local information, from transportation and historical sites to shopping and entertainment.

Lost-and-Found

You may retrieve or turn in lost-and-found items at the NCTM Information Booth. Unclaimed items will be turned over to the Greater Richmond Convention Center Security.

First-Aid Station

There will be a first-aid station at the Greater Richmond Convention Center during the NCTM conference. If you need medical services while in Richmond, please check with the hotel concierge for the closest medical facilities. For any medical emergency, call 911 without hesitation.

Your Opinion Counts

Thank you for attending the NCTM 2014 Regional Conference & Exposition. In the days following the Regional Conference, you will receive an e-mail asking for an evaluation of your meeting experience. Please take a moment to complete the survey. Use the Conference App to rate specific presentations you attend. Your feedback is important to us and will be instrumental in planning future meetings.
Exhibits

Make time to visit the NCTM Exhibit Hall. The hours allow ample opportunity to explore, try out, and purchase products and services for your classroom or to help you meet your career goals. You’ll also be able to meet the people who produce these products, get fresh ideas, and see demonstrations of how products work. To give you dedicated time to visit the exhibits, no presentations will take place from 4:00 p.m. to 5:00 p.m. on Thursday. Check out the list of exhibits and a map of the Exhibit Hall on pages 84–92.

Exhibitor Workshops

Do you want more in-depth, personal interaction with exhibitors? If so, plan to attend the Exhibitor Workshops. These workshops are held on Thursday and Friday and offer a wide variety of topics. For exhibitor workshop offerings, look for presentations in this program book marked with the symbol .

Conference App

The NCTM Conference App keeps you connected with the Regional Conference’s every aspect. The free app allows you to search sessions, speakers, and exhibits; view the Exhibit Hall floor plan; highlight your favorite presentations; rate presentations; and interact with your colleagues! Visit www.nctm.org/confapp for more information.

Presentation Handouts

Attendees can access available electronic presentation handouts through the NCTM Conference App and online planner. Handouts will be available until March 2015.

Online Conference Planner

The Online Conference Planner is a great way for you to search the conference program book, set up your personal schedule, and download available presentation handouts. The Online Conference Planner is continually updated with the latest presentation changes and information. Visit www.nctm.org/plan to check it out.

NCTM App

When you return home, don’t forget to download NCTM’s Android or iOS app for free. The NCTM app gives users easy, efficient access to timely NCTM information throughout the year—from updates on new publications and best sellers to the latest information on upcoming conferences and professional development opportunities. Users can be up to the minute on NCTM activities, teaching tips, and classroom resources. The conference app also includes Facebook and Twitter feed updates. Visit www.nctm.org/nctmmobile for more information and to download the app.

NCTM Central

Check out NCTM Central. This exciting area has everything “NCTM” all in one convenient location, right at the entrance of the Exhibit Hall.

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• Whether you are a new or a longtime NCTM member, you can learn more about what your membership can do for you at Member Services. We can walk you through your benefits, including your online access to lessons, classroom-ready activities, online journal articles, and more. Make sure to stop by and pick up sample journals and other materials! Not a Member or wish to renew your membership? Make sure to sign up on-site and receive a free Boston Annual Meeting T-shirt! While supplies last.

• Browse the NCTM Bookstore and save 25% off the list price on all purchases! View firsthand all the publications that NCTM has to offer. You will also find a variety of specialty products that you can use as gifts, prizes, and incentives to spread the word about the importance of mathematics. Start your wish list today by previewing NCTM’s wealth of resources at www.nctm.org/catalog. The NCTM Bookstore is not equipped to handle shipping; the business center can assist you with your shipping needs.

Note on Sales Tax Exemptions: To be considered exempt from sales tax in the NCTM Bookstore, you must provide a copy of an Virginia tax exemption certificate at the time of purchase. NCTM is required by law to keep a copy of the certificate, so we cannot return it to you. To qualify, you must make payment with a purchase order, check, or credit card from the school to which the Virginia exemption certificate is issued. NCTM cannot accept personal checks, personal credit cards, or cash in conjunction with tax exemption certificates. Tax exemption certificates for states other than Virginia are not valid for this Regional Conference.

• The Networking Lounge is a prime location to meet up with colleagues between presentations! Whether you want to make connections with fellow conference goers, exchange teaching tips, or catch up with friends, you’ll find a comfortable spot in the Networking Lounge to do so. Download the Conference App to receive alerts for scheduled networking meet-ups and check out the program updates for more information!

Shuttle Service

Attendees who reserved their hotel room through NCTM’s official housing company will receive complimentary shuttle service from hotels in the NCTM housing block to the Greater Richmond Convention Center. Some hotels are within walking distance of the convention center and will not have shuttle service. Routes and schedules will be posted in your hotel lobby. The schedule will be followed as closely as possible. If you have questions, please visit the Information Booth located in the B15 & Marshall Street Lobby of the Greater Richmond Convention Center.
Build Your Own Fun Math Club!

HANDS-ON GAMES
that get kids fired up about math

THE COOL THING
to do after school

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Come see Crazy 8s in action
Thursday 9:30am • Room E21C

Start a free club at your school!

Visit Booth 315 for more info
Highlight
Opening Session (Presentation 1):
Beyond Relevance & Real World: Stronger Strategies for Student Engagement

Conference App
Network onsite with attendees!
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Interact with your colleagues!
www.nctm.org/facebook

Twitter
Want to stay informed? Follow us!
www.twitter.com/nctm
#NCTMRichmond

Registration Hours
5:00 p.m.–7:30 p.m.

NCTM Central Hours
5:00 p.m.–7:30 p.m.

Fire Codes
We have made every attempt to provide adequate seating for participants at the conference, but for your safety and because of fire regulations, only those with seats will be allowed in meeting rooms. To comply with fire codes, we will have to ask persons sitting on the floor or standing to leave the room.
Beyond Relevance & Real World: Stronger Strategies for Student Engagement
(General Interest) Session

Relevance and the real world are often seen as the most effective strategies for engaging students in difficult mathematics, but both strategies are limited and can fail in crucial ways. We’ll add strategies to our repertoire, looking at research-based methods for creating need and developing a question instead.

Dan Meyer
Stanford University, California

B21 (GREATER RICHMOND CONVENTION CENTER)

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Use this revolutionary talking graphing calculator to gain an academic edge in pre-algebra through calculus, as well as biology, chemistry, and physics.

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Conference App
Network onsite with attendees! www.nctm.org/confapp

Facebook
Interact with your colleagues! www.nctm.org/facebook

Twitter
Want to stay informed? Follow us! www.twitter.com/nctm #NCTMRichmond

Registration Hours
7:00 a.m.—3:00 p.m.

Exhibit Hours
8:00 a.m.—5:00 p.m.

NCTM Central Hours
7:00 a.m.—5:00 p.m.

Fire Codes
We have made every attempt to provide adequate seating for participants at the conference, but for your safety and because of fire regulations, only those with seats will be allowed in meeting rooms. To comply with fire codes, we will have to ask persons sitting on the floor or standing to leave the room.
7:15 A.M.–7:45 A.M.

2 Regional Conference Overview & Orientation
(General Interest) Session
Whether you are new to NCTM or a seasoned veteran, every conference has something new for everyone! Hosted by members of the Board of Directors, this session will help you to maximize your overall conference experience. Learn what’s new or discover something you’ve missed in the past, find out how to navigate presentations, use the Conference App, and network with other attendees. Meet other first-time attendees and join up with conference mentors who share your particular interests!

Rose Mary Zbiek
Board of Directors, National Council of Teachers of Mathematics; Pennsylvania State University, University Park
E10AB (GREATER RICHMOND CONVENTION CENTER)

8:00 A.M.–9:00 A.M.

3 Adventures with Mathematics: Engaging Families in Mathematics Learning
(General Interest) Session
What to do when kids are out of school? Play with mathematics! Participants will play games and engage in activities suitable for families. Activities give hints, help parents ask good questions, and help learners develop strategies. Participants will learn how to share information with home and how to run a family math night.

Charlene E. Beckmann
Grand Valley State University, Allendale, Michigan
Megan B. Frame
Eastern Michigan University, Ypsilanti
B15B (GREATER RICHMOND CONVENTION CENTER)

4 NCTM’s Mathematics Education Trust Provides Grants and Awards: Apply! Apply!
(General Interest) Session
The Mathematics Education Trust (MET) is a resource for mathematics teachers (and students) at all levels. Come and experience what others have used money for and learn how to apply for yourself or your school. Sixty minutes of conference time could be beneficial for your mathematics future.

Johnny Lott
Past President, National Council of Teachers of Mathematics; Retired, University of Montana, Missoula
CAPITAL BALLROOM 5 (MARRIOTT)

5 Count Me In! Teacher-in-Role Strategies for STEM Exploration
(Pre-K–2) Session
Discover how to take a more active role in dramatic play scenarios in your early childhood classroom! During this highly interactive workshop, led by a Wolf Trap Master Teaching Artist, participants will learn how to tap children’s love of imaginative play to spark meaningful explorations of math concepts by using teacher-in-role techniques.

Christina Farrell
Wolf Trap Institute for Early Learning Through the Arts, Vienna, Virginia
B15B (GREATER RICHMOND CONVENTION CENTER)

6 Great Early Math Attitudes = Later Successful Math Learners!
(Pre-K–5) Session
Principles to Actions
Let’s help our students develop positive attitudes about math. They need to be fully engaged in creating math models, persistent in completing their work, and motivated to advance their mathematical skills. This session will demonstrate how we can work with children to focus their behaviors and develop productive dispositions toward mathematics.

Stuart J. Murphy
Self-Employed Consultant, Boston, Massachusetts
E10AB (GREATER RICHMOND CONVENTION CENTER)
8:00 A.M.–9:00 A.M.

7 Mathematics Mentorship Project: Developing Mathematical Writing
(3–8) Session
Principles to Actions
The Mathematics Mentorship Program was developed to provide ongoing mathematics enrichment for gifted children in grades 5 and 6. The pilot study analyzes written mathematical communication to understand aspects of mathematical communication and to understand how this communication changes over time and what mentor feedback is useful to students.

Matthew D. Reames
University of Virginia, Charlottesville
B10 (GREATER RICHMOND CONVENTION CENTER)

8 Using Formative Assessment Techniques in K–8 Classrooms
(3–8) Session
Participants will examine the FACTs model to learn how to link instruction, assessment, and learning to make mathematics accessible for all students. We will focus on different purposes for using FACTs and consider ten different FACTs categories for selecting, implementing, and using data to inform instruction and improve student achievement.

Maria A. Timmerman
Longwood University, Farmville, Virginia
Leah Shilling-Traina
Longwood University, Farmville, Virginia
Virginia Vimpan Lewis
Longwood University, Farmville, Virginia

B15C (GREATER RICHMOND CONVENTION CENTER)

9 Keeping It Real: Teaching Math through Real-World Lessons
(6–8) Session
How long does it take to burn off a Big Mac? Is it ever a good idea to foul at the buzzer? We’ll explore real-world lessons and projects that teachers can use to address Common Core standards, foster a rigorous understanding of math, and challenge students to think critically about the world.

Karim K. Ani
Mathalicious, Charlottesville, Virginia
Matt Lane
Mathalicious, Charlottesville, Virginia
Chris Lusto
Mathalicious, Charlottesville, Virginia

GRAND BALLROOM CD (MARRIOTT)

10 How Do We Know What Students Know? Assessment Techniques
(6–8, Preservice and In-Service) Session
The tasks we use on assessments determine what we learn about what students know. This session focuses on a questioning framework that can be used to develop assessment tasks that emphasize conceptual understanding.

Barbara J. Dougherty
University of Missouri, Columbia
William W. Deleeuw
University of Missouri, Columbia
Rebecca J. Darrough
University of Missouri, Columbia

B21C (GREATER RICHMOND CONVENTION CENTER)

11 QR Codes for IRL Math Instruction to Diminish IDK Syndromes
(6–12) Session
Jazz up your formative assessments, guided or independent practice, and classroom instruction. Learn how to use QR codes and the smart phone to create activities that get students out of their seats and engaged in their own learning. You will leave with activities that you can use immediately in your classroom and the ability to create many more!

Virginia A. Fraser
Indiana University Southeast, New Albany

GRAND BALLROOM E (MARRIOTT)
8:00 A.M.–9:00 A.M.

12
Modeling Polynomial Functions: From Grid Paper to Graphing Calculator
(9–12) Session
Principles to Actions

Using a single sheet of grid paper and handheld technology, participants collect data and create models for polynomial functions. They leave the session with hands-on activities that lead students from the concrete to the abstract, and that make connections among the functions, statistics, and modeling strands of the Common Core State Standards.

Tom Beatini
Glen Rock High School, New Jersey

CAPITAL BALLROOM 4 (MARRIOTT)

13
Taking Your Textbook to the Next Level
(9–12) Session

We will take standard textbook problems and demonstrate turning them into challenging tasks that require problem solving, reasoning, communicating mathematical thinking, looking for patterns and structure, and more. Our samples will include functions, the Pythagorean theorem, transformations, and probability.

Kieran Flahive
Urban Assembly Gateway School for Technology, New York, New York

Fred Dillon
IdeaStream, Cleveland, Ohio

B15A (GREATER RICHMOND CONVENTION CENTER)

14
Math Machines and Algebraic Thinking
(9–12, Higher Education) Session

With Math Machines, students design, test, and revise mathematical functions to complete dynamic physical tasks such as making a laser follow an object (quadratic functions), simulating earthquakes (logarithms), and making colored lights oscillate in various combinations (periodic functions). Free software provided.

Robert A. Chaney
Sinclair Community College, Dayton, Ohio

Frederick J. Thomas
Learning with Math Machines, Englewood, Ohio

14.1 CW
Mathspace: Why You’ll Never Grade Math Assignments Again—Seriously!
(6–12) Exhibitor Workshop

You’ve seen it all, right? Adaptive learning? Check. Handwriting recognition? Hmm. Every math question graded step-by-step? Wait, that’s new! Imagine: automatic grading, so you focus on teaching; students hand-writing fully worked answers, with real-time feedback; and no more multiple choice! Come see why Mathspace is like nothing you’ve ever seen!

Mathspace
New York, New York

E21C (GREATER RICHMOND CONVENTION CENTER)

14.2 CW
CCSS Math Practices? Trust CPM’s 25 Years of Writing Experience!
(6–12) Exhibitor Workshop

Experience the mathematical practices embedded in lessons that include problem solving and discourse. The Core Connections series embeds the practices daily in a problem-based, student-centered CCSS-aligned curriculum for grade 6–algebra 2 (with an option for high school Integrated I–III). Receive free copies of CPM’s entire Core Connections series.

CPM Educational Program
Sacramento, California

E11C (GREATER RICHMOND CONVENTION CENTER)
Linking Mathematics and Early Literacy in Core Subjects Using Themes
(Pre-K–2) Gallery Workshop
When math and literacy are linked, students can make sense of the world around them. Explore vital resources on key concepts in math and early literacy. Receive an extensive list of math and literacy resources plus a home-school connection packet on making math and literacy fun.

Teresa W. Hicks
Richmond City Public Schools, Virginia
Ida M. Jones
Richmond City Public Schools, Virginia

E21A (GREATER RICHMOND CONVENTION CENTER)

Radically Real: Manipulatives as a Vehicle for Developing Number Sense
(Pre-K–2) Gallery Workshop
Multiple representations help support number sense in the preschool and kindergarten classroom. Hands-on activities focus on ways teachers can cement ideas including ten-frames, open-ended problems, literature, and much more. Video clips look deeper into student understanding with number sense and pave the way to a solid foundation in math.

Katie M. Isaac
Math Solutions, Sausalito, California

GRAND BALLROOM AB (MARRIOTT)

Linking the Learning: Domino Games for Upper Elementary Students
(3–5) Gallery Workshop
Principles to Actions
Come prepared to play games that incorporate the use of standard dominoes that teach the following Common Core standards: operations, patterns, fractions, place value, problem solving, and data management. This manipulative is easy to use and integrate into your program and is motivating for all learners. Game boards, student samples, and more will be shared.

Jane Felling
Box Cars and One-Eyed Jacks, Edmonton, Canada

E21B (GREATER RICHMOND CONVENTION CENTER)

Multiply or Divide? What Do I Do?
(3–5) Gallery Workshop
Children learn operations through context to build their understanding. The actions and relationships described in word problems influence the way children think and solve problems. Examining, modeling, and working through different multiplication and division situations will help us understand children’s thinking and problem-solving methods.

Bethany Farmer
Somerset Academy, Las Vegas, Nevada
Beckie Dehner
Clark County School District, Las Vegas, Nevada

E24 (GREATER RICHMOND CONVENTION CENTER)

Powerful Peers Promote Problem Solving
(3–5) Gallery Workshop
All students deserve engaging and focused experiences that amplify their brains and hearts. In this hands-on, bodies-moving workshop we explore five novel, structured ways to have students construct viable arguments and critique reasoning. The result: improved thinking skills and problem solving. Leave ready to easily implement a dozen new ideas.

Rob Jutras
Kagan Publishing and Professional Development, San Clemente, California

E11AB (GREATER RICHMOND CONVENTION CENTER)
21 Developing Fraction Sense by Considering Three Models (Area, Length, Set)
(3–5, Preserve and In-Service) Gallery Workshop
This session focuses on the three models for fractions. Models can help students clarify ideas that are confused using only procedural methods. Different models offer different opportunities to learn. Differentiating among the three models (area, length, and set) will broaden and deepen students (and teachers) understanding of fractions.

Ann Wallace
James Madison University, Harrisonburg, Virginia
CAPITAL BALLROOM 6/7/8 (MARRIOTT)

22 Go for the Gold!
(6–8) Gallery Workshop
Explore the golden ratio and golden rectangle by discovering its existence in: the human body, nature (Fibonacci sequence), everyday objects (credit cards, cereal boxes), art (the Mona Lisa, The Last Supper), architecture (the Parthenon, pyramids), music (violin construction), and more.

Sandra Marie Miller
Pennridge School District, Perkasie, Pennsylvania
Deanna Januzzi
Pennridge School District, Perkasie, Pennsylvania

E23 (GREATER RICHMOND CONVENTION CENTER)

23 You Gotta Know When to Fold: Paper Folding and Geometry
(6–8) Gallery Workshop
Principles to Actions
Participants will make several items by paper folding. The speakers will discuss and demonstrate ways to use paper folding to introduce, review, enhance, or facilitate geometric topics. The topics include geometric shapes, parallel and perpendicular lines, area, and perimeter. Handouts will be provided.

Deborah A. Crocker
Appalachian State University, Boone, North Carolina
Betty B. Long
Appalachian State University, Boone, North Carolina

E25 (GREATER RICHMOND CONVENTION CENTER)

24 Construction Junction, What’s Your Function?
(9–12) Gallery Workshop
Geometric constructions should be much more than the memorization of meaningless steps! Come learn how to teach your students the process of constructions while making connections to geometric concepts. Hands-on activities and digital resources will be presented. Please bring a laptop.

Sharon B. Hoffert
Chesterfield County Public Schools, Virginia
Melody S. Bushley
Chesterfield County Public Schools, Virginia
Michele Giglio
Chesterfield County Public Schools, Virginia

E10CD (GREATER RICHMOND CONVENTION CENTER)

25 Removing the Mystery from Distance and Midpoint Formulas
(9–12) Gallery Workshop
Teachers will learn to manage a lesson where students compare their own relative locations in space to their peers in order to calculate distance and midpoint. Teachers will learn to pose structured higher order questions, encouraging students of all levels to engage in a discussion that allows them to derive the formulas for distance and midpoint.

Stephanie L. Brady
Hanover County Public Schools, Ashland, Virginia
Gretchen C. Shaw
Hanover County Public Schools, Ashland, Virginia

CAPITAL BALLROOM 1/2/3 (MARRIOTT)

26 Traditional Topics with a “New Look” in Algebra 2
(9–12) Gallery Workshop
As we implement the Common Core, we do not need to change what we teach—we need to change how we teach. We will share lessons and activities that we have used in our algebra 2 classes that focus on the Standards of Mathematical Practice. Projects, activities, and student discovery lessons will be shared.

Wendy E. Bartlett
Parkland Magnet High School, Winston-Salem, North Carolina
Gregory S. Fisher
Mount Tabor High School, Winston-Salem, North Carolina

GRAND BALLROOM GHIJ (MARRIOTT)
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FRANCES CURCIO, SERIES EDITOR

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Thursday

9:30 A.M.–10:30 A.M.

27  Mathematical Habits of Mind: Helping Students Become Doers of Mathematics  
(General Interest) Session

If students are to be prepared for their future, how they think is at least as important as what they know. So how we teach is at least as important as what we teach. With a new generation of assessments focused on mathematical thinking, we have an opportunity to help students learn to think, reason, solve problems, and become Doers of Mathematics.

Cathy L. Seeley  
Past President, National Council of Teachers of Mathematics; Senior Fellow (Emeritus), Charles A. Dana Center, University of Texas, Austin  
B21C (GREATER RICHMOND CONVENTION CENTER)

28  Using Student Growth Data to Improve Math Instruction  
(General Interest) Session

Making every student better gets at the core of why we are in education: to help students grow. This presentation focuses on how educators can choose or create quality assessment sets of mirrored form, content, and cognitive demand; get useful student growth data; and easily make that data drive your instructional choices.

Anne F. Weerda  
Winnebago School District, Illinois  
B10 (GREATER RICHMOND CONVENTION CENTER)

29  Addition and Subtraction Fact Fluency! What Does It Take?  
(Pre-K–2) Session

This session by Kim Sutton will share strategies for achieving addition and subtraction fact fluency by using a teach for understanding model. Participants will learn the order of the strategies to be taught and practiced. Kim will share her motivating style of using games, songs, dances, and drills that thrill all learners!

Kim Sutton  
Consultant, Arcata, California  
E10AB (GREATER RICHMOND CONVENTION CENTER)

30  Math Matters: Using Math Games to Develop Number Sense  
(Pre-K–2) Session

Principles to Actions

Broaden your repertorie and learn how to use specific games to help your students develop a visual understanding of whole number operations, place value, number principles, and number sense. Participants in this hands-on workshop will become acquainted with math games that can help students develop number concepts and build analytic reasoning.

John Hinton  
Retired, Long Island University (C.W. Post), Brookville, New York  
GRAND BALLROOM E (MARRIOTT)

31  Good Questions That Promote Student Understanding  
(3–5) Session

The Common Core mathematical practices call for students to reason and construct mathematical arguments. Good questions probe student thinking, lead to deeper understanding, and help to differentiate instruction. What to ask and when to ask it is the key. Let’s look at some elementary concepts and great questions to go with them!

Linda M. Gojak  
Past President, National Council of Teachers of Mathematics; John Carroll University, University Heights, Ohio  
B21A (GREATER RICHMOND CONVENTION CENTER)

32  Geometry in the Upper Elementary and Middle Grades  
(3–8) Session

Geometry is important for all grade levels, and especially for the middle grades. Learn how geometry supports big ideas from number and operations, and from equations and expressions. Let’s take a vertical look at how geometry flows from elementary to high school, and use classroom-ready lessons to showcase important teaching and learning strategies.

Paul D. Gray  
Triumph Learning, Houston, Texas  
CAPITAL BALLROOM 4 (MARRIOTT)
Learning Trajectories: Making Sense and Improving Continuity of the Common Core
(3–8) Session

Learning trajectories in TurnOnCCMath.net describe students’ conceptual growth based on research and provide coherent cross-grade continuity for CCSSM. We introduce a five-element framework and new free PD MOOCs for individual trajectories, designed to enhance teachers’ insight into student learning over time and into instructional planning.

Alan P. Maloney
North Carolina State University, Raleigh

815B (GREATER RICHMOND CONVENTION CENTER)

Where Did That Answer Come From? Responses to Conceptual Measures
(6–8, Preservice and In-Service) Session

Responses to conceptual assessments provide insights into student understanding. Sometimes, students perform well on skill-based tasks but their responses on conceptual measures are not as robust. This session focuses on interpreting student responses to tasks found on a conceptual progress monitoring tool aligned with the Common Core State Standards.

William W. Deleeuw
University of Missouri, Columbia
Rebecca J. Darrough
University of Missouri, Columbia
Barbara J. Dougherty
University of Missouri, Columbia

821B (GREATER RICHMOND CONVENTION CENTER)

Electric Vehicle Mathematics
(9–12) Session

In this talk we’ll explore some simple mathematics related to the operation and efficiency of electric and hybrid vehicles. The relevant mathematics will be mostly ratios, linear functions, and graphs of real data, as well as one application to simple calculus concepts.

Philip A. Rash
North Carolina School of Science and Mathematics, Durham

815A (GREATER RICHMOND CONVENTION CENTER)

Revitalizing Statistics Using Videos, Applets, and Projects
(9–12, Higher Education) Session

Guidelines for Assessment and Instruction in Statistics Education suggest that statistics courses emphasize statistical literacy, stress conceptual understanding, and use real data. We explore how videos introduce concepts in context, applets allow for exploration, and data-centered projects enliven statistics.

Marsha J. Davis
Eastern Connecticut State University, Willimantic

CAPITAL BALLROOM 5 (MARRIOTT)

Common Core, NCTM, and GAISE: High School Teacher Preparation
(9–12, Preservice and In-Service) Session

We will present the Common Core, NCTM, and Guidelines for Assessment and Instruction in Statistics Education (GAISE) Report recommendations at the high school level. We will discuss how preservice high school teachers should be prepared in statistics and provide specific examples of teacher materials that exemplify best practices.

Anna E. Bargagliotti
Loyola Marymount University, Los Angeles, California
Mary McNelis
St. Agnes Academy School, Memphis, Tennessee
Jeanie Gibson
Hutchinson School, Memphis, Tennessee

GRAND BALLROOM CD (MARRIOTT)

Explorations, Investigations, Applications: It’s Why We Study and Teach Mathematics
(9–12, Preservice and In-Service) Session

Discover the relationship between the area and perimeter of rectangles and their graphical bounds. Examine geometric, statistical, and graphical models incorporating three of the CCSSM mathematical practices. Learn to easily explain the correlation coefficient. Extensive handouts provided.

David Kapolka
Emeritus, Forest Hills Public Schools, Grand Rapids, Michigan

815C (GREATER RICHMOND CONVENTION CENTER)
9:30 A.M.—10:30 A.M.

38.1 **Crazy 8s: It's Not Your Ordinary Math Club**
*Exhibitor Workshop*

Have you heard about Bedtime Math’s Crazy 8s? It’s the new after-school club designed to get kids fired up about math. Every week kids get to build stuff, run and jump, make music, make a mess . . . and make friendships at the same time. Crazy 8s makes math a blast for any kid, and the club kit is free. Join us to see Crazy 8s in action!

*Bedtime Math Foundation*
*Summit, New Jersey*

**E21C (GREATER RICHMOND CONVENTION CENTER)**

38.2 **Using Technology to Reason Mathematically**
*Exhibitor Workshop*

NCTM’s Principles to Actions document focuses on how teachers can create effective learning environments for all students. We will address its Mathematics Teaching Practices through the use of coherent activities and investigations with TI technology. Learn how to integrate technology into your lessons to help students make stronger connections in mathematics.

*Texas Instruments*
*Dallas, Texas*

**E22 (GREATER RICHMOND CONVENTION CENTER)**

38.3 **Transform Teaching and Learning with MathXL® for School**
*Exhibitor Workshop*

MathXL® for School allows middle and high school teachers to focus on important aspects of teaching, such as measuring learning outcomes, while students receive a personalized learning experience with immediate feedback, interactive learning aids, and practice, practice, practice! NEW—Mobile compatibility!

*Pearson*
*Boston, Massachusetts*

**E11C (GREATER RICHMOND CONVENTION CENTER)**

9:45 A.M.—11:00 A.M.

39 **Making Sense of Addition and Subtraction: Manipulatives Matter**
*Gallery Workshop*

Students must understand the meaning of operations, and not just memorize facts. Explore hands-on strategies for helping students understand operations as verbs in mathematical sentences. Learn research-informed methods for building understanding and fluency while exploring manipulatives, both new and familiar favorites, to support student learning.

*Sara Delano Moore*
*ETA hand2mind, Vernon Hills, Illinois*

**GRAND BALLROOM GHJ (MARRIOTT)**

40 **Explain, Justify, and Critique—Oh My!**
*Gallery Workshop*

How can you support your students’ ability to explain and justify their thinking and critique the reasoning of others? This can seem difficult to develop, especially at the primary level. It doesn’t need to be! Come see what this looks like in the elementary classroom and get ideas and tools to support your own students’ work in this area.

*Gina Kilday*
*Exeter-West Greenwich Regional School District, Exeter, Rhode Island*

**E11AB (GREATER RICHMOND CONVENTION CENTER)**

41 **Literature and Games: Great Ways to Teach Fractions**
*Gallery Workshop*

Fractions are tough for students to learn and for teachers to teach. Learning should engage students in both hands-on and minds-on experiences. Teachers can use books and games that give numerous chances to connect their thinking and reasoning while building their understanding. Come read, play, learn, and walk away with ways to engage your students.

*Rebecca D. Rappaport*
*Centronia/DC Bilingual Public Charter School, Washington, D.C.*

*Heather E. Kurtz*
*Centronia/DC Bilingual Public Charter School, Washington, D.C.*

*Jan Scott*
*Scholastic, Inc., New York, New York*

**E23 (GREATER RICHMOND CONVENTION CENTER)**
9:45 A.M.—11:00 A.M.

42  EL  
Mathematical Rigor through Core Practices and Classroom Games  
(3–5) Gallery Workshop

The CCSSM content, as reinforced by the Standards for Mathematical Practice, is taught through a conceptual approach that demands understanding and rigor. This means students need to be highly engaged in mathematics lessons. Come see how games can provide motivation, make student thinking visible, and help students to build connections and conceptual knowledge.

Ruth Harbin Miles  
Board of Directors, National Council of Teachers of Mathematics; Mary Baldwin College/Falmouth Elementary School, Staunton/Stafford, Virginia  
Don S. Balka  
TODOS: Mathematics for All; Saint Mary’s College, Notre Dame, Indiana

E10CD (GREATER RICHMOND CONVENTION CENTER)

43  CC  
Common Core Mathematics Upside Down: Flipping PD and Engaging Teachers!  
(3–8) Gallery Workshop

This session will involve math leaders using several “flipped” classroom activities for professional learning. It will include suggested use of digital resources that can be used anywhere or anytime, as well as onsite professional development (PD) activities, all reflecting the CCSSM content domains and its Standards for Mathematical Practice.

Francis (Skip) Fennell  
Past President, National Council of Teachers of Mathematics; McDaniel College, Westminster, Maryland  
Beth Kobett  
Stevenson University, Baltimore, Maryland  
Jon Wray  
Howard County Public Schools, Ellicott City, Maryland

GRAND BALLROOM AB (MARRIOTT)

44  ST  
“STEMifying” Your Math Class  
(6–8) Gallery Workshop

Engineering isn’t just for graduate students! Come experience STEM activities using the engineering design process and standard-based mathematics objectives. Motivate your students with the real-life applications of engineering, and leave with activities to implement in your classroom tomorrow.

Kristine A. Vester  
MathScience Innovation Center, Richmond, Virginia

GRAND BALLROOM F (MARRIOTT)

45  
Apportionment: Seven Roads to Fairness  
(6–12) Gallery Workshop  
Principles to Actions

Learn how the U.S. Constitution dictates how U.S. House seats are apportioned. Seven apportionment methods are discussed and include the geometric and harmonic mean. Graphing calculator technology is incorporated. Math mixes with history!

William Bowdish  
Retired, Sharon Public Schools, Massachusetts

CAPITAL BALLROOM 6/7/8 (MARRIOTT)

46  
Break the Cycle of Failure: Save Struggling Students with RtI  
(6–12) Gallery Workshop  
Principles to Actions

Learn why an urban middle school math RtI program measurably improves students’ mathematics skills and outlook. See how students are selected, taught targeted skills, and have their progress monitored. Replace ad hoc efforts with an RtI that justifies resources and boosts math department morale, student attitudes, and mathematics assessment scores.

Dana Schreiber  
East Hartford Schools, Connecticut

E24 (GREATER RICHMOND CONVENTION CENTER)
9:45 A.M.–11:00 A.M.

47  “What’s Fair?“: Using Mathematics to Examine Issues of Fairness
(6–12) Gallery Workshop
Experience the highlights of a unit where students have explored the mathematics of fair division in real-world situations, game theory (how our decisions affect others and their decisions affect us), and equal chances and distribution of resources (how mathematics can help us develop our own model of a fair society).
Steve Starr
Retired, Chicago Public Schools, Illinois
E21B (GREATER RICHMOND CONVENTION CENTER)

48  Reviewing for an Assessment with Games of Memory and Aptitude
(6–12) Gallery Workshop
Our goal is to provide group review games which are stimulating and fast-paced. These games are made off of “old” favorites such as Memory with a Steal, Words of Fortune, “I Have . . . Who Has . . .,” and King of the Hill. We will also discuss utilizing the March Madness tournament in your classroom.
Christine K. Smith
Edison State College, Punta Gorda, Florida
Joan VanGlabek
Edison State College, Naples, Florida
E25 (GREATER RICHMOND CONVENTION CENTER)

49  Transforming the Geometry Curriculum—Literally Transforming!!
(9–12) Gallery Workshop
The foundational delivery for the Common Core standards has changed to a transformational approach. Through activities and discussions we will connect transformational geometry to the essential concepts of congruence and similarity. We will also discuss what proof looks like in this newly “transformed” world!
Mike Patterson
Clark County School District, Las Vegas, Nevada
CAPITAL BALLROOM 1/2/3 (MARRIOTT)

11:00 A.M.–12:00 P.M.

50  New and Preservice Teachers Workshop
(Preservice and In-Service) Gallery Workshop
Find answers to your questions on topics such as classroom management, parents, motivation, and keeping your sanity. Connect with other new teachers, learn from experienced professionals, and find resources to engage you and your students. You might even win a prize.
David Barnes
National Council of Teachers of Mathematics, Reston, Virginia
E21A (GREATER RICHMOND CONVENTION CENTER)

51  President’s Session: Turning College and Career-Ready Standards into Student Learning: What It Takes
(General Interest) Session
Principles to Actions
High-quality standards are necessary, but not sufficient, to support high levels of students learning in mathematics. Teaching matters! Learn the most effective teaching practices to support students’ development of conceptual understanding, procedural fluency, and habits of mind required for high-level mathematics learning, along with the supports required to implement them, as described in NCTM’s new publication, Principles to Actions: Ensuring Mathematical Success for All.
Diane J. Briars
President, National Council of Teachers of Mathematics, Reston, Virginia
B21C (GREATER RICHMOND CONVENTION CENTER)
11:00 A.M.–12:00 P.M.

52  
**School Principals and Teacher Leaders Teaming to Improve Student Achievement**  
*General Interest* Session

How can principals and teacher leaders collaborate to create a school mathematics program focused on the NCTM Process Goals? An initiative in Virginia has helped over 350 principals address this issue. Resources developed for these principal workshops will be shared including suggestions for adapting the materials for work with teachers.

Vandivere Hodges  
Virginia Commonwealth University, Richmond  
Patricia Robertson  
Virginia Commonwealth University, Richmond

**B21B (GREATER RICHMOND CONVENTION CENTER)**

53  
**Making Math Count: Assessing for the Good of Students**  
*Pre-K–2* Session

It is easy to become overwhelmed by assessments and data. We will share how we made assessment meaningful by using Kathy Richardson’s Assessing Math Concepts (AMC). This formative assessment series provides timely data on students’ understanding of critical math stages. Data is then matched with engaging and purposeful instructional strategies.

Katherine A.G. Phelps  
Orange County Schools, Hillsborough, North Carolina  
Alexandra Humphries  
Wake County Public Schools, Raleigh, North Carolina  
Christina Lowman  
Chatham County Schools, North Carolina

**B15A (GREATER RICHMOND CONVENTION CENTER)**

54  
**Excite Your Students with a Classroom Economy**  
*Pre-K–5* Session

Learn how to engage your elementary students in a classroom economy, where they learn basic economic principles and practice mathematical and critical thinking skills in a hands-on classroom experience. This workshop will describe how to construct a classroom economy where students apply for jobs, open a bank account, and spend money in a store.

Alissa White  
Chesterfield Day School, Missouri

**CAPITAL BALLROOM 4 (MARRIOTT)**

55  
**Hats Off for Dr. Seuss**  
*Pre-K–5* Session

Take a mathematical journey through the world of Dr. Seuss. Teachers will leave with ideas for incorporating problem-solving activities into a celebration of Dr. Seuss’s birthday or a Dr. Seuss–themed unit. We will explore patterns and functions, graphing, time, measurement, and decimals.

Teresa D. Leahy  
MathScience Innovation Center, Richmond, Virginia

**B15C (GREATER RICHMOND CONVENTION CENTER)**

56  
**Three Steps: Align Your Math Curriculum to the Common Core**  
*Pre-K–5* Session

This presentation will invite participants to learn three quick steps (beginning in the session) to more closely align their existing math curriculum to the Common Core State Standards using their existing materials and without waiting for state curriculum maps and/or new assessments. Tools and templates will be provided.

Lisa Anne Palacios  
American Institutes for Research, Naperville, Illinois

**E10AB (GREATER RICHMOND CONVENTION CENTER)**
57  
High Impact Techniques for Asperger’s in the Classroom  
(3–8, Research) Session  
Finding high impact math classroom techniques that enable Asperger’s students to succeed with little additional teacher preparation time required is difficult. Specific techniques, gleaned from teacher interviews, and the targeted manifestations that each addresses, from choosing and executing strategies to explaining and showing work, will be discussed.  
Debbie Gochenaur  
Shippensburg University, Pennsylvania  
Andrew Geesaman  
Shippensburg University, Pennsylvania  
GRAND BALLROOM CD (MARRIOTT)

58  
The “Power” of One Game  
(3–8) Session  
Participants will experience firsthand the power of one algebraic reasoning and operations game and how it can be used across a variety of grade levels to support algebraic reasoning and mathematical standards in developmentally appropriate yet rigorous and meaningful ways.  
Virginia B. Wilcox  
Wesleyan College, Macon, Georgia  
Ronnie Shipman  
Monroe County School System, Forsyth, Georgia  
CAPITAL BALLROOM 5 (MARRIOTT)

59  
Understanding Linear Functions Using Manipulatives  
(6–8) Session  
Principles to Actions  
Do your students need hands-on activities to help develop their understanding of linear functions? Discover benefits of using virtual and traditional manipulatives in your class to help students better understand linear function concepts, including graphing, slope, y-intercept, and solving equations.  
Kevin Dykema  
Mattawan School District, Michigan  
B15B (GREATER RICHMOND CONVENTION CENTER)

60  
Using Formative Assessment to Improve Student Understanding  
(6–8) Session  
Principles to Actions  
Participants will explore high cognitive demand tasks and formative assessment strategies to develop student understanding of proportional reasoning. Discussion will include how to select appropriate tasks, use questioning and student discourse techniques, respond to formative assessment data, and support understanding for all students.  
Edward C. Nolan  
Montgomery County Public Schools, Rockville, Maryland  
B21A (GREATER RICHMOND CONVENTION CENTER)

61  
24 Activities for All Math Classes  
(6–12) Session  
Learn more than twenty fun activities that can be adapted for any level of math class. Activities range from pair work and group work to full-class activities. Some are games, while others promote mathematical discourse and reasoning. Participants will also learn some math songs and project ideas.  
Gregory S. Fisher  
Mount Tabor High School, Winston-Salem, North Carolina  
Fred Thompson  
East Forsyth High School, Kernersville, North Carolina  
GRAND BALLROOM E (MARRIOTT)

62  
Beyond the Mean: Find the Stats in Algebra and Geometry!  
(6–12) Session  
When I first taught AP Stats, I was surprised at how easily some topics complemented the standard algebra and geometry sequence. Explore the basic rules for describing distributions and correlation, see where these concepts fit easily into (and reinforce the content of) the introductory courses, and prepare students for success in AP Calc and AP Stats!  
Ruth Miller  
Greenhills School, Ann Arbor, Michigan  
B10 (GREATER RICHMOND CONVENTION CENTER)
11:00 A.M.–12:00 P.M.

62.1  
**Math Is a Verb in the 21st Century!**  
*(General Interest) Exhibitor Workshop*

Discover how to create a process-oriented, problem-solving, digital, and collaborative math classroom where the teacher is the facilitator of instruction and students take increasing responsibility for their own learning. The Pearson System of Courses, based on a collaborative workshop model, fosters students discourse and the opportunity to learn with and through each other—bridging the gap between the way students learn inside and outside of the classroom. Discover your pathway to success for college and career readiness while preparing students for the Next Generation high stakes assessment. This could very well be the last solution you will ever need!

_Pearson_  
Upper Saddle River, New Jersey  
_E11C (GREATER RICHMOND CONVENTION CENTER)_

62.2  
**There Is More to Math Than Facts . . . Like Problem Solving**  
*(Pre-K–2) Exhibitor Workshop*

In this session, attendees will discover how LEGO bricks can help students bridge the gap between learning core math and applying it in real-life scenarios. Experience a solution designed to develop students’ problem-solving abilities while enhancing their vocabulary, reading, thinking, listening, and speaking skills related to mathematics topics.

_LEGO Education_  
Pittsburg, Kansas  
_E21C (GREATER RICHMOND CONVENTION CENTER)_

62.3  
**Students Get Fit with the Personal Math Trainer Powered by Knewton**  
*(3–8) Exhibitor Workshop*

HMH presents Personal Math Trainer, the newest online practice, assessment, and intervention system. Geared to individual students’ needs and learning preferences, the PMT delivers personalized instruction to maximize achievement.

_Houghton Mifflin Harcourt_  
Boston, Massachusetts  
_E22 (GREATER RICHMOND CONVENTION CENTER)_

11:30 A.M.–12:00 P.M.

63  
**A Mathematics Teacher Goes to Washington: The Einstein Fellowship**  
*(General Interest) Burst*

The Einstein Distinguished Educator Fellowship brings STEM educators to Washington, D.C., to spend a year working in an agency or on Capitol Hill. Fellows engage in a wide variety of professional development, and the speaker will provide an overview of experiences that the fellowship affords. The application process will be outlined.

_Lynn Foshee Reed_  
Maggie L. Walker Governor’s School, Richmond, Virginia  
_E10CD (GREATER RICHMOND CONVENTION CENTER)_

64  
**How Do We Know . . .? 3 Essentials to Powerful Assessment**  
*(General Interest) Burst*

This session outlines the three essential components of powerful and authentic assessment: alignment, cognitive demand, and format. Participants will analyze selected assessments and learn about resources available from the Virginia Department of Education to modify and create strategic and appropriate assessments in K–12.

_Fanya Morton_  
King George County Schools, Virginia  
_GRAND BALLROOM F (MARRIOTT)_

65  
**Lessons Learned from the Math Emporium at Liberty University**  
*(General Interest) Burst*

A look at the Math Emporium model at Liberty University: how it began, lessons learned, and changes made to improve success.

_Estela Altamirano_  
Liberty University, Lynchburg, Virginia  
_CAPITAL BALLROOM 1/2/3 (MARRIOTT)_
**MathBuilders:** A supplementary math program designed for young braille users in grades K-3.

MathBuilders is separated into eight units by content standards and grade level. This allows the teacher to focus on specific standards or provide remedial material for individual students.

**Each Unit includes:**
- Teacher’s guide with lesson plans
- Student worksheets
- CD-ROM with General Guidelines for Teaching Math to Young Braille Users
- Dozens of manipulative items

**Units include:**
- Unit 1: Matching, Sorting, and Patterning
- Unit 5: Measurement and Estimation
- Unit 6: Geometry
- Unit 7: Fractions, Mixed Numbers, and Decimals
- Unit 8: Data Collection, Graphing, and Probability/Statistics

[http://shop.aph.org](http://shop.aph.org)

American Printing House for the Blind, Inc.  
800.223.1839 • info@aph.org • www.aph.org
11:30 A.M.–12:00 P.M.

66  
Ten Minutes with Ten-Frames
(Pre-K–2) Burst

Ask an elementary teacher what mathematics concept her students struggle with most, and the typical response is number sense. In this session, explore and learn several activities teachers, parents, and volunteers can do to promote number sense with primary students. Make ten-frame activities part of your daily math routine (even for just ten minutes a day!), and you will see your students becoming more flexible, fluent, and efficient with numbers.

Sallie Havey
Montrose Elementary School, Richmond, Virginia

E25 (GREATER RICHMOND CONVENTION CENTER)

67  
To Divvy Up or Measure Out, That Is the Question
(3–8) Burst

Most textbook division problems focus on divvy up scenarios. However, in order to conceptually understand how to divide with fractions, students need to solve problems that measure out. During this session, we will review and briefly discuss the mathematics behind divvy up and measure out, and why educators should include both in their instruction.

Rod D. Gillespie
Tazewell County Public Schools, Virginia

E11AB (GREATER RICHMOND CONVENTION CENTER)

68  
A Sixth Grader Reinvents the Pythagorean Theorem
(6–8) Burst

Principles to Actions

The presentation will incorporate a video clip of a sixth-grade student spontaneously constructing and explaining the Pythagorean theorem to solve a problem about the distance between two points. This student brought to the situation five years of constructivist mathematics in a school whose teachers emphasized sense making and schema building.

Anna Athanasopoulou
University of North Carolina at Charlotte

Michael G. Green
University of North Carolina at Charlotte

GRAND BALLROOM GHIJ (MARRIOTT)

69  
Mnemonics, Melodies, and Movements for the Middle Grades Mathematician
(6–8) Burst

Help your students access and understand mathematical vocabulary and concepts by tapping into their multiple intelligences. Come sing and dance your way through the vocabulary of the Common Core. All songs are short, packed with vocabulary, and set to timeless children’s tunes like the Hokey Pokey.

Leslie S. Paytes
Charlotte-Mecklenburg Schools, Matthews, North Carolina

E21B (GREATER RICHMOND CONVENTION CENTER)

70  
Easy Absolute Values? Absolutely!
(6–8) Burst

Many students learn to solve absolute value equations and inequalities by memorizing a series of steps. This session will focus on a conceptual development of absolute value and the idea of distance from zero.

Sharon Taylor
Georgia Southern University, Statesboro

E23 (GREATER RICHMOND CONVENTION CENTER)

71  
Lesson Study Utilizing a Measure of Standards-Based Teaching Practices
(6–8, Preservice and In-Service, Research) Burst

This presentation focuses on using an observational measure of standards-based mathematical teaching practices (M-Scan) for facilitating lesson study in middle grades classrooms to promote collaboration and professional development of practicing teachers. A plan will be provided for structuring similar professional development opportunities.

Holly Henderson Pinter
Western Carolina University, Cullowhee, North Carolina

Barbara A. Swartz
McDaniel College, Westminster, Maryland

E21A (GREATER RICHMOND CONVENTION CENTER)
72
**When Will We Ever Use This?**
*(6–12) Burst*

Math students often question why they need to learn math topics, especially when they (sometimes correctly) think that they will never use these concepts. We will focus on actual (and some humorous) math applications in medicine, legal trials, movies, television, literature, navigation, Internet security, agriculture, games, and others.

**Scott D. Oliver**
Adlai E. Stevenson High School, Lincolnshire, Illinois

**E24 (GREATER RICHMOND CONVENTION CENTER)**

73
**Math Specialists: Working with High School Teachers on Collaboration**
*(9–12, Higher Education) Burst*

**Principles to Actions**

Through a final project for a master’s degree in Mathematics Education Leadership, a self-study research project evolved that planned a professional development for creation and implementation of best practices for collaboration with high school teachers. The approach taken and results will be described as well as the course expectations.

**Pamela Bailey**
Mary Baldwin College, Staunton, Virginia

**Katherine Swanson**
Prince William County Schools, Virginia

**CAPITAL BALLROOM 6/7/8 (MARRIOTT)**

74
**Planning Classroom Observations That Culminate in Critical Conversations**
*(Higher Education, Preservice and In-Service) Burst*

We will share a process for planning focused classroom observations with specific goals and connected to mathematics literature. These observations offer means for enhancing teachers’ professional learning in the context of their classrooms. We will use exemplars of focused observation tools created by coaches to examine this approach.

**Melva R. Grant**
Old Dominion University, Norfolk, Virginia

**GRAND BALLROOM AB (MARRIOTT)**

75
**A Review of Test Anxiety Literature and Intervention Strategies**
*(General Interest) Burst*

The following areas will be discussed: an overview of test anxiety, various surveys used to measure test anxiety in students, and intervention strategies designed to reduce test anxiety.

**Michael Brom**
Lewis-Palmer Middle School, Monument, Colorado

**GRAND BALLROOM AB (MARRIOTT)**

76
**Exemplary K–12 STEM Teachers: Leadership and Success**
*(General Interest) Burst*

K–12 teachers are invited to apply to the Presidential Awards for Excellence in Mathematics and Science Teaching. Recipients receive a paid trip to Washington, D.C., a citation signed by the President of the United States and $10,000. Past awardees will discuss the application process and their leadership roles as PAEMST alumni.

**Marilyn Suiter**
National Science Foundation, Arlington, Virginia

**E11AB (GREATER RICHMOND CONVENTION CENTER)**

77
**Understanding Low Performance on the National Assessment of Educational Progress**
*(General Interest) Burst*

What do we know about the lowest performing students on the National Assessment of Educational Progress (NAEP)? What is their background? What do we know about their schools and teachers? This talk describes the lowest performing students as a group on the NAEP based upon information collected from student, teacher, and school questionnaires.

**Zachary Rutledge**
Independent Researcher, Salem, Oregon

**GRAND BALLROOM F (MARRIOTT)**
12:30 P.M.–1:00 P.M.

78 Trigonometry: Measuring the World in Small Groups
(General Interest) Burst
College students typically view two concepts with disdain: group work and real-world explorations. These are, however, areas in which they will confront much work in their future careers, and so it is imperative students be exposed to both. How do students react when thrust into a real-world challenge with a group of strangers? They thrive!

David S. DeLong
Kaplan University, Fort Lauderdale, Florida
CAPITAL BALLROOM 1/2/3 (MARRIOTT)

79 Four Types of Addition Facts That Help Develop All Others
(Pre-K–2) Burst
Principles to Actions
There are four types of addition facts that we should focus on first and then use those to help students develop fluency with all their addition facts. The four types are: Doubles, +0, Make a 10, and 10 + something. This session will look at activities that build these four types of facts and the connections to all other addition facts.

Christina Tondevold
Mathematically Minded, LLC, Orofino, Idaho
Lynn Rule
Retired Teacher, Wheaton, Illinois
GRAND BALLROOM GHJ (MARRIOTT)

80 Create, Publish, Critique: Teach Math with Student-Generated Content at Shooloo.org
(3–8) Burst
Make word problems relevant to students’ own lives. Empower them to create math stories of their own, and engage them through peer feedback. Teach them to pay attention to precision. We will share tips and resources on how to teach Common Core mathematical practices with student-generated content. Leave with ideas that are immediately actionable.

Robin Yang
Shooloo.org, New York, New York
Jeanne Shannon
Saint Elizabeth Catholic Academy, Ozone Park, New York
E21A (GREATER RICHMOND CONVENTION CENTER)

81 Common Core Mathematical Practices: How Will Our Teaching Change?
(6–12) Burst
This course helps teachers and curriculum specialists analyze the Common Core Standards for Mathematical Practice. We will address each practice and experience those practices via mini-lessons.

Kathleen W. Kaplan
ExploreLearning, Charlottesville, Virginia
E21B (GREATER RICHMOND CONVENTION CENTER)

82 Virtual Versus Physical: Manipulatives in the Mathematics Classroom
(6–12) Burst
This presentation will introduce free web-based manipulatives as well as downloadable applications that can be used with tablet devices and smart phones and also ideas for challenge-based learning. Student feedback comparing these with traditional manipulatives will be discussed.

Rhonda Kilgo
Jacksonville State University, Alabama
Audria White
Jacksonville State University, Alabama
E21C (GREATER RICHMOND CONVENTION CENTER)

83 The M in STEM and CCSSM: Resources for Problem-Based Learning AND Mastery of Standards
(9–12) Burst
Many secondary math teachers can identify with the problem of designing engaging, authentic tasks and problem-based lessons that also advance learning and mastery of math standards. This session will connect participants with repositories of lessons, design tools, and one another as resources for designing lessons that align problem scenarios with math standards to amplify learning.

Stephanie Ogden
L&N STEM Academy, Knoxville, Tennessee
E25 (GREATER RICHMOND CONVENTION CENTER)
12:30 P.M.–1:00 P.M.

84
The Math of Student Loans
(9–12, Higher Education) Burst

Student loans are a financial commitment spanning decades. We will examine how the monthly payment is determined, calculate the interest paid over the life of the loan, and look at the long-term effect of paying a small amount above the monthly payment. Common Core standards include geometric sequences, exponential growth, and compound interest.

Alice W. Seneres
Rutgers University, Piscataway, New Jersey

E10CD (GREATER RICHMOND CONVENTION CENTER)

85
Fostering a Favorable Disposition toward Mathematics through the Common Core
(Preservice and In-Service) Burst

During this presentation, attendees will consider how the Common Core State Standards for Mathematics can be used to promote a productive disposition in preservice and in-service teachers of early childhood and elementary education. The main point of discussion will focus on how mathematical concepts build and connect throughout the standards.

Sharon K. O’Kelley
Francis Marion University, Florence, South Carolina

E24 (GREATER RICHMOND CONVENTION CENTER)

86
The Role of Teacher Leaders in Learning Communities
(Preservice and In-Service) Burst

We will present data from a professional development program, the Arizona Mathematics Partnership project, a National Science Foundation–funded Math and Science Partnership. Project participants form school-based Collaborative Communities of Learners. The presentation focuses on identifying teacher leaders and their roles within the groups.

Lisa Hoppe
Scottsdale Community College, Arizona

Amie Pierone
Scottsdale Community College, Arizona

CAPITAL BALLROOM 6/7/8 (MARRIOTT)

12:30 P.M.–1:30 P.M.

87
How to Shift Mind-Sets from Remembering How to Understanding Why
(General Interest) Session

Some of the least effective lessons I’ve observed boil down to telling students what they need to remember. Some of the very best and most effective lessons I’ve observed boil down to providing students with a range of alternative approaches that support an understanding of why the answers make sense. We’ll look at elements of these lessons.

Steven Leinwand
American Institutes for Research, Washington, D.C.

B21A (GREATER RICHMOND CONVENTION CENTER)

88
Mathematically Yours—All the Math Culture Complete!
(General Interest) Session

Mathematically Yours is a newspaper whose first issue (available online) is a tribute to Chicago. You will discover Chicago through math, as we write about mathematicians, arts, jobs, people, movies, etc. Its editors are students, teachers, or just people passionate about math. Consider working on an issue for your own city!

Frederic Mahieu
French International School, Chicago, Illinois

GRAND BALLROOM CD (MARRIOTT)

89
Mathematics Preparation of Non-Science College Majors
(General Interest) Session

We continually hear how students are lacking in mathematical skills and knowledge within the college classroom or workplace. How can non-science majors become better prepared in order to compete for opportunities in the future? This session proposes to identify answers to this question.

Christina G. Miles
Old Dominion University, Norfolk, Virginia

Mary C. Enderson
Old Dominion University, Norfolk, Virginia

CAPITAL BALLROOM 5 (MARRIOTT)
12:30 P.M.–1:30 P.M.

**90**
Math & Movement: Using Movement to Increase Math Ability and Exercise
(Pre-K–2) Session
Children love to move. Learn how to harness that energy and turn it into rapid retention of number concept skills, including skip counting, addition, multiplication, and more. Learn cross-body movements that energize your students and strengthen math. A fast-paced workshop that will keep you hopping and having fun while moving to the numbers.

Suzy Koontz
National Math Foundation, Ithaca, New York

**GRAND BALLROOM E (MARRIOTT)**

**91**
Engaging Activities + Effective Instructional Strategies = Numerically Nimble Students
(3–5) Session
Improve students’ numeric competence with strategies to promote greater sense making and participation. Discover effective ways to differentiate instruction and efficiently implement CCSSM, particularly the Standards for Mathematical Practice. Handout activities enhance mathematical reasoning and improve students’ number sense and computation skills.

Leigh Childs
San Diego County Office of Education, California

**B15C (GREATER RICHMOND CONVENTION CENTER)**

**92**
Fractions as Numbers
(3–5, Preservice and In-Service) Session
Principles to Actions
The focus of this session will be on fractions as numbers. Participants will engage in hands-on tasks that involve a variety of representations, comparing and ordering, and equivalent fractions. Student work that shows students’ lack of understanding will be shared, with strategies for addressing those misconceptions.

Mark Schmit
ETA hand2mind, Vernon Hills, Illinois

**B21B (GREATER RICHMOND CONVENTION CENTER)**

**93**
Building a Positive Mathematics Learning Community
(6–8, Preservice and In-Service) Session
How can we build a positive mathematics community? Every year, one middle school celebrates “I Love Math Day” on February 14. In the weeks between January 1 and then, students work in small teams to solve interesting, rich mathematical problems every week and submit their solutions. Learn what you need to start building a positive math community.

Hoyun Cho
Capital University, Columbus, Ohio
Gary Lawrence
Mustard Seed School, Hoboken, New Jersey

**CAPITAL BALLROOM 4 (MARRIOTT)**

**94**
Parlez-vous Math?
(6–8, Preservice and In-Service) Session
Do your students struggle with word problems? Can they translate a verbal expression to an algebraic one? Sometimes math can seem like a foreign language! Come learn about strategies and activities that you can use to help your students become fluent in speaking math.

Melinda Griffin
Williamsburg-James City County Schools/College of William & Mary, Virginia
Kay Bennett
Gloucester Public Schools, Virginia

**B10 (GREATER RICHMOND CONVENTION CENTER)**

**95**
The Harmonic Mean: Overlooked, Undervalued, Yet Way Cool!
(6–12) Session
High school math students are expected to know about the arithmetic and geometric means, but the harmonic mean is studied—usually—“if there’s time.” This session will investigate the derivation of the harmonic mean formula and how it can be applied to the study of number, geometry, finance, and more (if there’s time). Lots of problems on numerous handouts.

Steve Yurek
Lesley University, Cambridge, Massachusetts

**B15A (GREATER RICHMOND CONVENTION CENTER)**
12:30 P.M.–1:30 P.M.

96  What Is Good Mathematics? How Do We Teach It Well?
(6–12) Session
Teachers decide what to emphasize in a lesson based on knowledge of students and curriculum. What if those decisions are based on mathematics as well? Then how can we tell what students have learned, and what they can do with what we taught them? Dynamic interactive technology can bring these together to make a real difference in what students learn.

Gail Burrill
Past President, National Council of Teachers of Mathematics; Michigan State University, East Lansing, Michigan

97  A FUNdamental Approach to Connecting Families of FUNctions
(9–12) Session
Principles to Actions
Use hand-held technology to explore properties of families of functions. Participants will be provided with classroom-ready, hands-on lessons that enable students to examine functional behavior and discover FUN ways to make sense of transformations. We will connect the algebra and functions strands of the Common Core State Standards.

Tom Beatini
Glen Rock High School, New Jersey

98  Using Good Tasks
(9–12) Session
Principles to Actions
What tasks can help my students learn about statistics and sampling, or about connections between functions and geometry? Together, we will work two problems that answer these questions and that model selecting goals, choosing good tasks, planning for discourse, thinking about assessment, having multiple entry points, and using proper tools.

Fred Dillon
Ideastream, Cleveland, Ohio

Stay connected!
Check us out on Twitter and Facebook.
1:30 P.M.–2:45 P.M.

99 Making Sense of Student Reasoning  
(Pre-K–2) Gallery Workshop
Mathematical reasoning is an integral component of the Common Core State Standards. In order to engage students in mathematical reasoning, teachers need to be able to build and evaluate the reasoning of each child. Engage in classroom-tested, hands-on activities to build and make sense of student reasoning.

Brenda Anne Pearson  
CCSD: Sandy Searles Miller Academy, Las Vegas, Nevada  
E23 (GREATER RICHMOND CONVENTION CENTER)

100 Shuffling into Math: Primary Games for the Common Core  
(Pre-K–2) Gallery Workshop
Come prepared to play card and dice games that help your primary students achieve success in the following Common Core concepts: numeration, operations and fact fluency, patterning, and graphing. Excellent take-home ideas, game boards, and student samples will be shared. Great for regular, title, ELL, and after-school programs.

Julie Knudsen  
Trinity Valley School, Fort Worth, Texas  
E24 (GREATER RICHMOND CONVENTION CENTER)

101 Melodies, Methods, and Models That Make Math Marvelous and Meaningful  
(Pre-K–5) Gallery Workshop
Come have fun learning ways to help students truly understand math and enjoy solving problems. Learn ways to help students to develop number sense and to connect math and art. Learn how to help students connect math to the real world. Receive a free math songs CD to help students remember the “math language.”

Brenda P. Barrow  
Retired, Norfolk Public Schools; Adjunct Professor, Old Dominion University, Norfolk, Virginia  
E21A (GREATER RICHMOND CONVENTION CENTER)

102 Taking Primary Math Journals to a New Dimension  
(Pre-K–5) Gallery Workshop
Principles to Actions
Participatory power is high as you learn by doing in this fast-paced, hands-on session. Discover how to add dimensionality to your primary student’s math journal as you transform basic classroom materials into 3-D graphic organizers. Depart with a mini composition book filled with ideas ready to use immediately.

Robert Stremme  
Eastern University, St. Davids, Pennsylvania  
CAPITAL BALLROOM 1/2/3 (MARRIOTT)

103 Place Value: Building Bridges to Long-Term Understanding and Skill  
(3–5) Gallery Workshop
Developing place value concepts and procedural skills is essential to mathematics success. Computational error pattern analyses guide the design of targeted instruction linked to Common Core standards. We will analyze work samples, rubrics, and engage in intervention strategies. Handouts provided.

Helene Sherman  
University of Missouri–St. Louis  
GRAND BALLROOM AB (MARRIOTT)

104 Alternate Bases to Encourage STEM Interconnectedness and Understanding  
(3–5, Preservice and In-Service) Gallery Workshop
Elementary school teachers are not always exposed to alternate bases. This workshop will engage participants in learning about alternate bases and how alternate base systems have been used in the past and today. Attendees will participate in a brief, hands-on activity to illustrate how alternate bases could be used in their own classrooms.

Donald Goodman  
Dozenal Society of America (DSA), Martinsville, Virginia  
Jen Seron  
Dozenal Society of America (DSA), Martinsville, Virginia  
Dan Simon  
Dozenal Society of America (DSA), Martinsville, Virginia  
CAPITAL BALLROOM 6/7/8 (MARRIOTT)
1:30 P.M.–2:45 P.M.

105  Communicate to Learn! Developing Communication Skills to Teach Number Sense
(3–8) Gallery Workshop
Learn practical ways to help students communicate their thinking and even read word problems! Engage in fun activities that teach talk, reading, writing, and problem solving for number sense in mathematics. Explore activities that you can implement tomorrow to deepen students’ understanding. All activities support the Common Core and NCTM standards.

Cathy Marks Krpan
Ontario Institute for Studies in Education, University of Toronto, Canada

GRAND BALLROOM F (MARRIOTT)

106  Wait! Wait! Don’t Tell Me!
(3–8) Gallery Workshop
See how inquiry in the mathematics classroom can solve some current education conundrums like teaching all students well in mixed ability classrooms, time needed for reteaching, student engagement, and test results. Transform your classroom to a place where amazing happens. Emphasis will be on fractions, decimals, and percents. Oh, and you get stuff.

Andrew Derer
MathScience Innovation Center, Richmond, Virginia

E10CD (GREATER RICHMOND CONVENTION CENTER)

107  Adventures in Probability: From Fraction Rainbows to Striking Umpires
(6–8) Gallery Workshop
In this workshop, we will explore a variety of activities and games that connect probability to middle school topics in algebra and geometry as well as to interesting and fun contexts. Through making conjectures and using simulations to test them, we will highlight important ideas in probability that every student should understand.

Kyle Schultz, PhD
James Madison University, Harrisonburg, Virginia

GRAND BALLROOM GHIJ (MARRIOTT)

108  Filling Bottles with Water
(6–12) Gallery Workshop
We will study the graphs relating the water level to the volume of water inside bottles of varying shapes as they are gradually filled. The activity provides an intuitive context for understanding the graph of a function and its rate of change. We will consider which bottles produce linear graphs and what the slope means in this case.

Addie Evans
San Francisco State University, California

E25 (GREATER RICHMOND CONVENTION CENTER)

109  Fun and Games in the Math Classroom
(9–12) Gallery Workshop
Teachers will experience a variety of activities that can be used for reinforcement and review. A sampling of activities from algebra 1, geometry, algebra 2, trigonometry, precalculus, and calculus will be included. Types of activities include card matches, card games, bingo games, and more.

Patricia M. Gabriel
Fairfax County Public Schools, Virginia

E21B (GREATER RICHMOND CONVENTION CENTER)

110  Technology and Mathematical Practices: Impact on Classroom Discussions and Understanding
(9–12, Preservice and In-Service) Gallery Workshop
Engage in lively conversation regarding effective ways to teach mathematics ranging from algebra to calculus emphasizing reasoning and understanding. Useful strategies and examples related to CCSSM mathematical practices will be shared among participants. Technology tips and activities will be explored through online resources and iPad apps.

Farshid Safi
The College of New Jersey, Ewing
George J. Roy
University of South Carolina, Columbia

E11AB (GREATER RICHMOND CONVENTION CENTER)
2:00 P.M.–3:00 P.M.

111
50 First Dates with Math
(General Interest) Session
Do you wonder why students do not seem to retain material from year to year? Come to this session to hear how brain research explains this phenomena, and what teachers can do to help students remember the mathematics they are taught.
Carolyn Williamson
The Carmel School, Ruther Glen, Virginia

GRAND BALLROOM CD (MARRIOTT)

112
Math Modeling with Digital Media
(General Interest) Session
We make enormous promises to our students that mathematics models the world they live in, that math has power in their world. We attempt to make good on that promise with word problems that look nothing like that world and look nothing like modeling as it’s practiced by mathematicians. In this session we’ll learn how digital photos and videos can help us engage and challenge our students in the modeling practice of CCSSM.
Dan Meyer
Stanford University, California

B21C (GREATER RICHMOND CONVENTION CENTER)

114
Number Sense Routines That Impact Student Learning
(Pre-K–2) Session
Teachers will learn the role of number sense routines in building numerical fluency. They will build familiarity with routines such as quick images, counting around the circle, and mental math strings. They will watch a variety of these routines in action and learn how to effectively implement daily number sense routines in their classrooms.
Yojairy Sands
Cathedral School of St. John the Divine, New York, New York
Maria Peneda
Cathedral School of St. John the Divine, New York, New York

B10 (GREATER RICHMOND CONVENTION CENTER)

115 ST
Math + Technology = Learning
(Pre-K–5) Session
In this session, you’ll learn how to use technology in clever ways for teaching and learning mathematics. See how math lessons can be enlivened and enhanced through the integration of resources and tools found on the Internet, the iPad, and the classroom computer. You’re guaranteed to leave with many ideas you can use tomorrow with your students!
Tammy Worcester Tang
ESSDACK, Hutchinson, Kansas

GRAND BALLROOM E (MARRIOTT)

116
Generating Interest In and Excitement For Real Problem Solving
(3–8) Session
Generate excitement for, and interest in problem solving. Energize and enrich your curriculum by encouraging students to take risks in problem solving while reminding them that a real problem is not the same as a practice exercise. Reduce the need to “cram” for any states’ assessments by utilizing the methods and the types of questions discussed.
Nicholas J. Restivo
Retired, Mineola Union Free School District, New York

B15A (GREATER RICHMOND CONVENTION CENTER)

117
Shark-tistics: Uncovering the Truth about Shark Attacks
(6–8) Session
Do you ever wonder which sharks attack the most and where? Are shark attacks more prevalent during certain times of year or on certain days of the week? Participants will learn how to incorporate real-life shark attack data into middle school lessons focused on data analysis and statistics and how to create interdisciplinary lessons.
Kristen L. Apraiz
University of Florida, Gainesville

B15C (GREATER RICHMOND CONVENTION CENTER)
2:00 P.M.–3:00 P.M.

**118**

**Problem Solving Then and Now**  
(6–8, Preservice and In-Service) Session

We will look at the trajectory of problem solving from Polya to CCSSM to understand the evolution and implications for middle school teaching and learning, consider examples (written and video) of problems and problem solving, reflect on what was presented, and create problems to teach mathematics.

Melva R. Grant  
Old Dominion University, Norfolk, Virginia

**E10AB (GREATER RICHMOND CONVENTION CENTER)**

**119**

**Using Geocaching in Teaching Algebra and Geometry**  
(6–12) Session

Geocaching is a real-life treasure hunt that can help engage your students in math content, help them to make real-world connections, and provide them with a new hobby. Come find out what geocaching is and how you can use it to teach various topics. Leave with sample lessons and information on how to obtain the technology.

Laura Y. Bridge  
Fluvanna County Schools, Virginia

**CAPITAL BALLROOM 4 (MARRIOTT)**

**120**

**A Potpourri of Conic Section Construction Techniques**  
(9–12) Session

Few topics connect with as many branches of mathematics as conic sections. Congruency, similarity, the Pythagorean theorem, and trigonometry all play a role in investigating ellipses, parabolas, and hyperbolas. This session provides an interactive tour of the many physical models that draw conics, as well as their counterparts built with Sketchpad.

Daniel Scher  
KCP Technologies, New York, New York

Scott Steketee  
KCP Technologies, Philadelphia, Pennsylvania

**B21A (GREATER RICHMOND CONVENTION CENTER)**

**121**

**Animation and Mathematics: What They Share in Common**  
(9–12, Higher Education) Session

Principles to Actions

Explore animation, an application dependent on geometry, matrices, and technology. Dilations, reflections, rotations, and translations required to create movement. Large data sets needed for images and sound are handled via matrices. Experiential learning opportunities and cross-disciplinary problem-solving methods for students will be emphasized.

Susan G. Helser  
Mott Community College, Flint, Michigan

**B15B (GREATER RICHMOND CONVENTION CENTER)**

**122**

**What to Expect When You’re Electing: The Mathematics of Elections**  
(9–12, Higher Education) Session

How do we determine who wins an election? It seems obvious, but different reasonable voting methods can lead to different winners. In fact, it can be proven that there is no “perfect” voting system. We will look at some of these considerations and show how to bring mathematics into what most people consider to be a nonmathematical subject.

Jonathan R. Corbett  
Harris-Stowe State University, St. Louis, Missouri

Ann Podleski  
Harris-Stowe State University, St. Louis, Missouri

**B21B (GREATER RICHMOND CONVENTION CENTER)**

**122.1 CC**

**Teachers’ Perceptions and Practices Regarding the CCSSM Implementation**  
(General Interest, Research) Session

We use surveys and interviews of several hundred teachers across the state of New Jersey to address the questions: how do teachers across the state understand, interpret, and implement CCSSM; and, what, if any changes in practice are used to address the PARCC assessments.

Lina Sanchez-Leal  
Rutgers University, Newark, New Jersey

Roberta Schorr  
Rutgers University, Newark, New Jersey

**CAPITAL BALLROOM 5 (MARRIOTT)**
2:00 P.M.–3:00 P.M.

122.2  Unleash the Power of Games-Based Math with Mangahigh.com
(General Interest) Exhibitor Workshop
Mangahigh has revolutionized the way we engage students in our math classrooms. With interactive games and clever adaptive quizzes, all mapped to the curriculum for K–grade 10, Mangahigh brings dramatic improvements in students' attitudes towards learning math. Attend to claim your free 60-day trial of www.mangahigh.com!
Mangahigh.com
London, England, United Kingdom
E22 (GREATER RICHMOND CONVENTION CENTER)

122.3  Making Failure Fun: Amplify Math Games
(6–8) Exhibitor Workshop
Participants will learn about Amplify's unique approach and process in developing math games. Learn how Amplify sees games as a voluntary activity for learning in the student's free time and what we have learned through trial and error in the design process. Get firsthand experience with Twelve, available now in the Apple app store.
Amplify
Brooklyn, New York
E21C (GREATER RICHMOND CONVENTION CENTER)

122.4  Michele Douglass Presents the Power of Multiple Strategies
(6–12) Exhibitor Workshop
Building mathematical understanding requires conceptual and procedural knowledge, which comes through in-depth knowledge of a topic. Participants solve problems using multiple strategies, discover development of in-depth understanding, use hands-on activities, and discuss alternative strategies that empower student success in higher mathematics.
Voyager Sopris Learning
Dallas, Texas
E11C (GREATER RICHMOND CONVENTION CENTER)

3:15 P.M.–4:30 P.M.

123  The Transmedia Approach to Teaching Math
(Pre-K–2, Preservice and In-Service) Gallery Workshop
Explore the concept of transmedia storytelling in educational media—aligned to Common Core State Standards for Mathematics—to advance children's mathematics learning. Experience how a single storyline can be woven through multiple delivery methods—video, online games, and hands-on activity—to engage students and reinforce learning.
Jean B. Crawford
Public Broadcasting Service, Arlington, Virginia
Francis (Skip) Fennell
Past President, National Council of Teachers of Mathematics; McDaniel College, Westminster, Maryland
E11AB (GREATER RICHMOND CONVENTION CENTER)

124  Making Sense of Number Sense: From Whole Numbers to Fractions
(Pre-K–5) Gallery Workshop
No matter if you are in first grade or fifth grade, there always seems to be students who struggle with number sense. Come join us as we look at ways to help students build number sense from early counting principles to those dreaded fractions and decimals.
Daniel Schroll
Loudoun County Public Schools, Sterling, Virginia
E10CD (GREATER RICHMOND CONVENTION CENTER)

125  Can Rigorous Lessons Equal Fun in the Classroom? Absolutely!
(3–5) Gallery Workshop
Join us as we walk through some of the lessons we use every day to engage our students in learning rigorous concepts through table/partner activities. Make and take some products that build number sense with decimals, fractions, prime and composites, all upper elementary concepts, and with a little measurement and geometry added in for fun!
Jacqueline L. Stewart
Hanover County Public Schools, Mechanicsville, Virginia
Patti A. Schneider
Hanover County Public Schools, Mechanicsville, Virginia
E21A (GREATER RICHMOND CONVENTION CENTER)
3:15 P.M.–4:30 P.M.

126
Fun with Geometry
(3–5) Gallery Workshop
Using teacher-made manipulatives, participants will be engaged in several “hands-on” geometric activities that they can take back to their classrooms so their students can also have fun with geometry. The activities will address the geometry content and the mathematical practices in CCSSM.

Benjamin (Ben) H. Lindeman
Retired, New York State Education Department, Albany
E24 (GREATER RICHMOND CONVENTION CENTER)

127
Intentional Instruction
(3–5) Gallery Workshop
Is multiplication madness? Are fractions a frustration? Is vocabulary vexing? Research shows humor, color, and mnemonics help us to learn and retain concepts. A master teacher shares her strategies for intentional instruction. Use these strategies to make your students multiplication masters, fraction fanatics, and vocabulary victors.

Sandra White
Retired, Shallowater ISD, Texas
E23 (GREATER RICHMOND CONVENTION CENTER)

128
Exploring Compound Events through Games and Simulations
(6–8) Gallery Workshop
Come play games and conduct simulations appropriate for exploring independent and dependent events. Use tree diagrams, experimental probability, and theoretical probability to analyze the games and simulations and to make predictions. Receive copies of student activity pages and teaching guides that will include summaries of the mathematics.

Virginia Vimpeny Lewis
Longwood University, Farmville, Virginia
Leah Shilling-Traina
Longwood University, Farmville, Virginia
Maria A. Timmerman
Longwood University, Farmville, Virginia
GRAND BALLROOM GHIJ (MARRIOTT)

129
Increase Student Engagement with Interactive Graphic Organizers
(6–8) Gallery Workshop
Teachers are looking for ways to improve students’ learning experience and interest in mathematics. One such way is the use of interactive graphic organizers or foldables. Foldables are a quick and effective way to organize materials. It’s an easier way for students to relate factual information to a concrete and memorable learning experience.

Ernestine Saville-Brock
Montgomery County Public Schools, Christiansburg, Virginia
E25 (GREATER RICHMOND CONVENTION CENTER)

130
NASA: Distance-Rate-Time Mathematics in Air Traffic Control
(6–8) Gallery Workshop
Apply proportional reasoning, strategic thinking, and problem-solving skills to solve distance-rate-time problems in air traffic control. Use print-based worksheets and an interactive air traffic control simulator to model and solve problems involving two to five airplanes. All materials are free and available on the web or via a mobile app.

Rebecca A. Green
NASA Ames Research Center, Moffett Field, California
Gregory W. Condon
NASA Ames Research Center, Moffett Field, California
GRAND BALLROOM AB (MARRIOTT)

131
Using Multiple Representations and the Graphing Calculator
(6–12) Gallery Workshop
Through specific activities we can discover ways to represent the same context in multiple ways: graphically, numerically, symbolically, and verbally. The use of multiple representations helps with understanding relationships between variables, expressing these relationships in multiple ways, and reasoning about connections between representations.

Fred Decovsky
Teachers Teaching with Technology, Millburn, New Jersey
GRAND BALLROOM F (MARRIOTT)
3:15 P.M.—4:30 P.M.

132
Parametric Equations as a Culminating Precalculus Activity
(9–12) Gallery Workshop

Studying curves defined by parametric equations can be used to more carefully examine the most important functions of precalculus by combining these in novel and interesting ways. I will present many examples of parametric equations whose representation can challenge students to master their basic inventory of functions.

William Rose
Montgomery Blair High School, Silver Spring, Maryland

E218 (GREATER RICHMOND CONVENTION CENTER)

133
Experimental Mathematics with Open Problems in Elementary Number Theory
(9–12, Preservice and In-Service) Gallery Workshop

Students’ learning is enhanced when they discover mathematical insights on their own in the spirit of becoming independent learners. We will introduce participants to some easily posed unsolved open problems in elementary number theory including the Collatz, Goldbach, and Home Prime conjectures. The use of the TI-89 CAS will aid in the discovery.

Jay L. Schaffman
Rowan University, Glassboro, New Jersey

CAPITAL BALLROOM 6/7/8 (MARRIOTT)

134
STEM Tasks from PD to Classroom: A Problem-Based Approach
(9–12, Preservice and In-Service) Gallery Workshop

Come explore problem-based professional development that blends lesson study with STEM-rich classroom-ready projects including launching objects, building roller coasters, bacteria growth, and others to engage and inspire teachers and their students. Participants will connect to the Standards for Mathematical Practice while completing these tasks.

Mike Long
Howard County Community College, Columbia, Maryland
Jennifer Suh
George Mason University, Fairfax, Virginia
Padmanabhan Seshaiyer
George Mason University, Fairfax, Virginia

CAPITAL BALLROOM 1/2/3 (MARRIOTT)

3:30 P.M.—4:30 P.M.

135
Assessing Students’ Sense Making and Reasoning: Formatively and Summatively
(General Interest) Session

Student behaviors in making sense of mathematics and in demonstrating reasoning are critical. Too often, these are done in isolation and without meaning. Recommendations, strategies, and techniques to expand teacher effectiveness in obtaining, reflecting on, and making decisions based on students’ activity, oral and written communications, and work samples.

Henry S. Kepner
Past President, National Council of Teachers of Mathematics; University of Wisconsin–Milwaukee, Milwaukee, Wisconsin

B21C (GREATER RICHMOND CONVENTION CENTER)

136
“Count On” Assistive Technology to Bridge Common Core
(General Interest) Session

Educators are challenged with incorporating Common Core State Standards regardless of students’ abilities. We will highlight an implementation model that includes four key components which has resulted in significant student progress, increased assistive technology opportunities, and students demonstrating metacognition of math.

Nicole L. Kalcheim
Eisenhower Cooperative, Crestwood, Illinois
Jennifer L. Emanuele
Eisenhower Cooperative, Crestwood, Illinois
James Larocco
Eisenhower Cooperative, Crestwood, Illinois

B21A (GREATER RICHMOND CONVENTION CENTER)

Check out the many sessions that address one or more of the teaching practices and guiding principles found in NCTM’s Principles to Actions. See page 5 for details.
3:30 P.M.—4:30 P.M.

137
Integrating the Mathematical Practices with Formative Assessment Strategies
(General Interest) Session
The intersection of the CCSS mathematical practices and formative assessment strategies is seamless. Learn how to integrate formative assessment and the mathematical practices to enhance your ability to gather, analyze data, and provide appropriate interventions based upon your students’ knowledge and understanding of the mathematics standards.
Anne M. Collins
Lesley University, Cambridge, Massachusetts
E10AB (GREATER RICHMOND CONVENTION CENTER)

138
Algebraic Strategies for Enhancing Visual Discrimination and Numeracy in Children
(Pre-K–2) Session
Explore a variety of easy-to-learn techniques for introducing algebra to children in early grades. Learn strategies for using algebraic symbol manipulation and matching exercises to enhance visual discrimination and strengthen addition, subtraction, multiplication, and division in young children. Participants will leave with handouts.
Suzy Koontz
National Math Foundation, Ithaca, New York
GRAND BALLROOM E (MARRIOTT)

139
Our Best Interactive and Interdisciplinary Mathematics Activities
(Pre-K–2) Session
Participants will actively engage in activities for pre-K–2. The mathematics content will come alive through children’s literature and will integrate other disciplines.
Adam Goldberg
Southern Connecticut State University, New Haven
Maria Diamantis
Southern Connecticut State University, New Haven
B15A (GREATER RICHMOND CONVENTION CENTER)

140
If It’s Not Real World, It’s Not Real Math!
(Pre-K–5) Session
Teaching mathematics to children goes way beyond a textbook or program. It involves surveying your class to discover students’ interests and designing projects that meet their needs. Learn about real-world projects that will make your students ask for more! Hands-on activities, make it—take it, and handouts provided.
Dacia P. Jones
Durham Public Schools, North Carolina
B21B (GREATER RICHMOND CONVENTION CENTER)

141
Project-Based Learning and Math: What Does That Look Like?
(3–5) Session
Project-based learning seems to be the hot topic right now. What is it really? And how can you use it to enrich your math lessons? Come hear two teachers talk about their experiences and leave with ideas and materials ready to implement in your classroom.
Frances O. Coleman
Collegiate School, Richmond, Virginia
Jessica Catoggio
Collegiate School, Richmond, Virginia
B10 (GREATER RICHMOND CONVENTION CENTER)

142
Core within the Core: Algebra Readiness for ALL
(6–8) Session
Do your students look puzzled when you talk about multiplication? Do they tremble when you mention fractions? Is it difficult for you to motivate them? This session focuses on best practices to get your middle schoolers ready for algebra.
Jan Scott
Scholastic, Inc., New York, New York
B15B (GREATER RICHMOND CONVENTION CENTER)
Expressions and Equations: Transitioning to the Common Core  
(6–8) Session

Significant changes to mathematics instruction are occurring with implementation of the Common Core. Central to these changes is the Expressions and Equations content domain. In this session, you will explore progressions of knowledge, mathematical practices, and instructional strategies applicable to this key CCSSM domain.

Oliver F. Jenkins  
MathEd Constructs, LLC, Millersville, Maryland

Building Assessments through Common Content Planning Teams  
(6–12) Session

This session will focus on improving math instruction using common content planning teams. Developing assessments using a backwards design will be discussed. Presenters will explain how to use the data generated from assessments to drive instruction. Lessons learned from the implementation of common content teams at Lee-Davis High School will be shared.

Jackie R. Davis  
Lee-Davis High School, Mechanicsville, Virginia

Brian K. Canady  
Lee-Davis High School, Mechanicsville, Virginia

Avatars: Where Mathematics Meets Audio and Video  
(9–12, Higher Education) Session

Principles to Actions

Examine animation that is dependent on video and audio applications that require and integrate mathematics and technology and that includes the following: large data sets necessary to handle images and sound via matrices; discrete and real numbers; and a focus on cross-disciplinary problem-solving methods and experiential learning opportunities for students.

Susan G. Helser  
Mott Community College, Flint, Michigan

Tracing Teachers’ Change: Results of a Successful Teacher Development Program  
(Higher Education, Research) Session

In this presentation, we examine how learning communities have been created in a successful model for professional development, the coding scheme and rubric that was used to assess teacher change, and the changes in the teachers’ practice that was coupled with increased percentages of students meeting the state learning standards for mathematics.

Lynn D. Tarlow  
City College of the City University of New York, New York
Unleash the Mathematical Mind of Every Student

Join us in Atlantic City, Minneapolis, or Nashville to focus on learning, inspiration, and new resources that will help you promote the mathematical habits of mind that will lead your students to college and career success.

• Learn from 200+ in-depth sessions on trending topics including the Common Core State Standards, technology, STEM, assessment, and much more.
• Explore best practices from classroom innovators.
• Discover a robust exhibit hall, packed with products and services.
• Dive into the latest educational resources, including Principles to Actions: Ensuring Mathematical Success for All
• Expand your local network and collaborate with like-minded peers.

Whether you’re a classroom teacher, math coach, administrator, math teacher educator, teacher-in-training, or math specialist, there’s something for you at NCTM’s Regional Conferences & Expositions.

Learn more at www.nctm.org/regionals and follow us on
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Registration Hours
7:00 a.m.–3:00 p.m.

Exhibit Hours
8:00 a.m.–4:00 p.m.

NCTM Central
8:00 a.m.–4:00 p.m.

Fire Codes
We have made every attempt to provide adequate seating for participants at the conference, but for your safety and because of fire regulations, only those with seats will be allowed in meeting rooms. To comply with fire codes, we will have to ask persons sitting on the floor or standing to leave the room.
7:15 A.M.–7:45 A.M.

147 Regional Conference Overview & Orientation
(General Interest) Session
Whether you are new to NCTM or a seasoned veteran, every conference has something new for everyone! Hosted by members of the Board of Directors, this session will help you to maximize your overall conference experience. Learn what’s new or discover something you’ve missed in the past, find out how to navigate presentations, use the Conference App, and network with other attendees. Meet other first-time attendees and join up with conference mentors who share your particular interests!

Rose Mary Zbiek
Board of Directors, National Council of Teachers of Mathematics; Pennsylvania State University, University Park
E10AB (GREATER RICHMOND CONVENTION CENTER)

8:00 A.M.–9:00 A.M.

148 A Mathematical Tour of Richmond
(General Interest) Session
Richmond is a beautiful city with a rich history. Attendees will be introduced to a field guide for a “Mathematical Tour” they might take to examine some of Richmond’s sights through a mathematical lens! Examples include the Maury monument, the Confederate pyramid in Hollywood Cemetery, and the Virginia Capitol (designed by Thomas Jefferson).

Lynn Foshee Reed
Maggie L. Walker Governor’s School, Richmond, Virginia
B21A (GREATER RICHMOND CONVENTION CENTER)

149 Strategies for Fostering the CCSS Mathematical Practices
(General Interest) Session
The challenge as we shift to the Common Core will be teaching in ways that help develop the eight Standards for Mathematical Practice. See how to modify your existing lessons to foster these crucial skills. Handouts available.

Brad S. Fulton
Enterprise Elementary School District, Redding, California
B15B (GREATER RICHMOND CONVENTION CENTER)

150 Strategies for Teaching Beginner ELLs with Picture Books
(General Interest) Session
Principles to Actions
Picture books can help classroom teachers remove English as the barrier for participation of English language learners (ELLs). But only some fiction and nonfiction books have features that prompt integrated learning of science, mathematics, and English. Participants will experience ideal books for supporting and enhancing comprehension and engagement of beginner ELLs.

Ana Lado
Marymount University, Arlington, Virginia
GRAND BALLROOM E (MARRIOTT)

151 Using Graphs to Build Mathematical Reasoning
(Pre-K–2) Session
Learn about some of the endless number of ways children can collect and represent data. Graphing is a great way for young children to apply what they know about classification, counting, and one-to-one correspondence. Attendees will receive a booklet of ideas to immediately use in their classroom.

Linda L. Noel
Wilson School, St. Louis, Missouri
E10AB (GREATER RICHMOND CONVENTION CENTER)

152 It’s Math . . . What’s There to Talk About?
(Pre-K–5) Session
Math is serving the conversation where demonstrating mathematical understanding involves much more than calculating a correct answer. Participants will be introduced to five research-based teacher “moves” to facilitate students’ mathematical thinking and learning. Connections will be made to the eight Standards for Mathematical Practice.

Maggie M. Hackett
Sunnyside Unified School District, Tucson, Arizona
B15A (GREATER RICHMOND CONVENTION CENTER)
153
Mathematical Discourse from Question Asking to Question Answering
(3–8) Session
Getting students to talk about math is a process of asking good questions, getting students to think through and respond to those questions, and responding to the answers provided by students. In this session we will use classroom examples from our own struggles and successes facilitating this process and provide tips for developing discourse.

Dean D. Ballard
CORE Inc., Berkeley, California
Nancy McGivney
CORE Inc., Berkeley, California

154
Connect the Dots (Data Points)
(6–12) Session
In this session, we will use SMART Board software and other technology (overheads work, too) to focus on making sense out of data. Topics will include dot plots and box plots and connections between them, scatter plots, and functions modeling linear relationships between quantities interpreting the rate of change and initial value in terms of the situation it models.

Linda Treilman
Mercer County Community College, West Windsor, New Jersey

155
Ingredients for Successful Lessons: Challenging Tasks and Questions That Count
(6–12) Session
Research suggests some instructional practices have the potential to make a difference in what students learn. What are strategies to make these happen in our classrooms, and what is the role of dynamic interactive technology in supporting those practices?

Gail Burrill
Past President, National Council of Teachers of Mathematics; Michigan State University, East Lansing, Michigan

155.1
Got Linear Equations? Now Let’s See What They Mean
(9–12) Session
You have taught function, tables, graphs, intercept, and slope, but do your students really get it? Using the Common Core’s modeling, students work through stations to gather data and model the linear relationship. Worksheets, extensions, rubrics, and samples of the final project will be shared.

Stacy M. Remphrey
Unionville-Chadds Ford School District, Kennett Square, Pennsylvania

156
Linear Regression: Embrace Its Uses, But Avoid Its Abuses
(9–12, Higher Education) Session
Linear regression—a powerful tool for investigation—is an important theme in statistics and an integral part of the Common Core State Standards. However, its application and interpretations from its use should be conducted wisely. All material conforms to statistics components of CCSS and is appropriate for AP Statistics.

Kenn L. Pendleton
Montgomery College, Germantown, Maryland

157
Trends in the Interface between High School and College Mathematics
(9–12, Higher Education) Session
Today, more students take calculus in high school than in college. The number of students taking the AP Calculus exams each year exceeds the number of students taking first-semester calculus in American colleges and universities. We will explore this and other trends in the changing interface between high school and college mathematics.

Michael Boardman
Pacific University, Forest Grove, Oregon
8:00 A.M.–9:00 A.M.

158

Impacting High School Mathematics Teachers’ Knowledge and Practice
(Higher Education) Session

In this research paper we present results of the online PD project for secondary teachers. The main objectives of the program are to (1) provide teachers with a high-quality PD to address the M-CCRPE in teaching, and improve their mathematics content knowledge and pedagogy; and (2) prepare them to support student’s readiness for postsecondary mathematics.

Agida G. Manizade
Radford University, Virginia
Dragana Martinovic
University of Windsor, Canada
Laura Jacobsen
Radford University, Virginia

158.1 eW

Algebra Readiness for All: The Critical Role of Innovative Technology
(General Interest) Exhibitor Workshop

Come learn how IXL, the most widely used math subscription site in the country, is partnering with educators to ensure algebra readiness for all students. Aligned with all fifty state standards, IXL delivers truly differentiated, thoughtfully crafted technologies to engage students and close achievement gaps in K–12.

IXL Learning
San Mateo, California

158.2 eW

Walk the Number Line for Meaningful and Motivating Mathematics!
(Pre-K–5) Exhibitor Workshop

Elementary learners need a number line for powerful math concepts like skip counting, adding on, alternative algorithms for regrouping, making change, elapsed time, rounding, factoring, and fractions! You will be amazed at the unique strategies that Kim Sutton from Creative Mathematics will use with this tool! You will be ready for action on Monday morning with all the latest ideas for teaching every area of mathematics! You will sing, dance, play games, and learn lots of strategies that will change your classroom!

Creative Mathematics
Arcata, California

158.3 eW

Mathspace: Why You’ll Never Grade Math Assignments Again—Seriously!
(6–12) Exhibitor Workshop

You’ve seen it all, right? Adaptive learning? Check. Handwriting recognition? Hmm. Every math question graded step-by-step? Wait, that’s new! Imagine: automatic grading, so you focus on teaching; students hand-writing fully worked answers, with realtime feedback; and no more multiple choice! Come see why Mathspace is like nothing you’ve ever seen!

Mathspace
New York, New York

159

What’s the Difference? Exploring Subtraction Deeply in K–2
(Pre-K–2) Gallery Workshop

How can I help my students to understand different subtraction situations more deeply? This session will examine a variety of subtraction word problems that represent both separate and comparative situations. We will explore sense-making tools to help students connect their conceptual understanding of subtraction to the context of the problem.

Andria Disney
University of Montana, Missoula

160 Tg

Teaching Common Core Addition and Multiplication Strategies on the iPad
(Pre-K–5) Gallery Workshop

The Common Core emphasizes using strategies to learn math facts. Learn about iPad apps that emphasize learning strategies while also helping kids memorize their addition and multiplication facts. In this session, we’ll play with the apps and also learn how to share iPad screens on the projector. Some iPads provided, but BYO iPad if you have one.

Kara K. Carpenter
Teachley, New York, New York
Rachael Labrecque
Teachley, New York, New York
8:00 A.M.—9:15 A.M.

161
What’s the Situation Got to Do with It?
(Pre-K–5) Gallery Workshop
Principles to Actions
It is important to recognize that children view word problems differently than adults do. The action or relationship described in a word problem influences the way children think and solve the problem. Examining the different addition and subtraction problem situations will help us understand children’s thinking and their problem-solving methods.

Ruby Mora
Clark County School District, Las Vegas, Nevada
Bethany Farmer
Somerset Academy, Las Vegas, Nevada

GRAND BALLROOM AB (MARRIOTT)

162
What’s in Your Toolbox?
(3–5) Gallery Workshop
Let’s dig deep into our teacher toolboxes and dust off our number lines and hundreds charts! The presenter will energize the attendees with new and engaging hands-on activities to use with these timeless tools. These activities are sure to enhance your students’ understanding of number and operations as well stimulate their interest in mathematics.

Carolyn B. Doyle
Richmond Public Schools, Virginia

GRAND BALLROOM GHIJ (MARRIOTT)

163
A Clever Approach to Teaching and Solving Word Problems
(3–5, Preservice and In-Service) Gallery Workshop
Principles to Actions
Can we teach word problems in a way that works for students of all abilities? Join Greg Tang and experience firsthand his clever, self-guided system that teaches kids to persevere and solve word problems—on their own. You will learn strategies that make word problems easy to solve and get access to materials that make word problems easy to teach.

Greg Tang
GregTangMath.com, Cambridge, Massachusetts

GRAND BALLROOM F (MARRIOTT)

164
Moving Forward with Metric! Measurement within the Common Core
(3–8) Gallery Workshop
5K races, 2-liter soft drinks, milligrams of medicine. Metric is here! Learn hands-on methods to teach and “see” the metric system. Meet standards with classroom activities aligned with Common Core standards. And have fun! Handouts and materials provided.

Donna L. Monck
Rock Christian Academy, Easton, Pennsylvania

E25 (GREATER RICHMOND CONVENTION CENTER)

165
Pi in the 21st Century: An Irrational Exploration
(3–8) Gallery Workshop
Explore a hands-on approach to introducing your students to the concept of pi as an irrational number, part of circle equations, and a ratio. Experience a unique and wide variety of activities to bring pi alive in your classroom, including the celebration of Pi Day (March 14). Handouts, materials, and ready-to-use activities provided.

Cecil M. Phibbs
Palm Beach County School District, West Palm Beach, Florida
Brianne Tuzzolino
A.D. Henderson University School, Boca Raton, Florida

CAPITAL BALLROOM 6/7/8 (MARRIOTT)

166
We Got Rhythm
(6–8) Gallery Workshop
There are many connections between music and math. In this session, we will listen, clap, and count the beats in music, and then use musical notation to demonstrate how teachers can build a deep understanding of fractions. Calculators will play a role in helping students make connections between mathematical and musical notations and meanings.

Bob Horton
Clemson University, South Carolina

E11AB (GREATER RICHMOND CONVENTION CENTER)
8:00 A.M.–9:15 A.M.

167
What Do “Words” Have to Do with Solving Mathematical Problems?
(6–8) Gallery Workshop

Through research, teachers will have a better idea as to why students are not grasping the concept of reading word problems and then solving them successfully. Teachers will engage in activities and games in each content area, emphasizing relevant key words in order to solve problems.

Nancy A. Jones
Martin Luther King, Jr. Middle School, Richmond, Virginia
E21A (GREATER RICHMOND CONVENTION CENTER)

168
Avoiding Trigonometric Tribulations and Geometric Grief
(9–12) Gallery Workshop

Radians, unit circles and trig functions and inverses are abstract concepts that are difficult for many students, especially those with language and learning difficulties. Learn how to create simple manipulatives and use multisensory strategies and structured language to explore radians, unit circles, and the six trig functions and their inverses.

Nadia A. Carrell
Multisensory Training Institute, Atlantic Seaboard Dyslexia Education Center, Rockville, Maryland
E24 (GREATER RICHMOND CONVENTION CENTER)
8:00 A.M.–9:15 A.M.

169  
**Game Show Statistics**  
(9–12) Gallery Workshop

If your students are a little confused about statistics and think a “normal distribution” describes the usual way you pass out assignments and a z-score refers to a musical number written by Zorro, this session is for you. Come see how “Minute to Win It” activities can be used to generate statistics to demonstrate the usefulness of z-scores.

Brian Domroes  
MathScience Innovation Center, Richmond, Virginia

_E10CD (GREATER RICHMOND CONVENTION CENTER)_

171  
**Keeping It Real: Teaching Math through Real-World Questions (High School)**  
(9–12) Gallery Workshop

How have video game processor speeds changed over time? If someone’s identified by the NSA as a threat, what’s the probability that he actually is? We’ll explore real-world lessons and projects that teachers can use to address Common Core standards, foster a rigorous understanding of math, and challenge students to think critically about the world.

Karim K. Ani  
Mathalicious, Charlottesville, Virginia  
Matt Lane  
Mathalicious, Charlottesville, Virginia  
Chris Lusto  
Mathalicious, Charlottesville, Virginia

_E21B (GREATER RICHMOND CONVENTION CENTER)_

9:30 A.M.–10:30 A.M.

172  
**A Professional Development Model to Increase Student Thinking**  
(General Interest) Session

The Virginia Council of Teachers of Mathematics outreach committee will share the creation of a train-the-trainer model designed to increase student thinking with an emphasis on the process standards. Participants will leave with ideas on how to implement a similar model in their communities.

Alfreda Jernigan  
Norfolk Public School, Virginia  
Pamela R. Bailey  
George Mason University, Fairfax, Virginia  
Carolyn Holmes  
Hampton City Schools, Virginia

_B21B (GREATER RICHMOND CONVENTION CENTER)_

173  
**Primary Number and Operations through an Interactive Technology Lens**  
(Pre-K–2) Session

Learn new ways to introduce primary children to number and operations using technology. Experience how to engage students in rigorous mathematics activities to help build conceptual understanding in numbers and operations. Technologies will include tablet devices, web-based programs, and interactive whiteboard activities.

Shannon Stone  
Jefferson County Public Schools, Louisville, Kentucky

_B15A (GREATER RICHMOND CONVENTION CENTER)_

174  
**Developing Number Sense with Literature**  
(Pre-K–5) Session

In this workshop session, we will explore ways to use children’s literature to help young children develop number sense. The process will be modeled, and participants will explore actual children’s literature and discuss ways to enhance their instructional practices.

Clare V. Bell  
University of Missouri–Kansas City

_GRAND BALLROOM E (MARRIOTT)_

Download Speaker Handouts! Visit [www.nctm.org/plan](http://www.nctm.org/plan) to access available presentation handouts.
9:30 A.M.–10:30 A.M.

175
Teaching Mathematics Meaningfully for Struggling Learners
(Pre-K–5) Session
We will consider how we can use mathematical learning trajectories and evidence-based instructional strategies for struggling learners to help support these learners as they learn mathematics. The primary mathematical focus will be on number and operations across K–5.
LouAnn Lovin
James Madison University, Harrisonburg, Virginia
B21C (GREATER RICHMOND CONVENTION CENTER)

176
Meaningful and Motivating Alternative Algorithms
(3–5) Session
Principles to Actions
Do your students struggle with long division, double-digit multiplication, or other computation skills? Do they mindlessly “go through the motions” without understanding procedures? We can help! Come explore meaningful, motivating alternative ways to teach the four operations while building number sense with whole numbers, fractions, and decimals.
Lisa Hall
Henrico County Public Schools, Richmond, Virginia
John Hinton
Retired, Long Island University (C.W. Post), Brookville, New York
CAPITAL BALLROOM 4 (MARRIOTT)

177
Singin’ and Signin’ Teaches the Way Kids Learn!
(3–8) Session
Learn an engaging, kinesthetic, and award-winning approach to teaching rigorous math standards that captures students’ energy and invigorates your classroom! Leave with manipulatives and song lyrics to teach eight lessons including area, volume, and circumference, that will measurably impact learning immediately! Be ready for fun and be a student yourself!
Siegrid I. Stillman
Fallbrook Union Elementary School District, California
B21A (GREATER RICHMOND CONVENTION CENTER)

178
Developing Students’ Abilities to Describe and Reason about Data
(6–8) Session
Principles to Actions
Do you need tasks where students reason about the context of data? In this session, participants will engage in reasoning tasks about data that they could use in their own classroom. Presenters will lead a discussion about how to help students understand the context of a statistical question and the type of data the question produces.
Jennifer Nickell
North Carolina State University, Raleigh
Kayla Chandler
North Carolina State University, Raleigh
Ashley Whitehead
North Carolina State University, Raleigh
B15B (GREATER RICHMOND CONVENTION CENTER)

179
Engaging Students via Technology with Video Tasks
(6–12) Session
This session will examine how to engage, motivate, and teach the iGeneration (the Internet Generation). Participants will be provided with videos, tasks, and motivational strategies for students in grades 5–10 that can lead to building better number sense and algebraic skills.
Eric Milou
Rowan University, Glassboro, New Jersey
E10AB (GREATER RICHMOND CONVENTION CENTER)

180
Flipped Teaching and Learning for Upper Classes
(9–12, Higher Education) Session
This presentation offers participants strategies for using video tutorials for “homework” as the primary method of instruction for a variety of math courses. Lesson design, the roles of the teacher and student, use of classroom time, curriculum, and coverage of Common Core standards will be discussed in detail as they relate to flipped learning.
John A. Kerrigan
Rutgers University, New Brunswick, New Jersey
B10 (GREATER RICHMOND CONVENTION CENTER)
9:30 A.M.—10:30 A.M.

181
Relating Hypothesis Tests, Confidence Intervals, Means, and Standard Deviations
(9–12, Higher Education) Session

When testing hypotheses, the decision to reject the null hypothesis or not can be affected by mean(s) and standard deviation(s) of the sample(s). Several one-sample, two-sample, and three-sample situations will be considered. Also, confidence intervals and their relationship to hypothesis testing are part of the discussion.

Lance L. Revennaugh
Frostburg State University, Maryland
B15C (GREATER RICHMOND CONVENTION CENTER)

182
Differentiating Instruction to Reach All Students in Calculus I
(Higher Education) Session

Does your college level calculus I class have a mixture of students who’s prior high school courses range from precalculus to AP Calculus? Do you find it challenging to reach every beginning calculus student while keeping the attention of those who have had it before? Tools and ideas will be shared that will keep all of your students on their toes.

Jessica Pfeil
Fairfield University, Connecticut
GRAND BALLROOM CD (MARRIOTT)

183
“I Can Not Solve”: Engaging Reluctant Prospective Teachers in Problem Solving
(Preservice and In-Service) Session

Through this presentation, participants will learn strategies to prepare prospective elementary school teachers to teach through problem solving. Many prospective teachers lack the confidence to solve problems, and this session will help them to develop the confidence they need to move forward.

Rupam Saran
Medgar Evers College, City University of New York, New York
CAPITAL BALLROOM 5 (MARRIOTT)

183.1
Formative Assessment and Hands-On Instruction for RtI and CCSSM Success!
(General Interest) Exhibitor Workshop

Moving with Math Pre-K–12 programs integrate the four essential elements of RtI: universal screening, decision making, explicit instruction, and progress monitoring. Strategies using the C-R-A methodology that have been proven successful for reaching all students will be shared. Teachers and math directors love the ease of use and improved results.

Math Teachers Press, Inc.
Minneapolis, Minnesota
E21C (GREATER RICHMOND CONVENTION CENTER)

183.2
Teaching Statistics in the Middle Grades
(6–8) Exhibitor Workshop

In this session, we will share classroom activities that engage students in meaningful investigations of the real world through data and statistics. Learn how incorporating technology into your lessons can open opportunities for mathematical dialogue amongst your students and help them make stronger connections in mathematics.

Texas Instruments
Dallas, Texas
E22 (GREATER RICHMOND CONVENTION CENTER)

183.3
Investigations in Number, Data, and Space
(Pre-K–5) Exhibitor Workshop

Experience CCSSM through Investigations and the Common Core—interactive whiteboard, assessment, and differentiated activities that focus on the Standards for Mathematical Content will be shared for use in your classroom.

Pearson
Washington, D.C.
E11C (GREATER RICHMOND CONVENTION CENTER)

Extra! Extra!
Pick up your copy of the Program Updates.
9:45 A.M.—11:00 A.M.

184
Kinesthetic Strategies for Integrating Math and ELA
(Pre-K–2) Gallery Workshop
Is your ELA (English language arts) block a long 90-minute? Learn innovative ideas for integrating kinesthetic math practice into ELA. Learn fun, efficient strategies for increasing math instruction time and meeting the Common Core standards. Gain ideas for increasing your students’ focus, attention span, math ability, writing, and creative thinking.
Suzy Koontz
National Math Foundation, Ithaca, New York
E23 (GREATER RICHMOND CONVENTION CENTER)

185
Let’s Get Physical—with Math on the Floor!
(Pre-K–2) Gallery Workshop
In this highly interactive session, teachers will see the value of kinesthetically exploring math concepts on a large 100-square floor grid. All number sense concepts will be addressed, including calendar, with additional strategies shared for other strands. Ideas for making your own classroom grid will be readily shared. Bring your camera!
Wendy E. Hill
Retired Elementary Teacher, Mississauga, Canada
E11AB (GREATER RICHMOND CONVENTION CENTER)

186
Thinking Strategically: Connecting Addition and Subtraction
(Pre-K–2) Gallery Workshop
By the end of grade 2, students are expected to explain why addition and subtraction strategies work. Three strategies lead students to the connections between the two operations, and they provide the underlying reasoning to the “basic facts.” Can these be extended to multi-digit computation? Yes! Let’s arm our students with meaningful strategies!
Rob Nickerson
ORIGO Education, St. Charles, Missouri
GRAND BALLROOM AB (MARRIOTT)

187
Even Fractions Are Better with Chocolate!
(3–5) Gallery Workshop
Touch the chocolate, draw the chocolate, and think the chocolate—and eat it too? This is the research-based CRA approach to teaching, proven very successful with struggling learners. Experience lessons that use manipulatives, including chocolate bars, and the CRA approach to develop student understanding of fraction concepts in grades 3–5 of the Common Core.
Sonja L. Goerdt
St. Cloud State University, St Cloud, Minnesota
Amy L. Johnson
Math Teachers Press, Inc, Minneapolis, Minnesota
E10CD (GREATER RICHMOND CONVENTION CENTER)

188
What Is a Million?
(3–5) Gallery Workshop
Have your students struggled with a million? In this presentation, participants will make a million, use manipulatives to show place value concepts, and work on developing other numeracy concepts. What do the students need to make a million? What patterns do you observe in building a million? Come experience a fun way to develop place value concepts.
Patti A. Schneider
Hanover County Public Schools, Mechanicsville, Virginia
Elyse Coleman Coleman
Spotsylvania County, Spotsylvania, Virginia
E24 (GREATER RICHMOND CONVENTION CENTER)

189
Explore Cryptography with Two Guys
(3–8) Gallery Workshop
From Caesar to computer communication, cryptography has been around for centuries. Come explore the mathematical concepts behind some of history’s best-known methods for sending secret messages. Learn how students’ natural fascination with secret codes leads to critical thinking as well as enjoyment of math.
Justin C. Hose
Frederick County Public Schools, Winchester, Virginia
Tres Wells
Albemarle County Public Schools, Charlottesville, Virginia
E21B (GREATER RICHMOND CONVENTION CENTER)
9:45 A.M.—11:00 A.M.

190  DL  
**Multisensory Algebra: Building Solutions, Proof by Construction**  
*(6–8) Gallery Workshop*

Students benefit from using manipulatives that provide tactile kinesthetic links to abstract calculations. Participants will construct models of algebraic functions to illustrate concepts and function solutions. Linear, quadratic, and exponential functions will be modeled using common objects and manipulatives. Focus will be on regular, LD, and ELL classes.

*Marilyn Zecher*  
The Multisensory Training Institute of ASDEC, Rockville, Maryland  
**E25 (GREATER RICHMOND CONVENTION CENTER)**

191  DL  
**Strategies to Teach Fractions to Students Who Struggle**  
*(6–8) Gallery Workshop*

*Principles to Actions*

Helping students who are identified as learners who struggle to understand fractions is critical to their success in middle grades. This workshop focuses on innovative strategies that build conceptual understanding and develop skills with fractions. Generalizations leading to algebraic reasoning are developed within the fraction context.

*Rebecca J. Darrough*  
University of Missouri, Columbia  
*Barbara J. Dougherty*  
University of Missouri, Columbia  
*William W. Deleeuw*  
University of Missouri, Columbia  
**GRAND BALLROOM GHIJ (MARRIOTT)**

192  TG  
**Creatively Integrate CCSSM, Questioning Techniques, Interactive Technologies, and Mathematically-Rich Engaging Problems**  
*(6–12) Gallery Workshop*

Hands-on experience: four activities that promote active student engagement and are mapped to the CCSSM standards and mathematical practices. Learn specific instructional strategies and obtain questioning techniques that stimulate deeper conceptual understanding. Discover, explore, investigate, and analyze with appropriate technology (iPad apps, handhelds, software).

*Tom Reardon*  
Youngstown State University, Ohio  
**GRAND BALLROOM F (MARRIOTT)**

193  
**Bicycles and Music: A Mean Connection**  
*(9–12) Gallery Workshop*

There’s a reason why it always feel like you’re almost always riding uphill on a bicycle trip. In this hands-on session (no, we won’t be riding bikes), we’ll explore this phenomenon, and then tie our findings into an investigation of the arithmetic, geometric, and harmonic means. All of these means tie directly into music, and we’ll see how.

*Bob Horton*  
Clemson University, South Carolina  
**CAPITAL BALLROOM 6/7/8 (MARRIOTT)**

194  
**“Pedi for the Lady” and Other Area and Volume Activities**  
*(9–12) Gallery Workshop*

Ever wondered how much polish it would take to give the Statue of Liberty a pedicure? Delve into activities where innovative ideas are shared to make finding the area and volume of irregular shapes interesting. Solutions will be found through Riemann sums and integration using hands-on methods as well as graphing calculators.

*Deedee Stanfield Henderson*  
Oxford High School, Alabama  
**CAPITAL BALLROOM 1/2/3 (MARRIOTT)**
9:45 A.M.–11:00 A.M.

195
New and Preservice Teachers Workshop
(Preservice and In-Service) Gallery Workshop
Find answers to your questions on topics such as classroom management, parents, motivation, and keeping your sanity. Connect with other new teachers, learn from experienced professionals, and find resources to engage you and your students. You might even win a prize.

David Barnes
National Council of Teachers of Mathematics, Reston, Virginia
E21A (GREATER RICHMOND CONVENTION CENTER)

11:00 A.M.–12:00 P.M.

196
Formative Assessment: A Beyond “Checking for Understanding” Classroom Process!
(General Interest) Session
In this motivational session, discover the difference between checking for understanding in class and the deeper formative assessment process and work of your students. We will explore the six essential elements of formative feedback as part of a lesson design that leads to significant improvement in student learning. Come join the discussion!

Timothy D. Kanold
Loyola University, Chicago, Illinois
B21C (GREATER RICHMOND CONVENTION CENTER)

197
Math Workshop: A Differentiated Approach to Teaching Mathematics
(General Interest) Session
Math Workshop is a structure for mathematics instruction that focuses on differentiation. Participants will learn why it is a valuable vehicle for mathematics instruction and how to establish routines and procedures that will allow student choice, meaningful small-group guided math, and engaging learning stations.

Jennifer Wolfe Lempp
Fairfax County Public Schools, Virginia
B21A (GREATER RICHMOND CONVENTION CENTER)

198
Methods of Solving Complex Math Problems
(General Interest) Session
The winner of the Math Olympiads, and the author of a new book, \textit{Methods of Solving Complex Geometry Problems}, developed her own way of learning mathematics. During this talk she will share with you her ideas and methods of developing mathematical talent for geometry problem solving.

Ellina Grigorieva
Texas Woman’s University, Denton
GRAND BALLROOM CD (MARRIOTT)

199
Helping Parents Understand a Constructivist Approach to Building Computational Fluency
(Pre-K–2) Session
In this session, participants will be led through a parent presentation with examples of student work, fluency-building games and activities, and ways to extend math learning at home. There will be an emphasis on helping parents to understand the value of multiple computational strategies and supporting their students in using these strategies at home.

Yojairy Sands
Cathedral School of St. John the Divine, New York, New York
Alan Donaldson
Cathedral School of St. John the Divine, New York, New York
B10 (GREATER RICHMOND CONVENTION CENTER)

200
More or Less: Developing the Concepts of Comparison
(Pre-K–5) Session
Principles to Actions
In this session, we will explore the developmental progression of comparison. We will consider the differences between direct and indirect comparison as well as additive and multiplicative thinking. We will discuss how these concepts are linked to the four operations and how to carefully develop comparison ideas.

Debi DePaul
Origo Education, Inc., St. Charles, Missouri
E10AB (GREATER RICHMOND CONVENTION CENTER)
11:00 A.M.–12:00 P.M.

201
Not All Definitions Are Created Equal (in the Elementary Classroom)
(3–5, Preservice and In-Service) Session
Definitions play a central role in both the teaching and learning of mathematics at the elementary level. This presentation describes two considerations (mathematics as a discipline and students as learners) that can be used to judge the appropriateness of definitions used at the elementary level, primarily in the context of even and odd numbers.

Leah Shilling-Traina
Longwood University, Farmville, Virginia
Virginia Vimpney Lewis
Longwood University, Farmville, Virginia
Maria A. Timmerman
Longwood University, Farmville, Virginia

202
Learning to Love Fractions
(3–8) Session
Imagine a world that loves fractions. Presenting fractions is the key to your students’ success. This session will compare traditional to nontraditional teaching strategies for simplifying, adding, and subtracting fractions. Did you know students can be taught to add and subtract fractions quickly in their heads without finding a common denominator?

Joseph C. Mason
Hagerstown Community College, Maryland

203
Flipping Your Classroom: What, Why, and, Most Importantly, How
(6–12) Session
If only my students would do their homework. If only my students had more practice time. If only I could give my students more individual attention. If only I could take a fresh approach without starting over completely. If only I could walk away at the end of a presentation and immediately implement what I have learned. This is that presentation.

Chip F. McNamara
Henrico County Public Schools, Richmond, Virginia
Adam T. Semo
Henrico County Public Schools, Richmond, Virginia

204
LOCUS: A Tool for Assessing Statistical Reasoning in CCSSM
(6–12) Session
This session will present diagnostic assessments for measuring students’ understanding of statistics as outlined in the Common Core State Standards and Guidelines for Assessment and Instruction in Statistics Education. These tools have implications for the research community as well as for classroom teachers, as they can be used in a formative manner.

Steve Foti
University of Florida, Gainesville
Tim Jacobbe
University of Florida, Gainesville

205
“How Can I Solve It?“: Using Manipulatives for Deeper Understanding
(9–12) Session
Come participate in sample lessons and problems that use manipulatives to build a deep understanding of negatives as well as to solve equations. Teachers will receive ideas and materials that they can use in their own classrooms.

Lonnie A. Bellman
Lemoore High School, California

206
Transition to College Mathematics and Statistics for Non-STEM Students
(9–12, Higher Education) Session
An overview of Transition to College Mathematics and Statistics (TCMS), an emerging problem-based, inquiry-oriented, technology-rich fourth-year course funded by the National Science Foundation. It is intended for the large number of students planning to enter college programs or workforce apprentice programs that do not require calculus.

Christian R. Hirsch
Western Michigan University, Kalamazoo
11:00 A.M.–12:00 P.M.

207 Integrating Ethnomathematical Ideas from Indigenous Cultures in Mathematics Teaching
(Pre-service and In-Service) Session

This presentation highlights in-service teachers’ investigations in ethnomathematics through immersion in indigenous cultures. We will share mathematical ideas that transpired in out-of-school settings and lessons that teachers developed during their study abroad experiences.

Iman C. Chahine
Georgia State University, Atlanta

CAPITAL BALLROOM 4 (MARRIOTT)

11:30 A.M.–12:00 P.M.

208 Bring Your Own Device—Are You Kidding Me?
(General Interest) Burst

“BYOD” is when students bring their own technological device to the classroom to increase their engagement and enhance their learning. I will share my experience implementing BYOD in the high school mathematics classroom. Successes and failures will be discussed, as well as how it has changed how I teach mathematics.

Wendy E. Bartlett
Parkland Magnet High School, Winston-Salem, North Carolina

E21C (GREATER RICHMOND CONVENTION CENTER)
11:30 A.M.–12:00 P.M.

**210**
*Students Reveal How Ongoing Assessments Helped Them Learn Math*
(General Interest) Burst
Principles to Actions

Formative assessments are necessary for student learning. Students reported in course evaluations that biweekly, ungraded quizzes were helpful in aiding their understanding of the mathematics content and allowed them to formalize their ideas before being graded. Participants will discuss pedagogical considerations.

Barbara A. Swartz  
McDaniel College, Westminster, Maryland
Holly Henderson Pinter  
Western Carolina University, Cullowhee, North Carolina

**GRAND BALLROOM F (MARRIOTT)**

**211**
*Find the Math in a Children’s Book!*
(Pre-K–2) Burst
Principles to Actions

Participants will experience how we take a children’s book and find activities to do mathematics.

Maria Diamantis  
Southern Connecticut State University, New Haven
Adam Goldberg  
Southern Connecticut State University, New Haven

**GRAND BALLROOM GHIJ (MARRIOTT)**

**212**
*All the Facts about Fact Fluency*
(Pre-K–5) Burst
Principles to Actions

Come and learn some quick ways to incorporate fact fluency into your math block. We will show different games, technology, and data tracking to help increase student fact scores.

Kathryn Busbey  
Granby Public Schools, Connecticut
Kristin Rice  
Granby Public Schools, Connecticut

**E24 (GREATER RICHMOND CONVENTION CENTER)**

**213**
*Realizing Rigor in the Elementary Mathematics Classroom*
(3–5, Preservice and In-Service) Burst
Principles to Actions

To realize rigor in elementary classrooms, teachers must transform instruction to require students to think and reason. This interactive session will explain why rigor is necessary in today’s classrooms and include problem-solving experiences teachers can use with students to promote a shift in thinking. Rigor analysis tools will be included.

Ruth Harbin Miles  
Board of Directors, National Council of Teachers of Mathematics; Mary Baldwin University, Staunton, Virginia
Gayle Thyring  
Falmouth Elementary School, Virginia

**CAPITAL BALLROOM 1/2/3 (MARRIOTT)**

**214**
*A Problem of the Day for Every Math Class*
(6–8) Burst
Principles to Actions

This presentation will discuss how to select and find problems that will get your students excited about math. Incorporating a mathematical problem every day into your math instruction is not only a good way to get your students’ brains working, but it also leads to developing essential problem-solving skills.

Kristen L. Apraiz  
University of Florida, Gainesville

**E23 (GREATER RICHMOND CONVENTION CENTER)**

**215**
*Design & Build Your Dream House*
(6–8) Burst
Principles to Actions

Design & Build Your Dream House is a hands-on teaching strategy that incorporates an abundance of geometry skills and learning objectives. The strategy allows students to create their dream house using concepts learned in the classroom. Students are enthusiastically engaged in learning geometry from design to construction.

Amy K. Crawford  
Summit Academy Secondary, Youngstown, Ohio

**E25 (GREATER RICHMOND CONVENTION CENTER)**
11:30 A.M.–12:00 P.M.

216
Assumption: The Missing Component in Probability Reasoning
(6–12, Research) Burst

Our session will use exemplars of mathematics problems and learners’ work to demonstrate their lack of capacities to reason mathematically in probability contexts. We suggest that there is a critical need for addressing and clarifying the role of probability assumption in order to help students establish a systematical view of this subject.

Yating Liu
Old Dominion University, Norfolk, Virginia

GRAND BALLROOM AB (MARRIOTT)

217
Master Proofs with Number Patterns
(9–12) Burst

Introduce your students to reasoning and proof by using a game like Mastermind, but with numbers. We will share examples of students justifying their solutions and of proving that a solution does not work. With Digits, students are excited to take part in activities that are accessible, yet that require mathematical reasoning.

Peter Sell
New York City Department of Education, New York

E11AB (GREATER RICHMOND CONVENTION CENTER)

218
Curriculum Alignment as a Component of Math Teacher Development
(9–12, Higher Education) Session

Math faculty helped a community to identify and solve areas of curriculum non-alignment and to create high school course enhancements, so that high school graduates would be prepared to succeed in college STEM courses. Steps included a targeted mathematics graduate course and development of curriculum alignment tools for high school teachers.

Mikhail M. Bouniaev
University of Texas at Brownsville

Jerzy Mogilski
University of Texas at Brownsville

James Hilsenbeck
University of Texas at Brownsville

CAPITAL BALLROOM 6/7/8 (MARRIOTT)

219
Exploring the Creativity of Your Math Students
(Higher Education) Session

Several projects and class activities that have been used successfully in calculus classes will be presented. The topics include maximizing the volume of a box, related rates, solids of revolution, and selling a course. No calculus knowledge needed to adapt these ideas to your classroom.

Joan Van Glabek
Edison State College, Naples, Florida

Christy Smith
Edison State College, Port Charlotte, Florida

Ron Smith
Edison State College, Port Charlotte, Florida

E21B (GREATER RICHMOND CONVENTION CENTER)

12:30 P.M.–1:00 P.M.

220
Bringing STEM into the Middle School Mathematics Classroom
(General Interest) Burst

Principles to Actions

Participants will be involved in a build activity that puts mathematics into action. All materials will be provided and the participants will be able to take their item home. The mathematics exploration involved will be at the grades 6–8 level, to include circumference, measurement, ratios and proportions, but the activity can easily be extended to algebra 1, geometry, and physics. Participants will brainstorm ways to use the activity in the classroom.

Diane Leighty
Board Member, Virginia Council of Teachers of Mathematics; Retired K–12 Math Coordinator, Richmond, Virginia

GRAND BALLROOM GHIJ (MARRIOTT)

Thank you to all of the volunteers who help make this conference a success!
12:30 P.M.–1:00 P.M.

221 Instructional Coaching in the Math Classroom
(General Interest) Burst
This session will introduce you to the role of instructional coaches and how to best utilize them in your classroom. We will also look at how instructional coaches can document their progress with teachers and use data to drive their focus in the school.
Kathryn Busbey
Granby Public Schools, Connecticut
Kristin Rice
Granby Public Schools, Connecticut
E25 (GREATER RICHMOND CONVENTION CENTER)

222 Play Your GAMES: Generating Academic Meaning from Entertainment Systems
(General Interest) Burst
Have you ever wondered why kids play video games? With each gaming session, they are learning—how to succeed, fail, and solve problems! In this session, teachers will develop a framework for creating a high-engagement gaming program that emphasizes problem solving, scientific methods, and STEM connections, while encouraging accountability.
Tim Kubinak
Suffolk Public Schools, Virginia
GRAND BALLROOM F (MARRIOTT)

223 Teachers as Researchers: A Look at Lesson Study
(General Interest) Burst
Learn about lesson study as a professional development platform that encourages teacher researchers to improve their craft and student outcomes through planning, observation, and reflection.
Joan M. Kernan
MathScience Innovation Center, Richmond, Virginia
E11AB (GREATER RICHMOND CONVENTION CENTER)

224 Exploring Patterns in Guided Math Groups
(Pre-K–2, Preservice and In-Service) Burst
Engage your students with guided math groups! Discover ways to differentiate lessons and workstation activities on patterns. Become familiar with assessing student understanding through reviewing samples of student work from independent stations. Attendees will receive samples of effective math workstations to use with K–2 students.
Monica Hocot
Williamsburg James City County Public Schools, Virginia
Karen LaPorte
Williamsburg James City County Public Schools, Virginia
E10CD (GREATER RICHMOND CONVENTION CENTER)

225 Encourage Entrepreneurship in Your Students
(Pre-K–5) Burst
Challenge your students to design a business starting from the ground up. This workshop will describe how to construct a classroom business where students develop a product, conduct market research, and sell their product. Students learn firsthand the workings of a business and foster mathematical and critical thinking skills.
Alissa White
Chesterfield Day School, Missouri
E21B (GREATER RICHMOND CONVENTION CENTER)

226 Reacting to Fractions: A Visual and Cultural Approach
(Pre-K–5) Burst
Rebecca Klemm, Ph.D., (Statistics), will share her data and experiences in multiple learning environments to show elementary-grade-level comprehension of fractions. She will discuss how visual manipulatives, expressions, and historical narratives create a holistic conceptualization of fractions.
Rebecca J. Klemm
NumbersAlive!, Washington, D.C.
E21A (GREATER RICHMOND CONVENTION CENTER)
227
What Is a Graph, Really?
(6–12) Burst
Students often do not fully grasp that the Cartesian graph of a mathematical statement in $x$ and $y$ is a depiction of the set of ordered pairs that satisfy the statement. In this session, we look at mathematical statements (not functions!) and graphs that strongly encourage students to grasp the fundamental nature of a graph in meaningful ways. We will look at the graphs of statements that may surprise you, including $\sin(x) < \sin(y)$ and $|x+y| = |x+y|$. Come join us!

GT Springer
HP Calculators, San Diego, California

228
Formative Assessment Lesson: A 3-D Snapshot of Student Learning
(9–12) Burst
Implementation of a formative assessment lesson (FAL) developed through the Mathematics Assessment Project enabled students to activate their prior knowledge and deepen their comprehension by building meaningful connections. Assessment analyses indicated a significant growth in learning, but it also revealed potential threats of FAL implementation.

Sandra Wilder
Northeast Ohio Medical University (NEOMED), Rootstown, Ohio

229
The Cure for the Common Core
(9–12) Burst
Over the past year, a small group of teachers and curriculum developers from Illustrative Mathematics, High Tech High, and Mathalicious have teamed up to create high school course plans and unit blueprints. This resource details a pathway for translating CCSSM into a sequence of classroom experiences.

Patrick Callahan
University of California, Los Angeles
Kate Nowak
Mathalicious, Charlottesville, Virginia

230
How to Teach When You Can’t Talk: Developing Learning Communities
(Higher Education) Burst
Principles to Actions
After cancer treatment I couldn’t talk for a full period, so no lectures. My wife, a mathematics educator, helped set up learning communities in my upper division math classes so that the students could work together. This led to some of my best teaching. I can talk now, but I’m still looking at how I can develop such communities in my classes.

Michael J. McConnell
Clarion University, Pennsylvania
Marcella K. McConnell
Clarion University, Pennsylvania

231
Changing Dynamics in Collaborative Communities of Learners
(Preservice and In-Service) Burst
We will present data from a professional development program, Arizona Mathematics Partnership, a National Science Foundation–funded project. The professional development includes school-based “Collaborative Communities of Learner” groups. This presentation focuses on changing dynamics in the groups from year 1 to year 2 of the project.

Judy Sutor
Scottsdale Community College, Arizona
Katie Cassinat
Scottsdale Community College, Arizona

232
Challenges for Rigor in the Mathematics Classroom
(General Interest) Session
In teaching good mathematics well, rigor plays a big part. What is mathematical rigor? What does it look like in mathematics classrooms? How can mathematics teachers at all grade levels facilitate rigor in their classrooms? Can we note student progress towards rigor?

Don S. Balka
Saint Mary’s College, Notre Dame, Indiana
12:30 P.M.–1:30 P.M.

233  
**National Assessment of Educational Progress: A Treasure Trove of Mathematics Problems**  
(General Interest) Session

**Principles to Actions**

Participants will learn how to make use of online tools to access released items from the National Assessment. They will also learn how to compare their students’ performance on items with students in their state and the nation. Techniques will be shared for using these items to help prepare students for standardized testing.

Crystal Walcott  
Indiana University-Purdue University, Columbus

Kathryn Essex  
Indiana University-Purdue University, Columbus

**GRAND BALLROOM CD (MARRIOTT)**

234  
**Native American–Based Mathematics Materials**  
(General Interest) Session

This session presents mathematics materials based in the culture and mathematics of Native American peoples for integration into K–12 or undergraduate courses. These materials—both paper and electronic—are classroom ready, and are developed and piloted in consultation with tribes throughout the West.

Charles P. Funkhouser  
California State University, Fullerton

Miles R. Pfahl  
Turtle Mountain Community College, Belcourt, North Dakota

Harriet C. Edwards  
California State University, Fullerton

**CAPITAL BALLROOM 5 (MARRIOTT)**

235  
**Becoming Numerically Nimble: Effective Practices That Lead to Fluency**  
(Pre-K–2) Session

Be more efficient and selective about time devoted to number. Highly engaging games and instructional strategies will help you enhance number sense, build confidence and competence in your students, and increase their fluency with number.

Laura Choate  
Fallbrook Union Elementary School District, California

**B15C (GREATER RICHMOND CONVENTION CENTER)**

236  
**Masterpieces and Mathematics: Exploring Mathematics in Visual Art**  
(Pre-K–2) Session

Famous artists and their masterpieces will be explored through the lens of mathematics with an emphasis on linking to the NCTM standards. Works by Mondrian, Thiebaud, Kelly, Delauney, Hirst, and Dali will be used to showcase various math concepts. The use of children’s literature to connect the visual arts and mathematics will also be discussed.

Lynne Pendergrass  
All Saints’ Episcopal School, Fort Worth, Texas

**B21B (GREATER RICHMOND CONVENTION CENTER)**

237  
**Developing Mathematical Reasoning and Discourse to Strengthen Problem-Solving Proficiency**  
(3–8) Session

The speaker will actively engage attendees in real-life problem solving, modeling effective questioning strategies and the use of vocabulary to elicit reasoning and discourse and build essential concepts. She will offer strategies to identify the question, eliminate nonrelevant information, and translate information into mathematical equations. Handouts will be provided.

Donna L. Knoell  
Educational Consultant, Shawnee Mission, Kansas

**B15B (GREATER RICHMOND CONVENTION CENTER)**

238  
**The Area Model, through the Years!**  
(3–8) Session

The focus of this session will be on the operations of multiplication and division. Participants will discover how the area model can be used to help build fluency and conceptual understanding. Participants will take part in hands-on demonstrations of how the area model can be implemented from grade 3 all the way to algebra 1.

Mark Schmit  
ETA hand2mind, Vernon Hills, Illinois

**B21A (GREATER RICHMOND CONVENTION CENTER)**
12:30 P.M.–1:30 P.M.

239
All about Changes: What Every Middle Schooler Should Know
(6–8) Session
Middle school is all about changes, especially in the context of the Common Core State Standards for math. Let’s investigate ways to utilize technology to better incorporate proportional reasoning through measurement conversions, unit rates, and rates of change in grades 6–8.
Lorie C. McFee
North Buncombe High School, Weaverville, North Carolina
CAPITAL BALLROOM 4 (MARRIOTT)

240
How Singapore’s Visual Models Enable All Students to Develop Algebraic Thinking
(6–8) Session
This session will focus on visual models and visualization used in the highly successful Singapore curriculum that provide students with entry points to complex problems and develop deep understanding of topics such as operations with fractions, ratio, and algebraic manipulation. Examples of their rich problems will also be shown.
Andy Clark
Retired, Portland Public Schools, Oregon
GRAND BALLROOM E (MARRIOTT)

241
RtI in Middle School—Ready to Instruct!
(6–8) Session
RtI is used to help struggling students. So what is RtI? Repeating taught information? Radical teaching ideas? Repairs to instruction? All of the above! Let us help you make sense of teaching math to students who need help beyond the regular math classroom. Leave with great ideas to use with your students to help build success in math.
Melinda Griffin
Williamsburg-James City County Public Schools/College of William & Mary, Virginia
Kay Bennett
Gloucester Public Schools, Virginia
E10AB (GREATER RICHMOND CONVENTION CENTER)

242
Using Geometric Transformations and Matrices to Create Beautiful Fractals
(9–12 Session
Engage your students with this project that allows them to use powerful mathematics while using their own creative ideas to build fractals. We will explore the mathematical ideas using geometry, trigonometry, and matrices, and we will use a free Java applet to create the fractal images. The project is appropriate for algebra 2 and precalculus students.
Maria L. Hernandez
North Carolina School of Science and Mathematics, Durham
B15A (GREATER RICHMOND CONVENTION CENTER)

243
Proofs of Ten Theorems from First Semester Calculus
(9–12, Higher Education) Session
The proofs of the key theorems from calculus can be made accessible to high school students if they are presented in an intuitive, flowing style. Eschewing cheap algebra tricks, and with the aim of increasing understanding, I will present geometry-based proofs of ten central theorems from differential calculus.
William Rose
Montgomery Blair High School, Silver Spring, Maryland
B10 (GREATER RICHMOND CONVENTION CENTER)

243.1
Mastery Ed: Tier 2 and 3 Intensive Math Interventions
(3–8) Exhibitor Workshop
Research indicates that the use of visual representations of mathematical ideas is critical to building understanding in students and teachers. This workshop will demonstrate targeted interventions for Tier 2 and 3 students. Attendees will receive samples of the visual tools and hands-on instruction to teach addition/subtraction and multiplication/division.
Mastery Ed
Fallbrook, California
E21C (GREATER RICHMOND CONVENTION CENTER)
Looking for lessons, activities, and teacher resources? Check out www.nctm.org

**243.2** 
*Math Navigator: Helping Kids Fix Misconceptions about Math*

(3–8) Exhibitor Workshop

Why do some students struggle with basic math concepts? Pearson’s Math Navigator intervention program targets misconceptions that prevent students from mastering the foundational concepts that result in poor performance. Learn how the Math Navigator Screener quickly diagnoses specific weaknesses and makes recommendations among the twenty-six skills modules.

*Pearson Education*  
Glenview, Illinois

**E11C (GREATER RICHMOND CONVENTION CENTER)**

**243.3** 
*Notebook Foldables® for Secondary Math*

(6–12) Exhibitor Workshop

Recharge your middle and high school students’ math journals and turn on the motivation factor via 3-D interactive graphic organizers, also known as Notebook Foldables®. Depart with a mini-composition book filled with immediately usable ideas sure to foster lasting understanding—even in your most reluctant learners.

*Dinah-Might Adventures*  
San Antonio, Texas

**E22 (GREATER RICHMOND CONVENTION CENTER)**

**244**

*Board Hot Topic: Assessing Your Assessment Practices: Do They Measure Up to Support Student Learning?*

(General Interest) Session

*Principles to Actions*

Do your assessments measure conceptual understanding, mathematical processes and practices, and procedural skills? How can results best support students’ learning? How can released tasks, including PARCC and SBAC prototypes, be used as instructional tools? Join us to learn research-informed, practical ways to increase the quality of your assessments, as described in NCTM’s *Principles to Actions: Ensuring Mathematical Success for All.*

*Rose Mary Zbiek*  
Board of Directors, National Council of Teachers of Mathematics; Pennsylvania State University, University Park

*Diane J. Briars*  
President, National Council of Teachers of Mathematics, Reston, Virginia

**GRAND BALLROOM GHIJ (MARRIOTT)**

**245**

*Building a Solid Foundation in Number Sense*

(Pre-K–2) Gallery Workshop

*Principles to Actions*

Do you have students counting on their fingers to add? What those students lack is number sense. Number sense can’t be taught, it has to be experienced. So come experience activities involving a MathRack, number path, and subitizing that will help develop your students’ number sense and their ability to add and subtract flexibly and fluently.

*Christina Tondevold*  
Mathematically Minded, LLC, Orofino, Idaho

*Lynn Rule*  
Retired Teacher, Wheaton, Illinois

**CAPITAL BALLROOM 1/2/3 (MARRIOTT)**
1:30 P.M.–2:45 P.M.

246 Helping Students Understand and Make Sense of the Number Line
(Pre-K–2 Gallery Workshop)

Explore the power of the number line in the early childhood mathematics classroom. Ideas will focus on using the number line as a visual representation for sharing students’ thinking and mathematical strategies as they problem solve. Special emphasis will be placed on helping students move from a traditional to an open number line.

Mary Branch Pronk
Kate Waller Barrett Elementary, Stafford County, Virginia
Susan Sydla
Hartwood Elementary School, Stafford County, Virginia

E11AB (GREATER RICHMOND CONVENTION CENTER)

247 Got Place Value??
(Pre-K–5 Gallery Workshop)

What is place value and how does it progress in the Common Core State Standards? Children learn place value conceptually, and then move into procedural understanding. Examining, modeling, and working through place value activities will help us see how students develop a deep understanding of place value.

Bethany Farmer
Somerset Academy, Las Vegas, Nevada
Kayla Miller
Somerset Emerson, Las Vegas, Nevada
David Janssen
Southern Nevada Regional Professional Development Program, Las Vegas

CAPITAL BALLROOM 6/7/8 (MARRIOTT)

248 Hands-on Approach to Teaching Decimal and Fraction Concepts
(3–5 Gallery Workshop)

Are your students having a hard time working with rational numbers? Come learn some hands-on activities that will increase your students’ understanding of rational numbers. We will be using number lines, cards, and dice to explore ways to build students’ and teachers’ understanding of decimals and fractions.

Wendy West
Fairfax County Public Schools, Virginia

E25 (GREATER RICHMOND CONVENTION CENTER)

249 Powerful Paper Folding Practice for Area, Perimeter, and Volume
(3–5, Preservice and In-Service) Gallery Workshop

Turn off the electronics for a session of simple but powerful paper folding activities to introduce and reinforce concepts of area, perimeter, and volume.

James J. Clayton
Saint Peter’s University, Jersey City, New Jersey

GRAND BALLROOM AB (MARRIOTT)

250 Seeing Is Believing! Using Concrete Manipulatives to Model Fraction Division
(3–8) Gallery Workshop

Why “multiply by the reciprocal” when dividing fractions? During this session, you will explore hands-on activities that support meaningful use and understanding of common algorithms. You will leave with instructional strategies that promote student understanding of fraction division and a set of rigorous and engaging tasks that support student success.

Marsha C. McCrary
University of Georgia, Athens

E23 (GREATER RICHMOND CONVENTION CENTER)

251 Thanks for Teaching Me Like I’m Smart: Developing Rich Tasks
(6–8) Gallery Workshop

Learn how to develop creative rich tasks for your students that motivate and inspire them to problem-solve, make conjectures, build connections, and develop conceptual understanding. We will share three surefire strategies to jump-start task development for your classroom and explore techniques for implementation, monitoring, and assessment.

Beth Kobett
Stevenson University, Baltimore, Maryland
Zac Stavish
Howard County Public Schools, Ellicott City, Maryland
Alexandra Weyforth
Howard County Public Schools, Columbia, Maryland

E10CD (GREATER RICHMOND CONVENTION CENTER)
1:30 P.M.–2:45 P.M.

252 Game On! Math Breaks That Teach
(6–12) Gallery Workshop

Codebreak a sequence of three numbers; guess the word stuck on your forehead; and revel in the world of board games with the highly rated Santorini. These games all engage and challenge at a variety of levels. Play MATH-termind, Mathbanz, and Santorini yourself to see how they could work in your class to establish a culture of problem solving.

Nina Chung Otterson
The Hotchkiss School, Lakeville, Connecticut

E24 (GREATER RICHMOND CONVENTION CENTER)

253 Shuffleboard, Racecars, and Reaction Times: Find the Algebraic Connection
(6–12) Gallery Workshop

Principles to Actions

Participants will create a playing field and write the equation that represents the possible points scored in the game. They will conduct time trials, predict who would win if there was a car race, and have a race to see if the predicted winner wins. They will also measure reaction time, calculate measures of central tendency, and create a histogram.

Claudia D. Maness
CORD Communications, Waco, Texas

GRAND BALLROOM F (MARRIOTT)

254 Algebra Activities from Automotive, Business, and Constructions
(9–12) Gallery Workshop

You will participate and receive three engaging hands-on classroom activities that highlight Common Core Standards for Mathematical Practice. The activities will span many career paths. The math topics include linear equations, systems of equations, and exponential. Join us to see how project-based activities can increase learning and provide relevance.

Tom W. Moore
Thompson School District, Loveland, Colorado

E21A (GREATER RICHMOND CONVENTION CENTER)

2:00 P.M.–3:00 P.M.

255 TG Illuminate Your Classroom and Teach Conceptually Using Free Virtual Manipulatives
(Preservice and In-Service) Gallery Workshop

Come explore Illuminations’ free virtual manipulatives to keep up with the technological trends in education! These physical and virtual manipulatives allow students to create conjectures, develop reasoning skills, and explore mathematics conceptually. Questions for students, pedagogical recommendations, and accompanying resources will be provided.

Ann Kong
National Council of Teachers of Mathematics, Reston, Virginia

E21B (GREATER RICHMOND CONVENTION CENTER)

256 “There’s an App for That!”: Geometer’s Sketchpad on the iPad
(General Interest) Session

Love GSP? Have iPads in the classroom? Come learn how to create GSP sketches that work on iPads. We will demonstrate various techniques that utilize functionalities of an iPad to allow your students to explore topics in new ways. No advanced knowledge of GSP is needed. Bring a laptop with GSP to create sketches with us!

Kayla Chandler
North Carolina State University, Raleigh
Ashley Whitehead
North Carolina State University, Raleigh
Jennifer Nickell
North Carolina State University, Raleigh

CAPITAL BALLROOM 5 (MARRIOTT)

Membership questions? We’ve got answers! Visit Member Services in NCTM Central!
2:00 P.M.–3:00 P.M.

257  
**Mathematical Madness**  
*(General Interest)* Session  
The increased rigor of new standards and assessments being implemented throughout the United States challenges teachers to reflect on their content knowledge and pedagogy. This session aims to provide perspective to teachers as they reflect on how the process standards are being integrated within their classrooms.

Michael Bolling  
Virginia Department of Education, Richmond  
B21C (GREATER RICHMOND CONVENTION CENTER)

258  
**Mobile Devices in the Math Classroom**  
*(General Interest)* Session  
Participants will learn to use iPads, iPod Touches, smartphones, and other mobile devices in the classroom to present lessons, assess students, and to communicate with parents. Applications such as iAnnotate, Explain Everything, Educreations, Movie Maker, and Pic Collage will be presented. Participants will learn methods for teachers and students.

Mandy Collier  
York County School Division, Yorktown, Virginia  
B21A (GREATER RICHMOND CONVENTION CENTER)

259  
**Strategies and Mathematical Ideas—Not One and the Same**  
*(Pre-K–2)* Session  
Discussions about strategies as well as the structure of mathematics need to occur in mathematics classrooms in primary grades. In this session, we will differentiate between discussions about the structure of mathematics and strategies used to solve problems by providing examples of each, as well as analyzing and discussing classroom videos.

Kristin A. Klingensmith  
Learning Research and Development Center, Institute for Learning, University of Pittsburgh, Pennsylvania  
Laurie B. Speranzo  
Institute for Learning, University of Pittsburgh, Pennsylvania  
B15A (GREATER RICHMOND CONVENTION CENTER)

260  
**Your Brain on Math: Number Sense**  
*(Pre-K–2)* Session  
Prenumerate children are equipped with an approximate analog system and a small exact number system. When children exhibit weak number sense, they do not shift from logarithmic to linear representation. The focus of this presentation is an explanation of the cognitive foundations of integer representation and strategies for supporting development.

Sara Stetson  
Rivier College, Nashua, New Hampshire  
E10AB (GREATER RICHMOND CONVENTION CENTER)

261  
**Students Learning Fraction Operations through Their Sense Making and Reasoning**  
*(3–8)* Session  
Building on student sense making, the use of multiple representations, reasoning with properties, and whole-number proficiencies, we will examine student experiences to establish meaningful fraction operations (from early strategies to algorithms). Focus on teaching sequences, teacher-coordinated mathematical conversations, and student reflections.

Henry S. Kepner  
Past President, National Council of Teachers of Mathematics; University of Wisconsin–Milwaukee  
B15A (GREATER RICHMOND CONVENTION CENTER)

262  
**Understanding Fractional Partitions, Equivalence, and Proportional Reasoning for Solving Problems**  
*(3–8)* Session  
Participants will learn the two distinct meaning of fractions, part-whole and quotient, and how to instruct students on ordering and comparing equivalent fractions while extending their knowledge and understanding on operations with fractions. Attendees will also learn how incorporate visual representations to solve real-world problems for fractions.

Joseph Sencibaugh  
Webster University, St. Louis, Missouri  
Jennifer Bond  
Ferguson-Florissant School District, St. Louis, Missouri  
Dan Sinclair  
Mastery Educational Services, Fallbrook, California  
B10 (GREATER RICHMOND CONVENTION CENTER)
2:00 P.M.–3:00 P.M.

263 ▲ Teaching Math to Students with Learning Differences
(6–8) Session

This session will provide ideas for teaching mathematics to students with ADHD and other learning differences. We will explore strategies and tools for supporting and managing all students in the math classroom.

Susan James
Commonwealth Academy, Alexandria, Virginia
B15C (GREATER RICHMOND CONVENTION CENTER)

264 An Innovative, Practical Approach to Formative Assessment Using Student Work
(6–12) Session

Principles to Actions

Learn how one district is developing teacher capacity to implement and sustain high-quality formative assessment processes in the middle school math classroom, as well as the implications for self-efficacy, motivation, and learning. The session incorporates video and tools from a job-embedded professional development framework using authentic student work.

Kathleen Dempsey
Mid-continent Research for Education and Learning - McREL, Denver, Colorado
Andrea Beesley
Mid-continent Research for Education and Learning - McREL, Denver, Colorado

GRAND BALLROOM E (MARRIOTT)

265 Quirky Opportunities to Stimulate Student Success in AP Calculus
(9–12) Session

Build 3-D objects with pipe cleaners. Use pasta to visualize derivatives. Play with cards to understand the fundamental theorem. Calculus concepts come alive through engaging opportunities that expand and enhance student learning. Come to experience calculus fun, and leave with unusual projects for your AP Calculus classroom!

Gail Kaplan
Towson University, Maryland

GRAND BALLROOM CD (MARRIOTT)

267 Working with Future Teachers: Teaching and Learning for Understanding
(Preservice and In-Service) Session

This presentation addresses the challenges of working with preservice teachers to prepare them for effectively teaching math in elementary school. The talk focuses on the importance of (1) teachers learning mathematics for understanding and (2) using instructional practices that provide opportunities for children to engage in sense-making.

Joy W. Whitenack
Virginia Commonwealth University, Richmond
CAPITAL BALLROOM 4 (MARRIOTT)

266 The Surprise of Equivalent Problems
(9–12, Preservice and In-Service) Session

Problem solvers take pleasure in observing that some problems can be solved by several different methods. The converse is also wonderful: two, maybe more, seemingly unrelated problems are linked by the same mathematics. The presenter, a co-editor of the “Calendar” in Mathematics Teacher, will share some “equivalent” problems with her audience.

Margaret E. Coffey
Thomas Jefferson High School for Science and Technology, Alexandria, Virginia
B21B (GREATER RICHMOND CONVENTION CENTER)

266.1 Creating a Classroom Culture of Confident Problem Solving
(9–12) Exhibitor Workshop

The first Common Core practice standard is “Make sense of problems and persevere in solving them.” Using a problem-based high school program called Interactive Math Program, you will experience problem-solving challenges from a student perspective, learn new techniques to implement problem solving, and develop a model of successful problem-solving practices.

It’s About Time
Mt. Kisco, New York

E22 (GREATER RICHMOND CONVENTION CENTER)
2:00 P.M.–3:00 P.M.

267.2 ✉️
Practice the Practices: Amplify Math Projects
(6–8) Exhibitor Workshop
Prepare middle school students for CCSS-based, high-stakes tests, and introduce project-based learning (PBL) into your classroom with Amplify Math Project’s engaging multiday projects. In this session, participants will gain tools and resources for supporting common pitfalls to PBL in a math class through Amplify Math Projects’ web-based teacher app.

Amplify
Brooklyn, New York

E21C (GREATER RICHMOND CONVENTION CENTER)

267.3 ✉️
Pearson’s Digits on Realize: Where Math Clicks and Virtual Nerds Rule
(6–8) Exhibitor Workshop
Experience digits, the only middle grades math curriculum built for today’s digital students with interactive whiteboard lessons, online assessments, and robust data analysis. Find out how digits harness the power of technology through the Realize platform and innovative apps, such as Virtual Nerd Mobile Math.

Pearson
Boston, Massachusetts

E11C (GREATER RICHMOND CONVENTION CENTER)

3:15 P.M.–4:30 P.M.

268
Let’s Play Cards: A Simple, Fun Approach to Teaching Math
(Pre-K–2) Gallery Workshop
Transform your math teaching with games and activities by using a standard deck of cards. Explore how to use cards to develop basic number sense, problem-solving skills, logical reasoning, and much more. You will leave this workshop with materials ready to use when you return to the classroom.

Frances O. Coleman
Collegiate School, Richmond, Virginia
Nicola Byford
Collegiate School, Richmond, Virginia

E10CD (GREATER RICHMOND CONVENTION CENTER)

269
The Facts about Basic Facts
(Pre-K–2) Gallery Workshop
Learn what research says about the role subitizing and strategies play in learning your basic facts. Gather ideas that support strategy instruction.

Lynn M. Meade
Henrico County Public Schools, Virginia
Joan M. Kernan
MathScience Innovation Center, Richmond, Virginia

E23 (GREATER RICHMOND CONVENTION CENTER)

270
Building Bridges, Not Walls, from Computation to Algebraic Thinking
(Pre-K–5) Gallery Workshop
In 2000 NCTM stated that algebra cuts across all areas of pre-K–12 mathematics. In 2010 the Common Core State Standards for Mathematics confirmed that algebraic thinking begins in kindergarten. Yet the progression from single-answer arithmetic to deep mathematics is not clear. Come experience powerful K–8 bridges that connect the dots. Lessons from the speaker’s Corwin book series will be provided.

Monica Neagoy
Monica Neagoy Consulting Services, Arlington, Virginia

E21A (GREATER RICHMOND CONVENTION CENTER)

271
Reasoning through Word Problems
(3–5) Gallery Workshop
Explore a variety of methods and models to help students unlock the mysteries of word problems, many of which are connected to reading comprehension strategies. Learn how to support your students’ emerging abilities to solve multistep problems through rich classroom discussions that allow students to share their reasoning.

Victoria M. Bohidar
Chesterfield County Public Schools, Virginia
Kimberly J. Bender
Chesterfield County Public Schools, Virginia
Kathryn Munson
Chesterfield County Public Schools, Virginia

E11AB (GREATER RICHMOND CONVENTION CENTER)
3:15 P.M.–4:30 P.M.

272
**The Work of the Elementary Math Coach: Problems and Solutions**
*(3–5, Preservice and In-Service) Gallery Workshop*
During this session the audience will consider different vignettes of actual coaching situations. In small groups they will address focus questions for each vignette. They will have opportunities to share their ideas with the whole group. At the end of the session, the audience will explore new ways to support the math coach’s work in schools.

*Virginia Commonwealth University, Richmond*

Aimee J. Ellington
Joy W. Whitenack

273
**Using Creative Activity to Build Understanding of Fractions**
*(3–8) Gallery Workshop*
Participants will experience the process of designing a quilt square in ways that explicitly engage them in mathematical discourse about fractions. The processes modeled during the session will focus on assessing and building upon students’ knowledge through creative hands-on activity and mathematical discourse.

*University of Missouri–Kansas City*

Clare V. Bell

274
**Breaking the Ice with Mathematical Tasks**
*(6–12) Gallery Workshop*
Many teachers like to get students working together on the very first day of class! This workshop introduces participants to a collection of mathematical ice breakers, appropriate for establishing cooperative norms in middle grades (and higher level) classrooms and promoting deeper and more critical mathematical understanding.

*Shippensburg University, Pennsylvania*

Thomas Evitts

275
**Meaningful Models and Productive Projects for Geometry**
*(6–12) Gallery Workshop*
Come do activities that will make geometry more fun and meaningful! As time allows, we will demonstrate properties with patty paper, construct the Wheel of Theodorus, make an icosahedron, a tetrahedron, and tangrams. I will also share successful projects including Geometry Valentines, creative writing, and Magic Square Quilts.

*Aimee J. Ellington*
*Virginia Commonwealth University, Richmond*

276
**Slope: An Intuitive Approach**
*(6–12) Gallery Workshop*
“Slope: An Intuitive Approach” is a unit of study consisting of hands-on activities that utilize inquiry learning to help students develop an understanding of slope. Participants will engage in selected activities from the unit.

*Christine Belcher*
*MathScience Innovation Center, Richmond, Virginia*

277
**Visual Dictionaries and Graphic Organizers Make Geometry Standards Stick**
*(6–12) Gallery Workshop*
Help all types of learners retain definitions, theorems, and concepts by using visual organizers. LD and ELL students in particular benefit from alternative representations. Come prepare visual dictionaries and graphic organizers for angle, polygon, and circle concepts that address the Common Core standards. Excellent for review and exam prep!

*Marilyn L. Zecher*
*Mathematics Institute of ASDEC, Rockville, Maryland*

2015 NCTM Annual Meeting & Exposition is coming up!

**Boston • April 15–18**
3:15 P.M.–4:30 P.M.

278  
Mathematical Expeditions in Polar Science  
(9–12) Gallery Workshop

There are multidisciplinary challenges facing our planet, and polar science provides particularly interesting contexts to engage students. We will examine three mathematics lessons based on shrinking Arctic sea ice extent, melting glaciers, and accurately measuring Weddell seals. Mathematical modeling and data representation will be unifying themes.

Lynn Foshee Reed  
Maggie L. Walker Governor's School, Richmond, Virginia

CAPITAL BALLROOM 1/2/3 (MARRIOTT)

279  
A Mathematics Coaching Model: Creating Cultural Change in One School  
(Pre-service and In-Service) Gallery Workshop

We will describe an adopted coaching model and how its first year of implementation has transformed children’s mathematics identities. We will share stories from classrooms about children’s actions related to their expectations for mathematics learning and their perspectives about the nature of mathematics.

Lisa A. Coffman  
Newport News Public Schools, Virginia
Melva R. Grant  
Old Dominion University, Norfolk, Virginia

GRAND BALLROOM AB (MARRIOTT)

280  
Modeling as Both Means and Ends to Learning Valued Mathematics  
(General Interest) Session
Principles to Actions

School mathematics is filled with opportunities to engage students with modeling as a practice yet meet mathematical content standards. Focusing on big ideas and essential understandings of mathematical modeling as it evolves from prekindergarten through high school will help us to do this work efficiently, effectively, and enthusiastically.

Rose Mary Zbiek  
Board of Directors, National Council of Teachers of Mathematics; Pennsylvania State University, University Park

B21C (GREATER RICHMOND CONVENTION CENTER)

281  
Web 2.0 for the Mathematics Classroom: Motivate and Engage  
(General Interest) Session

Web 2.0, the second generation of the World Wide Web, allows mathematics teachers to connect, create, and share information in a way they never have before. This workshop offers attendees an overview of some of the most effective Web 2.0 tools available today. They will learn how to use each tool and be given additional resources to learn more.

William C. Tozzo  
Bedford Central Schools, Bedford, New York

B21B (GREATER RICHMOND CONVENTION CENTER)

282  
Where the Sidewalk Ends: Measurement through Literacy  
(Pre-K–2) Session

This presentation illustrates how to integrate literacy in K–2 classroom in order to teach measurement and help children connect geometric concepts as they develop understanding of common units of measurement. Working with manipulatives and investigating their immediate surroundings, young children can comprehend abstract interrelationships of measurement and data.

Rupam Saran  
Medgar Evers College, City University of New York, New York

B15A (GREATER RICHMOND CONVENTION CENTER)

283  
Math Conferences for Assessing, Teaching, and Learning  
(Pre-K–5) Session

Confer one-on-one with your students to assess their level of mathematical understanding, give feedback, and lead them to their next steps in learning. Your students’ level of comprehension becomes clearly visible as they communicate their thinking. With your support, students focus on setting learning goals and self-assessing their progress.

Laney A. Sammons  
Independent Mathematics Consultant, Tunbridge, Vermont

GRAND BALLROOM E (MARRIOTT)
3:30 P.M.–4:30 P.M.

284
Common Core and Web 2.0
(3–8) Session
Technology is ever changing and schools are embracing it, for better or worse. The Common Core standards call for more critical thinking and mathematical conversation. Web 2.0 tools like Twitter, QR codes, blogs, and other online resources allow students to interact with technology while supporting and enhancing content and conceptual understanding.

Nicole E. Shobert
University of Oklahoma, K20 Center, Norman
B10 (GREATER RICHMOND CONVENTION CENTER)

285
Common Core Mathematics Instruction and Assessment: Making the Connection
(3–8) Session
Principles to Actions
Instruction and assessment must be mutually informing. Participants will explore how to plan for instruction and assessment for their K–8 classrooms with the learning goal in mind. Classroom video of students engaged in tasks supportive of both instruction and assessment will be shared, as participants explore what it means to connect them.

Juli K. Dixon
University of Central Florida, Orlando
CAPITAL BALLROOM 4 (MARRIOTT)

286
Increase Accuracy and Speed While Having Fun Using Nontraditional Strategies
(3–8) Session
Too often we teach one computational strategy, and students feel it is the only strategy there is. We need to remember that not everyone thinks the same or learns the same. I will introduce several nontraditional strategies for adding, subtracting, multiplying, and dividing whole numbers as well as finding the greatest common factor and least common multiple.

Joseph C. Mason
Hagerstown Community College, Maryland
B15C (GREATER RICHMOND CONVENTION CENTER)

287
Projects: Assessing Student Understanding
(6–8) Session
Projects provide an additional way to assess students, they are engaging, and you don’t have to lose a lot of teaching time! Projects tied to specific content standards and mathematical practices will be shared, along with student samples and rubrics.

Laurie Boswell
The Riverside School, Lyndonville, Vermont
B21A (GREATER RICHMOND CONVENTION CENTER)

288
EXCELlent Instructional Strategies for Teaching Common Core Math Standards
(6–12) Session
Discover the advantages of using Excel to teach the Common Core math topics of functions, modeling, statistics, and probability. These project-driven strategies deemphasize rote calculation that leads so many students to dislike math, and they empower students to use their higher thinking skills to complete real-world applications of mathematics.

Andrew John Nelson
Granada Hills Charter High School, Los Angeles, California
E10AB (GREATER RICHMOND CONVENTION CENTER)

289
CAS: Ten Years On
(9–12, Higher Education) Session
2002 was the first year that Year 12 students in Victoria, Australia sat Mathematical Methods external examinations for which using CAS (computer algebra systems) was permitted. Ten years later, all students studying Mathematical Methods are using CAS in examinations. This session will present a case study from one school reflecting on their decade of experience.

Sue M. Garner
Ballarat Grammar, Australia
B15B (GREATER RICHMOND CONVENTION CENTER)
3:30 P.M.–4:30 P.M.

290
Once Upon a Circle
(9–12, Higher Education) Session
Principles to Actions
Investigate a problem that involves powers of 2, quartic (and higher) regression, Pascal’s triangle, combinatorics, CAS (computer algebra system), and hyperspace!
John Hanna
Teachers Teaching with Technology, Dallas, Texas
CAPITAL BALLROOM 5 (MARRIOTT)

291
Calculus in the Workplace
(Higher Education) Session
While working on integration techniques and differentiation, have you ever heard “I will never use this stuff in my job”? To encourage students to delve into their respective fields of study we created a course project which requires creativity, technology, and research specific to the student’s field of study.
Christine K. Smith
Edison State College, Punta Gorda, Florida
Joan VanGlabek
Edison State College, Naples, Florida
Ronald R. Smith
Edison State College, Ft. Myers, Florida
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A list of Partner Affiliates in the conference’s region and the Affiliates-at-Large appears below. To join one of these groups, e-mail the Affiliate contact for membership information. NCTM has more than 200 Affiliates throughout the United States and Canada. For a list of all organizations affiliated with NCTM and information on how to join, please see the Affiliate Directory on the NCTM website.

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About the Host Organizations

The Virginia Council of Teachers of Mathematics is proud to be one of your host organizations for NCTM’s 2014 Regional Conference & Exposition. We are an organization of over 1,200 members encompassing K–16 educators, math coaches, math supervisors, and mathematicians. Our journal, the Virginia Mathematics Teacher, is published twice a year and just celebrated its 40th year. Each year, we award over $8,000 in scholarships, grants, and awards. Our annual conference is held in the spring and attracts nearly 1,000 members.

The Greater Richmond Council of Teachers of Mathematics (GRCTM), a professional resource for mathematics educators at all levels, was founded in 1965. The Council has three purposes:

• encouraging an active interest in and an appreciation of mathematics;
• affording a medium for exchange of views regarding the teaching of mathematics; and
• promoting cooperative study of problems of mathematics education at all levels.

Currently GRCTM serves approximately 250 members from the Capital Region and surrounding counties. GRCTM provides professional development for educators through an annual conference in the fall and a workshop-style academy in the spring. Members can be nominated for the Lucien T. Hall, Jr. Distinguished Service Award given annually to an outstanding teacher/supervisor who has dedicated herself or himself to mathematics education during a distinguished career. Past winners include Carolyn Williamson, Carol Rezba, and Michael Bolling. Additionally members can apply for one of two John van de Walle Professional Development Grants to improve the effectiveness of their teaching. Outreach for students include the annual Middle School Math Field Day held at the University of Richmond and the High School Conference co-sponsored with the MathScience Innovation Center. GRCTM publishes a newsletter, The Great Circle. Additional information can be found at www.grctm.info.
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E

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Discover the surest way to engage students and build a love of math. First In Math Online offers the deep practice students need to improve math skills. Comprehensive content (addition though algebra) strengthens problem solving and higher-order thinking skills. Self-pacing program allows students in K–8 to enter at their level, encouraging them to explore, take ownership, and persevere! Let us show you FIM’s extensive activities (aligned to CCSSM), fluency, focus, and assessment tools.

Frog Publications
Booth: 510
San Antonio, Florida
Ph: 800-777-3764
www.frog.com

Systematic reinforcement programs, individualized educational plans, response to intervention, differentiated instruction, terrific and ready-to-use learning centers, take-home parental involvement program, daily review, critical thinking and dual language! All Frog games use the same easy-to-learn rules. Students needing different levels or skills can practice together!

H

Hewlett-Packard
Booth: 504
San Diego, California
Ph: 619-942-4099
www.hp.com/calculators

HP educational solutions can revolutionize your classroom with cutting-edge tools and wireless classroom technology that encourage collaboration and enhance mathematical discourse. With the launch of the HP Prime Wireless Classroom Network, easily view and project students’ calculator screens, share customized data, and conduct polls from one easy location. Visit HP at booth 504 to learn more about HP Prime Graphing Calculators with the new Wireless Classroom Network.

Houghton Mifflin Harcourt
Booth: 501
Austin, Texas
Ph: 512-721-7161
www.hmhco.com

Houghton Mifflin Harcourt is a global learning company with the mission of changing people’s lives by fostering passionate, curious learners. HMH combines cutting-edge research, editorial excellence, and technological innovation to improve teaching and learning environments and solve complex literacy and education challenges. For more information, visit www.hmhco.com.
It’s About Time
Booth: 308
Mt. Kisco, New York
Ph: 914-273-2233
www.iat.com
It’s About Time believes that students learn math and science the way that practicing scientists and mathematicians do. They learn when something grabs their attention, and when the content is relevant to their lives. They learn when we allow them—and, in fact, encourage them—to talk to one another and question one another’s results. They learn when we permit them to get their hands on the subject matter. In short, when we allow students to use all of their senses, they make sense of math and science.

IXL Learning
Booth: 221
San Mateo, California
Ph: 855-255-8800
www.IXL.com
IXL is a math practice website for K–12 aligned to state standards and the Common Core. IXL offers unlimited questions in a fun, dynamic format that students love. Plus, teachers can view detailed reports on students’ progress and trouble spots—including complete question histories for individuals.

K
K8resources
Booth: 521
Saco, Maine
Ph: 207-283-4852
www.k8resources.com
Find out about our three CD-ROMS—Counting + Addition/Subtraction; Numbers + Multiplication/Division; and Geometry + Fractions. Each has visual introductions, self-checking practice slides, and challenge problems. Our super-affordable Learning Kits (for Addition, Multiplication, Fractions, Perimeter/Area, and Angles) have an introductory card, an activity, and 40 flashcards. The ultimate in low-tech, Light-Ups offered engaging facts practice—giving feedback at the speed of light! For more, see www.k8resources.com.

Kagan Publishing & Professional Development
Booth: 313
San Clemente, California
Ph: 949-545-6320
www.KaganOnline.com
Dedicated to revolutionizing education, Kagan Publishing & Professional Development’s line of products is all about engagement! Kagan works with educators to implement scientifically proven strategies that increase academic gains and create positive social relations. Research-based and extensively classroom tested, let Kagan show you how to boost classroom engagement and learning. Stop by booth 313 to see how we can customize a professional development program designed to meet your needs!

Kaplan ELC
Booth: 618
Lewisville, North Carolina
Ph: 336-712-2014
www.kaplancso.com
Kaplan Elementary is your resource for innovative supplemental materials to support 21st-century learning environments in core subject areas and extended learning settings from kindergarten to fifth grade. We are dedicated to providing hands-on resources and materials that help children continuously develop and improve their math skills while aligning with NCTM and state standards.

Kendall Hunt Publishing Company
Booth: 503
Dubuque, Iowa
Ph: 563-589-1075
dubuque.kendallhunt.com/prek12
Kendall Hunt provides educators with a complete, Common Core-aligned pre-K–12 mathematics solution. Our curriculum emphasizes mathematical practice standards, builds students’ critical thinking and procedural skills, and promotes conceptual understanding. Available in digital and print formats, our programs are supported with ongoing professional development to ensure effective implementation and elevate classroom achievement.

KnowRe
Booth: 412
New York, New York
Ph: 917-757-3667
www.knowre.com
KnowRe is an innovative adaptive learning solution for mathematics. KnowRe assesses an individual’s strengths and weaknesses, personalizes a curriculum for each student’s focus areas and engages students through gamified features, attractive graphics, and social learning. KnowRe believes in the importance of a good education, the need for personalization in our educational system and that technology is the most effective tool to help bring about these goals.

Learning Carpet-TLC, Inc.
Booth: 508
Huntsville, Ontario, Canada
Ph: 705-789-8912
thelearningcarpet.com
The Learning Carpet (6’ square) enables teachers to more effectively teach math and language concepts through the integration of body movement and language development. On the carpet, children have opportunities to play, discover, learn, and understand concepts. As a result they are able to articulate and demonstrate their learnings. Look for Wendy Hill’s interactive workshop, “Let’s Get Physical—With Math on the Floor!” Teachers will leave this interactive session with multiple practical ideas.

Learning Wrap-Ups
Booth: 414
Layton, Utah
Ph: 801-497-0050
www.learningwrapups.com
Learning Wrap ups, Inc. is the developer and publisher of Learning Wrap ups, Learning Palette, and Learning Palette Online. These unique products have been developed to assist the K–5 student with development of fact fluency, and conceptual understanding of important math skills. The products of Learning Wrap ups have been utilized in the classroom for over 30 years and have been called the “best learning center products” available.
LEGO Education
Booth: 219
Pittsburg, Kansas
Ph: 620-231-0000
education.lego.com/da-dk/lesi?domainredirect=www.legoeducation.us
LEGO® Education combines the unique excitement of LEGO bricks with hands-on classroom solutions that engender engagement with the mathematical concepts. We focus on providing high-quality education solutions that appeal to a variety of learning styles and for all educational levels. Visit the LEGO Education booth to learn how our products can bring innovation to your classroom where students will feel encouraged and motivated to think, write, and speak freely about mathematics.

Lone Star Learning
Booth: 502
Lubbock, Texas
Ph: 806-281-1424
lonestarlearning.com
Lone Star Learning is a curriculum development company offering unique, easy-to-use visuals and interactive bulletin boards that give students the specific practice needed to achieve mastery in math, science, and language arts. Lone Star Learning is the proud winner of Learning magazine’s Teachers’ Choice Award for three years running. We strive to increase student success while decreasing teacher effort with our innovative products! We hope to become an integral part of your classroom!

M
Mangahigh.com
Booth: 604
London, England, UK
Ph: 877-626-4244
www.mangahigh.com
Learn about this K–10 games-based math resource. Mangahigh’s new approach to online math uses behaviorist techniques from the social games world to generate incredible student engagement. Adaptive technology and personalized learning pathways ensure that students not only master the curriculum, but learn to love math.

MarkerBoard People
Booth: 609
Lansing, Michigan
Ph: 800-379-3727
www.dryerase.com
Our student dry erase markerboards and response boards in class sets are great for instant response and instant assessment. And at unbeatable prices! Single- and double-sided available. Perfect for math, science, language arts, graphing, handwriting and more. Long-lasting, non-toxic, ultra-low odor markers too!

Marshall Cavendish
Booth: 605
Tarrytown, New York
Ph: 914-332-8888
mceducation.us
Marshall Cavendish Education is a global provider of holistic education curricula that help teachers become facilitators and students to be critical thinkers. The company’s products are published in 13 languages, in more than 50 countries, and are used by K–8 educators and students. Marshall Cavendish Education is revolutionizing learning and teaching with the Singapore Math® Approach, which uses the concrete, pictorial, and abstract (CPA) learning progression.

Mastery Ed
Booth: 601
Fallbrook, California
Ph: 800-454-6284
www.MasteryEd.com
Mastery Educational Service (Mastery Ed), authorized representative for the Math-U-See line of products and services for Special Education. Specializing in RtI Tier 2 and 3 level interventions, we help you develop a program that truly is geared to provide unique, individualized instruction for students. If you are looking for a math program that meets the Common Core Standards for Mathematical Practice or training, we can help. Full demo and info at Booth 1030, or go to www.MasteryEd.com or call us at 800-454-6284.

Math & Movement
Booth: 112
Ithaca, New York
Ph: 607-339-6182
www.mathandmovement.com
Math & Movement is a kinesthetic, multi-sensory approach to teaching math that incorporates physical exercise, stretching, cross-body movements, yoga, and visually pleasing floor mats designed to encourage students to practice math concepts. The Math & Movement program allows students to physically hop, walk, crawl, dance, or touch the mats as they learn, thus using more learning modalities (visual, auditory, motor, and kinesthetic) when practicing math.

Math Matters Inc
Booth: 513
Westbury, New York
Ph: 516-333-0717
www.mathmattersinc.com
Math Matters, Inc., was established in 1998 and publishes a monthly journal of games and puzzles for elementary and middle school teachers. In addition, the company offers seminars, workshops and courses in math education throughout the United States. Books, kits, and math resource materials are available for elementary, middle and high school teachers of mathematics. For a full listing of services, and resources visit our website at www.mathmattersinc.com.

Math Solutions
Booth: 211
Sausalito, California
Ph: 415-339-4818
mathsolutions.com
Math Solutions, founded by Marilyn Burns, has been transforming instruction for 30 years by providing the highest quality professional learning, resources, and coaching to improve mathematics instruction and student proficiency. With partnerships across schools and districts nationwide, Math Solutions offers comprehensive professional learning to transform curriculum and instruction, while preparing students for the rigorous expectations of college and career.

Math Teachers Press
Booth: 608
Minneapolis, Minnesota
Ph: 800-852-2435
www.movingwithmath.com
Our Blended Learning Management System for pre-K–12 provides formative assessment and conceptual-based instruction using manipulatives with research based strategies and proven results. Objectives are correlated to all state and national standards. Instruction integrates the Concrete-Representational-Abstract (CRA) pedagogy with scripted lesson plans to provide embedded PD achievement gains for all students, especially ELL and basic/below basic levels. Includes web-based assessment and e-guides.
MATHCOUNTS provides fun and challenging programs for sixth, seventh, and eighth grade students. Through three programs—the MATHCOUNTS Competition Series, the National Math Club, and the Math Video Challenge—we strive to foster talent, curiosity, and a love of math in all students. We also provide free resources to educators, such as the School Handbook, with 300 problems aligned to Common Core Standards. There are many paths to success in math; stop by to learn how we can help your students discover theirs.

Mathematical Olympiads for Elementary & Middle Schools
Booth: 210
Bellmore, New York
Ph: 516-781-2400
moems.org
Math Olympiads is a non-profit corporation dedicated to stimulating enthusiasm, fostering creativity, and strengthening intuition in mathematical problem solving. Through the use of five monthly contests, teachers and teams of up to 35 students explore and review mathematical concepts while developing flexibility in solving non-routine problems. Certificates, medals, or trophies are awarded to all participants. Visit our booth for information, sample problems, and prizes.

MIND Research Institute
Booth: 602
Irvine, California
Ph: 888-751-5443
www.mindresearch.net
MIND is a neuroscience and education nonprofit that applies its distinctive visual approach to the development of math instructional software. MIND helps local schools create a blended learning environment to create a culture of critical thinkers for the next generation of STEM leaders. MIND’s ST Math® programs reach 630,000 students and 25,000 teachers in 2,050 schools in 35 states. For more information, visit www.mindresearch.net.

National Geographic Learning/Cengage Learning
Booth: 310
Dallas, Texas
Ph: 800-543-0487
NGL.Cengage.com
National Geographic Learning provides quality pre-K–12, academic, and adult education instructional solutions for reading, writing, science, social studies, ESL/ELD, and Spanish/dual language.

NCTM Affiliates-at-Large
Booth: 114
Tempe, Arizona
Ph: 480-894-9347
bannekermath.org; www.todos-math.org; www.wme-usa.org
The Benjamin Banneker Association, TODOS Mathematics for ALL, and Women and Mathematics Education are three NCTM Affiliates-at-Large that focus on an equitable mathematics education for groups that have been historically underrepresented in mathematics.

Neufeld Learning Systems Inc
Booth: 109
London, Ontario, Canada
Ph: 519-657-9334
www.neufeldlearning.com
Neufeld Learning Systems provides browser-based technology solutions and customized professional development for reaching all learners and teachers of mathematics. UMath X “goes deep” to address Common Core content with diagnostic tests for kindergarten to algebra 1. UMath X provides strand specific assessments and student reports to guide instruction and next steps.
NumbersAlive!
Booth: 116
Washington, D.C.
Ph: 202-652-1820
www.numbersalive.org

Created by educator Rebecca Klemm, PhD, NumbersAlive! presents numbers as fun and friendly characters who uncover numeric patterns embedded everywhere. The playful numbers captivate children as they come alive through interdisciplinary storytelling. They are touchable in the form of soft plush numbers and also enchant children through books, games, and apps. Bring our award-winning learning tools into your classroom and watch anxiety disappear! All products are teacher-developed and teacher-tested.

Origo Education
Booth: 411
Earth City, Missouri
Ph: 314-475-3061
www.origoeducation.com

ORIGO Education covers all facets of elementary mathematics education: from traditional printed products to digital/interactive resources and professional learning. ORIGO Stepping Stones (aligned to CCSS) delivers a world-class mathematics program that seamlessly blends digital and print materials. ORIGO is committed to excellence by creating products that inspire and empower teachers and students. Our diverse selection of products brings a renewed enthusiasm to students’ learning experiences.

Pearson
Booth: 212
Upper Saddle River, New Jersey
Ph: 201-236-6613
www.pearsoned.com

Pearson is serious about evolving how the world learns. We apply our deep education experience and research, invest in innovative technologies, and promote collaboration throughout the education ecosystem. Real change is our commitment, and its results are delivered through connecting capabilities to create actionable, scalable solutions that improve access, affordability, and achievement. For more information, visit www.pearsoned.com.

Renaissance Learning
Booth: 401
Wisconsin Rapids, Wisconsin
Ph: 715-424-3636
www.renaissance.com

Accelerated Math™ differentiates dynamic practice of grade-level CCSS or state standards by depth, as current standards recommend. The software automates the complete assess-teach-learn cycle by integrating STAR Math™ data to group students by ability, and automatically generating a full year of assignment plans for each group, delivered online or printed.

Share My Lesson
Booth: 615
Washington, D.C.
www.sharemylesson.com

Developed by teachers for teachers, Share My Lesson is a FREE website offering more than 300,000 resources covering all subjects and grades. The site also houses the most Common Core resources available for teachers. Come visit our booth to find out how to search for resources and how to share your own resources. Following the motto of “by teachers for teachers,” participants will also learn about our unique professional development opportunities where educators from across the country come together to develop or identify resources to share with their colleagues around such topics as Common Core, early childhood education (toddler to pre-K), formative assessment techniques, and more!

Singapore Math Inc.
Booth: 408
Tualatin, Oregon
Ph: 503-557-8100
www.SingaporeMath.com

Singapore Math Inc. is a company dedicated to bringing the highest-quality educational resources to the US and Canada. These resources include a range of selected core curricula and supplemental titles. We welcome you to come by booth 408 to peruse our Singapore Math® books and to learn more about the Singapore approach to teaching and learning mathematics.

Southern Teachers Agency
Booth: 320
Charlottesville, Virginia
Ph: 828-295-9122
www.southernteachers.com

Are you searching for a mathematics teaching position? Southern Teachers Agency can help! STA works with college preparatory private and independent schools around the mid-Atlantic and South connecting them with great candidates. Over 400 private and independent schools list vacancies with STA for teachers, counselors, administrators, librarians, and RAs. Founded in 1902, Southern Teachers Agency has been finding the right jobs for the right teachers for more than a century.

TenMarks Education, An Amazon Company
Booth: 613
Burlingame, California
Ph: 415-305-7211
www.tenmarks.com

TenMarks is the most comprehensive online solution designed for the new Common Core math standards. With integrated math practice, instruction, intervention, assessments, and differentiation, TenMarks provides teachers with the ability to reinforce what they’re teaching in class, with automatic intervention when necessary, and the power to differentiate instruction for students with ease. Designed for grades 1 through algebra and geometry, TenMarks is the program of choice in 25,000+ schools.

Texas Instruments
Booth: 419
Dallas, Texas
Ph: 214-567-6409
education.ti.com

TI provides free classroom activities that enhance math, science, and STEM curricula, technology that encourages students to develop a deeper understanding of concepts, and professional development that maximizes your investment in TI technology. TI offers handhelds, software, apps for iPad®, and data collection technology, all designed to promote conceptual understanding, and formative assessment tools that gauge student progress. Visit education.ti.com.
Voyager Sopris Learning
Booth: 111
Dallas, Texas
Ph: 757-897-8257
www.voyagersopris.com
Voyager Sopris Learning™ partners with schools to build local capacity and overcome obstacles that students, teachers, and school leaders face every day. Our research- and evidence-based solutions are innovative, both in overall instructional approach and in the strategic use of technology. With a comprehensive suite of instructional resources, we ensure sustained success through assessments, professional development, comprehensive intervention and supplemental math instructional tools.

Westat
Booth: 121
Rockville, Maryland
Ph: 301-251-1500
www.westat.com
Westat is one of the foremost professional service corporations of its kind—the gold standard of social science research, statistical analysis, and evidence-based communications. STEM education plays a critical role in maintaining U.S. economic and technological leadership in the 21st-century global marketplace. Westat evaluates and monitors innovative STEM programs that lead to program improvements and outcome assessments.

Western Governors University
Booth: 312
Salt Lake City, Utah
Ph: 801-290-3636
www.wgu.edu
The Teachers College at Western Governors University offers regionally, nationally, and NCATE accredited online competency-based master’s degrees in mathematics education. As a student, you’ll enjoy modest tuition rates, unbelievable flexibility, and unmatched student support. Scholarships and financial aid are available.

Wiley
Booth: 603
Hoboken, New Jersey
Ph: 201-748-6000
www.wiley.com
Wiley is an independent, global publisher of print and electronic products. Wiley provides content and learning resources for courses from honors and AP high school curriculum through undergraduate and graduate textbooks and reference materials. Jossey-Bass offers materials to enhance K–12 teacher effectiveness, meet Common Core standards, support AP courses, and build student-centered leadership skills. Demos of Common Core Math are given daily at during the conference.

Woot Math
Booth: 113
Boulder, Colorado
Ph: 303-449-6284
wootmath.com/
Woot Math is an award-winning, education technology company focused on helping struggling students master core math concepts. The supplemental software delivers a personalized progression of interleaved video instruction and scaffolded problems to mimic the natural give and take between a student and a tutor. Woot Math is designed to engage students with an intuitive and interactive experience supported on iPad, Chromebook (and all other web platforms), and Android devices (including Amplify).
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