Simply Calculate The Difference!

BRING YOUR ENTRY FORM TO BOOTH #2121 TO ENTER FOR A CHANCE TO WIN A CASIO’S CLASS ACT PRIZE!

Simply Calculate The Difference!
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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
Welcome to the world’s largest annual gathering of mathematics educators! The NCTM 2013 Annual Meeting and Exposition brings together classroom teachers, coaches, leaders, mathematics educators, researchers, and mathematicians. We invite you to share ideas and network to gather information about effective mathematics teaching and learning. After this experience, you will return to your classroom full of new ideas and fresh perspectives on what you can do every day to help students you influence reach their mathematics potential.

Over the next three days, you will meet new colleagues, make new friends, and form professional and personal bonds that will last a lifetime. If this is your first NCTM meeting, you may feel a bit overwhelmed; however, once you adjust to the pace and all the opportunities available to you, soak in all you can because nothing measures up to the experience of an NCTM Annual Meeting.

For those of you who are veterans of NCTM annual and regional conferences, you know what you want to accomplish. This year’s program includes some changes and additions, such as the new “Burst” sessions. Our goal is to bring you the best professional development experience to share with thousands of colleagues.

Our theme for the Denver meeting—“Reasoning and Proof: Is It True? Convince Me!”—complements our focus on reasoning and making sense for all students. You will also find a variety of other topics among the more than 700 presentations. Almost two years ago, the Program Committee began putting together an outstanding program with presentations that will challenge you to examine your own teaching practice, with reasoning and sense making at the core of whatever you teach.

While in Denver, find some time to enjoy the Mile-High City. Part of the excitement of an NCTM conference is getting out with friends and mixing pleasure with business after the meeting presentations. You can tour the Denver Museum of Nature and Science, see the impressive American Indian collection at the Denver Art Museum, or stroll down the 16th Street Mall and explore a full mile of shopping and dining attractions.

On behalf of the NCTM Board of Directors, the conference Program and Volunteer committees, the NCTM staff, and the many volunteers who have worked long, countless hours over the past two years to put together an extraordinary set of opportunities for you, welcome to Denver. Enjoy the conference!
Program Information

The NCTM 2013 Annual Meeting and Exposition officially begins with the Opening Session, starting at 5:30 p.m. on Wednesday, April 17, in the Bellco Theatre at the Colorado Convention Center. Presentations on Thursday, Friday, and Saturday begin at 8:00 a.m. each day and are scheduled concurrently throughout the day.

We have made every attempt to offer adequate seating for participants at the Annual Meeting and Exposition. The room capacity for each presentation is listed on all meeting room signs. For your safety and because of fire regulations, only those with seats will be allowed 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 Teacher Strand  
FRIDAY, APRIL 19

The New Teacher strand offers sessions and gallery workshops targeting the questions and concerns of new teachers and those training to become teachers. Presentations are grade-band specific and include topics from management and motivation, to engaging struggling students, to a celebration of those entering and just beginning their teaching careers. Learn, network with other new teachers, and get your questions answered. The strand targets early-career teachers and those working on certification; all are welcome.

Look for the symbol above for presentations within the strand. Start early with the New Teacher Kickoff (#273) on Thursday at 3:00 p.m. and finish with the New Teacher Celebration (#595) on Friday at 4:45 p.m. for more fun. Visit www.nctm.org/newteacher/ for more information.

Formative Assessment in the Common Core State Standards Strand

The Formative Assessment in the Common Core State Standards strand offers a broad examination of assessment issues and includes sessions about formative assessment at different grade levels, assessment for students from diverse populations, and special sessions about the PARCC (Partnership for the Assessment of Readiness for College and Careers) and SBAC (Smarter Balanced Assessment Consortium) Common Core assessments. Look for the symbol above for Formative Assessment in the Common Core State Standards presentations.

Research in Algebraic Thinking Strand  

The Research in Algebraic Thinking strand will summarize current research and discuss what is changing in algebra in classrooms. The strand concludes with an opportunity for researchers and teachers to collaborate. Look for the symbol above for Research in Algebraic Thinking presentations.

Research in Proof Strand  

The Research in Proof strand focuses on research concerning the teaching and learning of proof. The strand concludes with an opportunity for researchers and teachers to collaborate. Look for the symbol above for Research in Proof presentations.

Response to Intervention Strand  

The Response to Intervention strand focuses on working with students struggling to learn mathematics. This strand will be ideal for Title I teachers and those involved with implementing a multiliteracy prevention model such as response to intervention. Look for the symbol above for Response to Intervention presentations.
NCTM Committee Strand

NCTM committee presentations are identified by the symbol above. For a list of all NCTM committees, please visit www.nctm.org/.

Equity Strand

The Equity strand features presentations given by the Benjamin Banneker Association, TODOS: Mathematics for ALL, and Women and Mathematics Education. Presentations are scheduled on Friday and Saturday.

Mathematical Association Presidents’ Series

The Presidents’ Series is a feature of the NCTM Annual Meeting program that highlights connections within the mathematical community at different levels. Presentations are scheduled throughout the conference.

New Member and First Timers’ Orientation

New to NCTM, or a first-time attendee? Hear about maximizing your NCTM member experience and get takeaways full of classroom-ready activities with the New Member and First Timers’ Orientation. Plus, the sessions will discuss the conference’s format and help you make the most of your experience. Our attendees represent the United States, Canada, and many international locations.

Wednesday
Presentation #1
4:00 p.m.–4:30 p.m.
Four Seasons 2/3 (Convention Center)

Thursday
Presentation #3
7:15 a.m.–7:45 a.m.
Centennial Ballroom B/C (Hyatt)

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) represent a common format in which the speaker relates his or her ideas to an audience. The speaker may use audiovisual equipment, technology, and handouts, and sessions may include audience participation. Rooms are set theatre style and vary in size.

Research Sessions (60 minutes) emphasize the connection between research and practice, presented in a common format in which the speaker relates his or her ideas to an audience. The speaker may use audiovisual equipment, technology, and handouts, and sessions may include audience participation. Rooms are set theatre style and vary in size.

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

Bursts (30 minutes) are concise presentations that focus on a specific topic or idea. The goal is information sharing, conveyed quickly and succinctly. Bursts are not appropriate for hands-on activities, group work, or lengthy topics.

Exhibitor Workshops (60 minutes) are set theatre style for at least 120 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 help you find appropriate presentations to attend, each presentation lists the presentation’s target grade band audience:

- 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—applicable to all grades and audiences

On-Site Daily News

Start each morning with the NCTM Daily News, which will include late-breaking news about the NCTM 2013 Annual Meeting and Exposition, as well as program changes and cancellations. The Daily News will be distributed in the lobby of the Colorado Convention Center and available in the Hyatt Regency Denver.
The Math Forum @ Drexel: Reflecting on Mathematical Practices Since 1992

Make sense, persevere, generalize, apply, reason and critique, build mathematical models, use strategies, look for patterns and structure—these are the practices that the Common Core State Standards and leaders are saying “should be as much of a goal of the mathematics curriculum as the learning of specific content.” These have been the focus of the Math Forum community every day since 1992. Our community of over 3.5 million visitors each month focuses on:

- Implementation of the Mathematical Practices
- Technology-Supported Collaboration
- Formative Assessment and Grounding Instruction in Student Work
- Productive Math Talk
- Connecting Conceptual Development to Procedural Fluency through Problem Solving Strategy Development
- Professional Learning Communities that Connect the Informal to the Formal

Drexel University
School of Education

The Mathematics Learning and Teaching Program in Drexel University’s School of Education offers a one-of-a-kind graduate experience for mathematics teachers and leaders. Each of the program options combines the best of the Math Forum’s technologically-oriented and dynamic resources with an experiential, research-based curriculum centered on supporting the practices of the Common Core and features a focus on problem solving, communication, formative assessment, and individualized instruction. Options include:

- Online Master’s Program in Math Education
- Math Leadership and Coaching
- Ph.D. Concentration in STEM Education

mathforum.org/nctm/

Come have some popcorn!
Bring personalized practice to life!

Accelerated Math LIVE

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Online or on paper—the choice is yours

Custom-built for the Common Core
**HIGHLIGHTS**

New Members and First Timers’ Orientation (Presentation 1)
Opening Session: The Power of Just One Teacher (Presentation 2)

**FACEBOOK**
Become a fan!
www.nctm.org/facebook

**TWITTER**
Stay informed during the Annual Meeting!
#NCTMDenver

**ATTEND THE RESEARCH PRESESSION**

Registered for the Annual Meeting? You can attend Wednesday’s Research Presession at no extra cost! Visit the Research Presession Information Desk at the Colorado Convention Center, Lobby A, for program information.

**REGISTRATION HOURS**

8:00 a.m.–7:00 p.m.

**BOOKSTORE HOURS**

10:00 a.m.–7:00 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.
Regional Caucuses for Delegates and Alternates

2:30 p.m.—4:30 p.m.  
Colorado Convention Center  
Rooms 702/704/706

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<tr>
<th>CAUCUS</th>
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<tr>
<td>Affiliates-at-Large</td>
<td>Anne Collins, Lesley University, Graduate School of Education, Cambridge, Massachusetts</td>
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<tr>
<td>Canadian</td>
<td>Maureen MacInnis, Charles P. Allen High School, Bedford, Nova Scotia</td>
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<tr>
<td>Central</td>
<td>Janet Herrelko, University of Dayton, Dayton, Ohio</td>
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<td>Chris Moody, Clayton High School, St. Louis, Missouri</td>
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<tr>
<td>Eastern</td>
<td>Nancy Zarach, Consultant, Syracuse, New York</td>
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<td>Janie Zimmer, Research-Based Education, Reading, Pennsylvania</td>
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<td>Southern</td>
<td>Cathy Shelton, W. T. Woodson High School, Fairfax, Virginia</td>
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<td></td>
<td>E. Jean Ware (Retired), Caddo Parish School District, Shreveport, Louisiana</td>
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<tr>
<td>Western</td>
<td>Lisa Scott, Billings Public Schools, Billings, Montana</td>
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<td>Nancy Terman, University of California, Santa Barbara</td>
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Free Samples & Demo!

Problem Solving for the Common Core

An Online Resource for Assessment and Instruction

- **Differentiated** math tasks specifically developed for the Common Core at each grade level K–5.
- **Real-world** material for instruction and exploration as well as formative and summative assessment.
- **Preliminary Planning Sheets** that feature Math Concepts, Problem-Solving Strategies, Math Vocabulary/Notation, Possible Solutions and Mathematical Connections for each task.
- **Rubrics, Anchor Papers** and **Scoring Rationales** that provide tools for feedback and concrete examples of student work that meets the standard.
- Support for **Depth of Knowledge** levels 3 and 4.
4:00 P.M.–4:30 P.M.

1 New Members and First Timers’ Orientation
(General Interest) Session

New to NCTM? Join members of the NCTM Board of Directors to learn how to maximize your membership experience. From journals, online lessons, tools, and activities to networking and career-advancement opportunities, discover all that NCTM has to offer you. First-time attendees, learn how to make the most of your time at the conference.

NCTM Board of Directors
National Council of Teachers of Mathematics, Reston, Virginia

Four Seasons 2/3 (Convention Center)

5:30 P.M.–7:00 P.M.

2 The Power of Just One Teacher
Opening Session by Mayim Bialik
Remarks by NCTM President Linda Gojak

Mayim Bialik, the Emmy-nominated actress on The Big Bang Theory and real-life neuroscientist, is on a mission to help educators and parents inspire students to pursue STEM education and careers. Bialik will share her unique journey from child actress to neuroscientist to playing a scientist on TV and working with Texas Instruments.

Mayim Hoya Bialik received her BS in neuroscience and in Hebrew and Jewish studies from UCLA in 2000 and earned a PhD in neuroscience in 2007 from UCLA, specializing in obsessive–compulsive disorder in adolescents with Prader–Willi syndrome. She was born to first-generation American teachers and documentary filmmakers and was raised in Los Angeles, attending both public and religious school. Bialik is best known for her lead role in the 1990s NBC sitcom Blossom, as well as for portraying the young Bette Midler in Beaches. She appears regularly on CBS’s The Big Bang Theory as Amy Farrah Fowler, Sheldon’s “friend who is not his girlfriend.”

Mayim Bialik
Actress, Neuroscientist, and Texas Instruments Spokesperson, Los Angeles, California

Bellco Theatre (Convention Center)
The journal editors from *Teaching Children Mathematics*, *Mathematics Teaching in the Middle School*, and *Mathematics Teacher* will be giving a series of mini-sessions to help you write or referee for one of NCTM’s school journals. Inside of 15 minutes, you’ll discover how to submit your ideas for publication, volunteer as a referee, or polish an existing manuscript. The editors will explain the peer-review process, answer your questions, point you in the right direction, and allay any fears you may have about getting started. All for a price that can’t be beat—free!

**Here’s what’s going on:**

**Get Published**
Discover how simple it is to turn your ideas into articles.
*Presented by Sara-Lynn Gopalkrishna, MTMS editor*

- **Thursday, April 18:**
  - 10:40–10:55 a.m. and 1:10–1:25 p.m.
- **Friday, April 19:**
  - 10:30–10:45 a.m. and 1:50–2:05 p.m.

**Be a Journal Referee**
Find out how critiquing manuscripts can help your career.
*Presented by Albert Goetz, MT editor*

- **Thursday, April 18:**
  - 11:05–11:20 a.m. and 1:35–1:50 p.m.
- **Friday, April 19:**
  - 10:55–11:10 a.m. and 2:15–2:30 p.m.

**Avoid Writing Pitfalls**
Learn hints on steering clear of those pesky manuscript potholes.
*Presented by Beth Skipper, TCM editor*

- **Thursday, April 18:**
  - 11:30–11:45 a.m. and 2:00–2:15 p.m.
- **Friday, April 19:**
  - 11:20–11:35 a.m. and 2:40–2:55 p.m.
The Standards for Mathematical Practice promise to elevate students’ learning of math from knowledge to application and bring rigor to our math classrooms. But how can we incorporate the Practices into our teaching and ensure that our students develop these critical skills? Sue O’Connell and John SanGiovanni unpack each of the eight Practices and provide a wealth of practical ideas and activities to help you quickly integrate them into your existing math program.

Grades K-8 / 978-0-325-04655-6 / 2013 / 168pp / $19.00

Meet the Content Standards with Mastering the Basic Math Facts

Mastering the Basic Math Facts in Addition and Subtraction
Mastering the Basic Math Facts in Multiplication and Division
Strategies, Activities & Interventions to Move Students Beyond Memorization
Susan O’Connell and John SanGiovanni
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HIGHLIGHTS
New Members and First Timers’ Orientation (Presentation 3)
64th Annual Delegate Assembly (Presentation 4)
Learn↔Reflect Kickoff Session (Presentation 55)
NCTM President’s Address (Presentation 223)
New Teacher’s Workshop and Kickoff (Presentation 273)
Learn↔Reflect Reflection Session (Presentation 278)

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<td>RtI</td>
<td>Response to Intervention</td>
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THE BUZZHUB
The BuzzHub is the hub for networking as well as showcasing various NCTM resources. Learn more about your membership, pick up free take-home activities, check your e-mail, exchange ideas with your peers, and share your experiences. Be sure to BYOD (bring your own device).

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

TWITTER
Use Twitter to follow the Annual Meeting! #NCTMDenver

REGISTRATION HOURS
7:00 a.m.—4:00 p.m.

EXHIBIT AND BUZZHUB HOURS
8:30 a.m.—5:00 p.m.

BOOKSTORE HOURS
7:00 a.m.—5:30 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.
7:15 A.M.–7:45 A.M.

3 New Members and First Timers’ Orientation
(General Interest) Session
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NCTM Board of Directors
National Council of Teachers of Mathematics, Reston, Virginia
Centennial Ballroom B/C (Hyatt Regency)

7:30 A.M.–9:00 A.M.

4 Sixty-Fourth Annual Delegate Assembly
(General Interest) Session
This session is a forum for delegates and designated leaders of NCTM Affiliates to make recommendations to the NCTM Board of Directors concerning activities and policies of NCTM and mathematics education.

NCTM Affiliate Services Committee
National Council of Teachers of Mathematics, Reston, Virginia
Centennial Ballroom D (Hyatt Regency)

8:00 A.M.–9:00 A.M.

5 Chaos Games and Fractal Images
(General Interest) Session
President Series Presentation
See how to incorporate some interesting topics in contemporary mathematics, such as chaos and fractals, into the grades 6–12 curriculum. I give this session twice each year during the Math Field Days in Boston.

Robert L. Devaney
Mathematical Association of America; Boston University, Massachusetts
108 (Convention Center)

6 Math Lessons from Research
(General Interest) Session
Math education is in a state of dramatic change. What does the research say that offers reliable guidance to using new standards such as the Common Core State Standards, new curricula, and new teaching strategies? Discuss lessons from recent research. At the core of many successful efforts are learning trajectories: research-based paths of learning and teaching.

Douglas H. Clements
University of Denver, Colorado
Julie Sarama
University of Denver, Colorado
Capitol Ballroom 4 (Hyatt Regency)

7 Response to Intervention: Evidence-Based Interventions
(General Interest) Research Session
What does the research say about effective instruction for learners who struggle with mathematics? How can educators use these findings to support students receiving tiered interventions? View activities, evaluate materials, and receive handouts summarizing evidence-based interventions. I will share references and resources.

Linda L. Forbringer
Southern Illinois University Edwardsville
705/707 (Convention Center)

8 Teaching and Learning of Algebraic Thinking: Research Insights
(General Interest) Session
We will examine current research and discuss how algebra is changing in classrooms. We will also answer questions and overview the day’s presentations.

Daniel I. Chazan
University of Maryland, College Park
Mark Driscoll
Education Development Center, Waltham, Massachusetts
Megan Franke
University of California, Los Angeles
Mile High 1 C/D (Convention Center)
8:00 A.M.–9:00 A.M.

8.1 Teacher Professional Learning in the Era of the Common Core State Standards
(General Interest) Session
The Common Core State Standards brings with it an unprecedented opportunity to share resources and knowledge across districts and states, changing how educators can learn from and share with each other. I will engage participants in professional development modules and resources for teachers, to encourage a community of sharing and professional learning.

Ellen Whitesides
Institute for Mathematics and Education, University of Arizona, Tucson

Capitol Ballroom 1–3 (Hyatt Regency)

9 Standards for Mathematical Practice in Student-Friendly Language for Grades K–2
(Pre-K–2) Session
Explore how to use the eight Common Core State Standards for Mathematical Practice with younger children. Learn to reword each Standard for Mathematical Practice as an “I can” statement with student-friendly language and how to use these standards to facilitate a culture of problem solving.

Jeanne M. White
Elmhurst College, Illinois

102 (Convention Center)

10 Continual Formative Assessment Using the Common Core State Standards Mathematical Practices
(Pre-K–5) Session
The eight Common Core State Standards Mathematical Practices can be paired as Math Sense Making, Math Structure, Math Drawings, and Math Explaining. Hearing student reasoning and seeing student math drawings in a Math Talk Community supports continual formative assessment that the teacher can use immediately. Teachers will analyze videos for the Mathematical Practices.

Karen Fuson
Retired, Northwestern University, Evanston, Illinois

Mile High 4 A/B (Convention Center)

11 Helping Young Children Develop “Mathematical Habits of Mind”
(Pre-K–5) Session
Do your students think like mathematicians: looking for patterns, eagerly justifying their reasoning, striving to make sense of mathematics, and appreciating its power and beauty? Come see classroom-tested ideas for developing these mathematical habits of mind and learn how such habits are related to the Common Core State Standards’s Mathematical Practices.

Ellen Whitesides
Institute for Mathematics and Education, University of Arizona, Tucson

Capitol Ballroom 1–3 (Hyatt Regency)

12 Math Workshop: What Are the Kids Doing?
(3–5) Session
Math stations/centers, think-tac-toes, must-do/can-do lists, and other practice activities allow teachers to incorporate differentiation. Learn how they work in a math workshop model to foster cooperative and independent learning. I will share student work, resources, and strategies for accountability and management.

Jeanne M. White
Elmhurst College, Illinois

102 (Convention Center)

13 Making Mathematics Explicit
(3–8) Session
This presentation is based on the work of Hiebert and Grouws. We will model student engagement strategies, mathematical discourse, and making the mathematics explicit. I’ll give attention to the Mathematical Practices that are used as participants work on a mathematical task.

Mary Buck
National Academic Educational Partners, Berkeley, California

207 (Convention Center)
Learn from the Experts

From these sessions to your classroom, find out what's new from the nation's leading educators.

Thursday, April 18th

9:30am – 10:30am
David Dockterman
Developing a Growth Mindset in Struggling Math Students
605 (Convention Center)

11:00am – 12:00am
Marilyn Burns
Lesson Learning from Interviews about Numerical Reasoning
Four Seasons 2/3 (Convention Center)

3:30pm – 4:30pm
Alex Sarlin & David Dockterman
The Gamification of Math: Research, Gaming, Theory, and Math Instruction
Mile High 4 E/F (Convention Center)

Friday, April 19th

2:00pm – 3:00pm
Kimberly Broker
Turn Toward Success: How High-Quality Interactions Raise Student Achievement
501/502 (Convention Center)

2:45pm – 4:00pm
Harold Asturias
Using the Mathematical Practices as Scaffolding for Academic Language Development
Mile High 1 E/F (Convention Center)

Saturday, April 20th

8:00am – 9:15am
Kristi Cohen & Sheila Yates
Middle School Intervention: What Does It Look Like?
104/106 (Convention Center)

3:30pm – 4:30pm
Genni Steele & Le’Vada Gray
Math Classroom Routines that Support Reasoning
108 (Convention Center)

Visit us at Booth #917

Math Solutions
Booth #1301

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14 Changing Outcomes for Kids: Increasing Algebra Readiness in Grades 6–8
(6–8) Research Session
Explore our research and experience with respect to how heterogeneously grouping students and flexible weekly grouping for differentiation affects student growth in mathematics classes.

Ryan D. Martine
Preston Middle School, Poudre School District, Fort Collins, Colorado

Sue Martino
Preston Middle School, Poudre School District, Fort Collins, Colorado

Kathy Sampson
Preston Middle School, Poudre School District, Fort Collins, Colorado

505 (Convention Center)

15 Developing Proportional Reasoning by Using Manipulatives
(6–8) Session
Do your students need hands-on activities to help develop their understanding of unit rates, proportional reasoning, and slope? Discover the benefits of using virtual and hands-on manipulatives to help your students better understand these important topics, and see some examples of how to use various manipulatives to teach these concepts.

Kevin Dykema
Mattawan Middle School, Michigan

709/711 (Convention Center)

16 Influencing Student Reasoning with Tables and Graphs by Using Technology
(6–8) Research Session
Explore research related to reasoning and proof and proportional relationships. Examine classroom actions that show how a classroom community uses valid arguments to justify mathematical claims for finding the next term and the nth term in a table of values.

Judith Olson
University of Hawaii, Honolulu

Brendan Brennan
University Laboratory School, Honolulu, Hawaii

205 (Convention Center)

17 Let’s GO with Reasoning
(6–8) Session
Experience activities that strengthen the reasoning abilities of every student, including English language learners, by using Graphic Organizers.

Jennie M. Bennett
NUMBERS Mathematics Professional Development, Houston, Texas

Mile High 2 C (Convention Center)

18 Assessing Common Core State Standards for Mathematical Practice: Challenges and Opportunities
(6–12) Session
Assessing mathematical practices can be challenging. What content knowledge best aligns with each of the practice standards? What kinds of technology best allow students to interact with the practices? What kinds of scenarios engage students? We will share our experiences developing innovative tasks for assessing mathematical practices.

Luis E. Saldivia
Educational Testing Service, Princeton, New Jersey

Elida Wylie
Educational Testing Service, Princeton, New Jersey

703 (Convention Center)

19 Incredible Math Tasks: Developing the Standards for Mathematical Practice
(6–12) Session
Work through (and receive) a set of excellent worthwhile math tasks with strategies to develop abstract reasoning and effective classroom discourse. We will focus on developing all eight Standards for Mathematical Practice. Leave with resources you can use on Monday morning.

William Barnes
Howard County Public School System, Ellicott City, Maryland

Jennifer Novak
Howard County Public School System, Ellicott City, Maryland

Mile High 4 E/F (Convention Center)
8:00 A.M.–9:00 A.M.

20 Making Connections: A Middle School Maximization Exploration
(6–12) Session
Maximization problems are not just for calculus. Using a lesson rich in connections between equations, tables, patterns, and graphs, you’ll learn how to teach your middle school or high school students how to move from conjecture to proof in solving a classic max/min problem.

Carol DeFreese
Ft. Zumwalt School District, O’Fallon, Missouri
601 (Convention Center)

21 Picture Yourself Having Fun at Math
(6–12) Session
Use photography to incorporate real-world situations into your mathematics classroom. Use pictures to reinforce concepts involving geometric shapes, areas, volumes, similar objects, and transformations, as well as reinforce conic sections, the Pythagorean theorem, slope, and much more. You’ll get a CD containing ready-to-use examples.

Mary A. Robertson
Edison State College, Fort Myers, Florida
Mile High 3 B (Convention Center)

22 Teaching Mathematics with a Tablet PC
(6–12) Session
Using a tablet PC can bring to life proof and understanding of key mathematical concepts. Students use programs such as FluidMath (Brown University), Excel, Microsoft OneNote Notebooks, DyKnow (Dynamic Knowledge), Community Clips (videos), and e-textbooks, all on their tablet PCs, to explore concepts and create their own understanding of algebra.

Suzanne Lewis
Cincinnati Country Day School, Ohio
702 (Convention Center)

23 How Many to Order? Applying the Economic Order Quotient
(9–12) Session
Learn to use the Economic Order Quantity, a management tool, to decide how much of a product to carry in stock to minimize ordering and holding costs. Use technology and algebra to solve a specific example of the problem and generalize the result. We will share open-ended questions for launching the activity.

Thomas G. Edwards
Wayne State University, Detroit, Michigan
Kenneth R. Chelst
Wayne State University, Detroit, Michigan
S. Asli Ozgun-Koca
Wayne State University, Detroit, Michigan
501/502 (Convention Center)

24 Modeling: Investigating a Unique Design of the Common Core State Standards
(9–12) Session
The Common Core State Standards for Mathematics articulate modeling as a conceptual category for high school. It is uniquely connected to the other conceptual categories by a modeling framework. Experience a high school probability investigation (sports related) that unpacks this standard and its connection to other conceptual categories.

Henry Kranendonk
Marquette University, Milwaukee, Wisconsin
Four Seasons 1 (Convention Center)

25 The Math behind the Heavens and the Earth
(9–12) Session
Galileo once wrote, “Mathematics is the language with which God has written the universe.” Humanity’s desire to understand the cosmos drove much of the development of math. Learn how astronomers from Thales to Newton used, or invented, many topics from high school math to virtually explore the heavens.

Gary M. Rubinstein
Stuyvesant High School, New York City, New York
Centennial Ballroom F (Hyatt Regency)
8:00 A.M.–9:00 A.M.

26
Transform Triangle Congruence and Similarity by Using Core Math Tools
(9–12) Session
Experience resources for reasoning and proving triangle congruence and similarity conditions by using transformations and coordinate models. Examine how Common Core State Standards mathematical practices and geometry standards can be implemented using Core Math Tools, mathematical software for teachers and students, freely available at www.nctm.org/coremathtools.

Brin Keller
Michigan State University, East Lansing
605 (Convention Center)

28
Teaching Math for Social Justice: Health Disparities in Alaska
(9–12, Preservice and In-Service) Session
Research suggests that teaching mathematics for social justice expands the notion of equity work. I will share findings and lead a discussion on a real-world project that integrates content on health disparities in Alaska. The discussion will include implications for teaching mathematics for social justice in a Common Core State Standards era.

Alison Mall
University of Alaska Anchorage
203 (Convention Center)

29
Inquiring Minds Want to Know: The Common Core State Standards in College
(Higher Education, Preservice and In-Service) Session
Explore examples of problems and inquiry methods illustrating the Standards for Mathematical Practice in mathematics courses for elementary and middle grades mathematics teachers. The courses emphasize communications, reasoning, and sense making. Problems will illustrate algebraic and geometric reasoning.

Tommy G. Smith
University of Alabama at Birmingham
Charles Calhoun
University of Alabama at Birmingham
Mineral Hall F/G (Hyatt Regency)

30
Communicating Performance for Common Core State Standards
(Preservice and In-Service) Session
Many schools have begun to align curriculum and instruction with the Common Core State Standards. But how will they clearly communicate achievement to students and parents? Explore how to implement standards-based grading at the building and classroom level. Handouts offer examples of assessments, grade books, and parent letters.

Forrest Clark
North Thurston Public Schools, Lacey, Washington
Elizabeth Clark
North Thurston Public Schools, Lacey, Washington
107/109 (Convention Center)

8:00 A.M.–9:15 A.M.

31
Exploring Numeracy throughout the Day
(Pre-K–2) Gallery Workshop
Having a strong sense of number is crucial to math success. The Common Core State Standards have placed a greater emphasis on number in the early grades. In this hands-on gallery workshop, you will learn ideas on how to incorporate numeracy explorations during calendar, centers, transitions, seatwork time, game time, and intervention.

Cindy Pray
Adams 12 Five Star Schools, Broomfield, Colorado
Capitol Ballroom 5–7 (Hyatt Regency)
32 Time for Talk
(Pre-K–2) Gallery Workshop
Do you want to learn how to engage your students in more productive discussions and strengthen their mathematical ideas and understanding? Get strategies to help students develop and present their own solutions to problems involving time and money.

Mary M. Coakley
University of Massachusetts, Amherst
Deanna Bero
Wheaton Public Schools, Illinois
704/706 (Convention Center)

33 Nuts about Number Lines
(3–5) Gallery Workshop
Help your kids make connections between numbers and concepts by using number lines. You will walk away with several number lines that can deepen students’ understanding of number. Come and learn how to teach the visual connection between fractions, decimals, percents, and money with this inexpensive, hands-on approach.

Susan A. Hohstadt
Lawton Public Schools, Oklahoma
Stephanie A. Bowman
Lawton Public Schools, Oklahoma
Mile High 4 C/D (Convention Center)

34 The Quadrilateral Hierarchy in the Common Core State Standards
(3–5, Preservice and In-Service) Gallery Workshop
Standards related to or involving the classification of quadrilaterals begin in grade 2 and continue through grade 5 in the Common Core State Standards. Investigate the big ideas in this progression as well as the role of definition in mathematics through hands-on activities involving quadrilateral cutouts, Venn diagrams, and geoboards.

Robin O’Dell
Buffalo State College, New York
Nirmala Nutakki
Buffalo State College, New York
503/504 (Convention Center)

35 Base-Ten Blocks and Fractions to Beginning Algebra: Unifying Computational Algorithms
(3–8) Gallery Workshop
We will extend conceptually based computational models/algorithms found in grade schools to beginning algebra by using base-ten blocks to develop algorithms used by elementary students and then using algebra tiles to develop the analogous algebraic algorithms. Similarly, we will tie algebraic algorithms to those involving fractions.

Marvin E. Harrell
Emporia State University, Kansas
Elizabeth G. Yanik
Emporia State University, Kansas
Nancy Smith
Emporia State University, Kansas
Mile High 3 C (Convention Center)

36 LEAP into SMART Notebook: Lessons, Explorations, Activities, Play
(3–8) Gallery Workshop
Are you using your SMART Board to its full potential? Learn to create games and lessons that enhance your teaching and address both Content and Process Standards. Explore gallery items and math tools, the recorder, an IPEVO camera, the screen capture tools, and basic functions of SMART Notebook. Leave with ideas and templates you can use on Monday.

Ginalouise Palermo
Cattaraugus-Allegany BOCES, Olean, New York
Alyse Jennifer Sciolla
Council Rock School District, Newtown, Pennsylvania
Anna LaForgia
Council Rock School District, Newtown, Pennsylvania
Four Seasons 4 (Convention Center)
8:00 A.M.–9:15 A.M.

37
Reasoning to Develop Number Sense with Fractions
(3–8) Gallery Workshop
Do your students have strong number sense with fractions? Do they use this number sense to reason about fractions, solve problems, and determine whether answers to fraction problems make sense? We will engage in classroom-tested, hands-on activities that help students reason about fractional quantities and develop number sense with fractions.

Nancy K. Mack
Grand Valley State University, Allendale, Michigan
103/105 (Convention Center)

38
Smarter Together: Collaboration and Equity in the Elementary Math Classroom
(3–8) Gallery Workshop
As classrooms become more diverse, teachers must find ways to support all students in learning rigorous mathematics. However, ideas about who is smart can limit the participation of some students and affect access to rich math ideas for all. We will show how to design tasks so that even reluctant students can contribute and learn mathematics.

Marcy Britta Wood
University of Arizona, Tucson

Joy A. Oslund
University of Michigan, Ann Arbor
104/106 (Convention Center)

39
Understanding Fractions: One of the Gifts from the Common Core State Standards
(3–8) Gallery Workshop
Why are fractions so difficult? Explore fractions from a developmental perspective. Using tools to support students’ conceptual understanding, we will investigate different procedures. See how to use students’ understanding of multiplication and division of whole numbers to connect those operations involving fractions.

Kit Norris
Consultant, Southborough, Massachusetts
Mile High 1 E/F (Convention Center)

40
And the Area Is . . . Because!
(6–8) Gallery Workshop
Examine the spatial concept of area by using paper folding and grid paper to create convincing picture proofs. We will then arrive at an unfamiliar formula that requires investigation versus memorization, thus challenging all students regardless of prior knowledge. Problem solving beyond drill and practice is guaranteed.

Kathleen M. Fick
Methodist University, Fayetteville, North Carolina
Nicola D. Edwards-Omolewa
Delaware State University, Dover
Centennial Ballroom A (Hyatt Regency)

41
Integers on the Number Line: A Common Core State Standards–Based Approach
(6–8) Gallery Workshop
Explore adding and subtracting integers on the number line. Learn approaches that are tactile, visual, and sense making to help you move forward into a Common Core State Standards world. Activities are connected to the Common Core State Standards and the Standards for Mathematical Practice.

Mark Goldstein
Center for Mathematics and Teaching, Los Angeles, California
406/407 (Convention Center)

42
Median—Statistical and Geometric: How Are They Related?
(6–8) Gallery Workshop
Using manipulatives and drawings, we will develop reasoning connecting statistical mean and median with the intersection of medians in geometric planar figures. We will also address applications to centers of balance (architecture and toys) and to centers of population.

Leora R. White
Nampa Schools, Idaho
Danielle D. Desjarlais
Nampa Schools, Idaho
Mineral Hall A–C (Hyatt Regency)
8:00 A.M.–9:15 A.M.

43  **Menu of Pythagorean Delights**  
*(6–8) Gallery Workshop*

Two middle school teachers and a curriculum consultant in mathematics share their experiences in a three-year series of professional development that focuses on teaching for understanding, problem-based instructional tasks, meaningful and purposeful distributed practice, and assessment for learning.

Amy L. Keller  
Grant Wood Area Education Agency, Cedar Rapids, Iowa

Brenda Willis  
Clear Creek Amana CSD, Tiffin, Iowa

Beth Hahn  
Clear Creek Amana CSD, Tiffin, Iowa

708/710/712 (Convention Center)

44  **Middle School Math: Turn It On**  
*(6–8) Gallery Workshop*

Experience the journey that the students at Lakeside Middle School have been on for the past two years. Explore mathematics with the graphing calculator, covering topics ranging from fractions to growth rates to investigating rates of change. Take away classroom-tested activities that will put student thinking first.

Christi Fricks  
Lakeside Middle School, Anderson, South Carolina

Jennifer North Morris  
Consultant, Tucson, Arizona

403/404 (Convention Center)

45  **The Importance of Being Prime: Helping Students Understand Number Theory**  
*(6–8, Preservice and In-Service) Gallery Workshop*

Explore a variety of hands-on classroom tasks aimed at developing students’ conceptual understanding of factors, multiples, primes, composites, greatest common factor, and least common multiple. We will discuss prime factorization, which holds the key to helping students make sense of these ideas.

Ziv Feldman  
Boston University, Massachusetts

Mineral Hall D/E (Hyatt Regency)

46  **Collecting Live Data in Fathom**  
*(6–12) Gallery Workshop*

Collect live data in Fathom by using Vernier temperature probes and motion detectors. Plot functions to fit your data by using sliders to adjust function parameters. Try collecting data to match precreated graphs. Discuss how interacting with live data helps students understand rates of change, function rules, and parameters. Discuss classroom scenarios.

Tyler Pulis  
North Carolina State University, Raleigh

Blake Whitley  
North Carolina State University, Raleigh

Hollylynne Lee  
North Carolina State University, Raleigh

110/112 (Convention Center)

47  **Coordinate Plane Transformations: Have You Got the Right Image?**  
*(6–12) Gallery Workshop*

Explore strategies that use manipulatives and the TI-Nspire Navigator to engage students in generalizing the pattern of sets of ordered pairs under various transformations. After exploring the image of a geometric figure, you will create a picture and its image under a variety of transformations.

Margaret Bambrick  
Volusia County Schools, DeLand, Florida

Ruth Casey  
Teachers Teaching with Technology, Frankfort, Kentucky

Mile High 3 A (Convention Center)
48  M&M’s Statistics: Teaching Common Core State Standards with M&M’s Candies
(6–12) Gallery Workshop

The Common Core State Standards require students in grades 6–12 to describe and interpret data, make inferences, and use probability to draw conclusions. Learn to introduce these ideas with a bag of M&M’s. Whether you teach AP Statistics or incorporate the Common Core State Standards in a non-AP course, you can teach statistics with chocolate. (Caution: this presentation may contain nuts.)

Jason M. Molesky
Lakeville Area Public Schools, Minnesota

Doug Tyson
Central York High School, York, Pennsylvania

Centennial Ballroom E (Hyatt Regency)

49  Carrots before Horses, a.k.a. Experience before Formalization
(9–12) Gallery Workshop

“Students need a chance to grapple with mathematical situations and discover key ideas for themselves. Experience—intuition—formalization: this is the sequence that leads to proof.” This presentation will provide hands-on grappling experiences that will lead to intuition and finally to formalization. We will use Nspire and old-fashioned techniques.

Cindy M. Percival
Roosevelt High School, Des Moines, Iowa

Jeffrey Marks
Roosevelt High School, Des Moines, Iowa

111/113 (Convention Center)
50  
**Looking at Functions from Multiple Perspectives**  
*(9–12) Gallery Workshop*

Experiment with activities that challenge students to examine functions numerically, graphically, symbolically, and verbally.

Kay A. Wohlhuter  
University of Minnesota, Duluth

506/507 (Convention Center)

51  
**Mind-On Projects Introducing Multiple Representations of Linear and Exponential Functions**  
*(9–12) Gallery Workshop*

Explore a classroom-tested, inquiry-based project introducing linear and exponential functions based on the Standards for Mathematical Practice from the Common Core State Standards. You will engage in the project and will get access to several more projects and resources. I will present a Geometer’s Sketchpad file summarizing/illustrating key project ideas.

Jack L. Jackson  
University of Arkansas—Fort Smith

Mile High 2 B (Convention Center)

52  
**NASA’s Exploring Space through Geometry**  
*(9–12) Gallery Workshop*

And we have liftoff. We will introduce you to geometry lessons created from real data based on NASA’s human spaceflight projects. The problems were developed by math educators who collaborate with scientists and engineers. Students will be inspired by the opportunity to analyze real data.

Paulette Granger  
NASA Johnson Space Center, Houston, Texas

Natalee Lloyd  
NASA Human Research Program Education and Outreach, Houston, Texas

Mile High 1 A/B (Convention Center)

53  
**Teaching Polynomial and Rational Functions with CAS**  
*(9–12) Gallery Workshop*

Zeros and factors, end behavior, maxima/minima, asymptotes, and limits: these properties of polynomial and rational functions don’t take a long time to teach when we use the TI-Nspire CAS handheld. Learn activities that avoid the pitfalls of student inaccu- racies that keep students from getting the most of the learning goals of precalculus.

Scott Galson  
Chicago Public Schools, Illinois

Michael Caines  
Chicago Public Schools, Illinois

603 (Convention Center)

54  
**Exploring Modular Arithmetic in Precalculus, Calculus, and Discrete Mathematics**  
*(9–12, Preservice and In-Service) Gallery Workshop*

Modular arithmetic enables one to solve diverse mathematical problems. Explore patterns in recursive sequences with regard to their divisibility and periodicity, forming patterns in derivatives of trigonometric and other transcendental functions, and view powers of $i = \sqrt{-1}$ with the aid of the TI-89 CAS.

Jay L. Schiffman  
Rowan University, Glassboro, New Jersey

607 (Convention Center)

54.1  
**Math Teachers Are Reading Teachers, Too?**  
*(9–12, Preservice and In-Service) Gallery Workshop*

Difficulties in mathematics often stem not from procedural or conceptual misunderstandings but from difficulties in reading comprehension. Get classroom-ready strategies and best practices to ensure that your students are numerate and literate. (Great for English language learners and students with limited English proficiency.)

Jacqueline Foss  
YES Prep Public Schools, Houston, Texas

Centennial Ballroom G/H (Hyatt Regency)
54.2  
**Math for Students with Mild, Moderate, and Severe Disabilities**  
(General Interest) Exhibitor Workshop

Equals Mathematics curriculum is aligned to standards for students with mild, moderate, and severe disabilities. Learn about the methods, skills, and differentiation in Equals. Hear about the next strand in prealgebra and pregeometry as well as the latest new, exciting research data. Attendees will receive a differentiated instruction guide.

AbleNet  
Roseville, Minnesota

303 (Convention Center)

54.3  
**enVisionMATH Common Core: Let’s Take a Look at Rigor**  
(K–5) Exhibitor Workshop

Experience how the instructional design of enVisionMATH Common Core provides a high cognitive level of core instruction that supports the three aspects of rigor: conceptual understanding, procedural skill and fluency, and applications.

Pearson  
Upper Saddle River, New Jersey

301 (Convention Center)

54.4  
**Teaching Developmentally and the Common Core State Standards**  
(General Interest) Exhibitor Workshop

Explore how teachers can help all pre-K–8 learners make sense of math by supporting their own mathematical understanding and cultivating effective planning and instruction.

Pearson  
Upper Saddle River, New Jersey

302 (Convention Center)

54.5  
**Sneak Peek! Look What’s New in K–5 Mathematics**  
(Pre-K–5) Exhibitor Workshop

The new edition of *Math Trailblazers* provides dynamic delivery of mathematical content and strong, embedded assessment specifically designed to address and meet the new Common Core State Standards (CCSS). Get a sneak peek at its new digital format and learn how the fourth edition can help you meet the CCSS mathematical practice and content standards.

Kendall Hunt Publishing Co.  
Dubuque, Iowa

304 (Convention Center)

55  
**Get Your Students to Reason More in Math Class**  
Learn→Reflect Kickoff Session  
(General Interest) Session  
President Series Presentation

Explore “Fran’s Top 5,” a set of reasons to enhance students’ opportunities for reasoning in math class. Take part in discussions guided by video clips of students as they reason through mathematical problems, student work samples, and research findings about student reasoning.

Fran Arbaugh  
Association of Mathematics Teachers Educators, Pennsylvania State University, University Park

Four Seasons 1 (Convention Center)

56  
**Historical Topics in Mathematics: Pascal’s Triangle and Pyramid**  
(General Interest) Session

The Chinese knew Pascal’s triangle 500 years before he lived. Explore the Chinese triangle, Pascal’s triangle, and Pascal’s pyramid. Topics include even and odd numbers, binomial expansions, the Fibonacci sequence, trinomial expansions, the Sierpinski triangle, volume, layers, height, slant height, surface area, and more.

Jim Fulmer  
University of Arkansas at Little Rock

Lowell Lynde  
University of Arkansas at Monticello

Mile High 1 C/D (Convention Center)
Check out the Presentation Spotlight stage in the BuzzHub—just one of many exciting offerings in the BuzzHub!

Presentation Spotlight Schedule

Located in the BuzzHub in the center of the exhibit hall. All presentations are 15 minutes. Presentations are subject to change.

Thursday, April 18

9:25 a.m. Research Brief: Discussion—Benefits and Strategies
9:50 a.m. Free Online Resources for Elementary School
10:15 a.m. Free Apps for Teaching Elementary Math with the Common Core
10:40 a.m. Get Published
11:05 a.m. Be a Journal Referee
11:30 a.m. Avoid Writing Pitfalls
11:55 a.m. Research Brief: Students’ Understanding of Ratio and Proportion
12:20 p.m. Using NCTM’s Free Reflection Guides as a Resource for Professional Development
12:45 p.m. Online Math Games to Build Understanding
1:10 p.m. Get Published
1:35 p.m. Be a Journal Referee
2:00 p.m. Avoid Writing Pitfalls
2:25 p.m. Meet MOTO: NCTM’s New Digital Curriculum for Grades K–2
2:50 p.m. Need Funding? The Buzz about MET (Mathematics Education Trust)
3:15 p.m. Twitter #MathChat
3:40 p.m. To be determined

Friday, April 19

10:30 a.m. Get Published
10:55 a.m. Be a Journal Referee
11:20 a.m. Avoid Writing Pitfalls
11:45 a.m. Online Math Games to Build Understanding
12:10 p.m. Meet MOTO: NCTM’s New Digital Curriculum for Grades K–2
12:35 p.m. Using NCTM’s Free Reflection Guides as a Resource for Professional Development
1:00 p.m. Free Online Resources for Middle School
1:25 p.m. Free Apps for Teaching Middle School with the Common Core
1:50 p.m. Get Published
2:15 p.m. Be a Journal Referee
2:40 p.m. Avoid Writing Pitfalls
3:05 p.m. Free Apps for Teaching Elementary School with the Common Core
3:30 p.m. Tweet Your Journal: Learn. Share. Connect.
3:55 p.m. Free Apps for Teaching Middle School with the Common Core
4:20 p.m. Classroom-Ready Mathematically Rich Activities—Free
4:45 p.m. Meet MOTO: NCTM’s New Digital Curriculum for Grades K–2
5:10 p.m. To be determined

Saturday, April 20

9:30 a.m. New Teacher? This Facebook Group Is Just for You
9:55 a.m. Using NCTM’s Free Reflection Guides as a Resource for Professional Development
10:20 a.m. Free Online Resources for High School
10:45 a.m. Need Funding? The Buzz about MET (Mathematics Education Trust)
11:10 a.m. Classroom-Ready Mathematically Rich Activities—Free
9:30 A.M.–10:30 A.M.

57 Improving Student Understanding and Engagement with Technology
(General Interest) Session
Join Emmy-nominated actress, teacher, and real-life neuroscientist Mayim Bialik and T3 instructor Tom Reardon as they show the power of math classroom technology—from prealgebra through calculus and statistics—by incorporating TI-Nspire CX technology and software into your lessons to bolster students’ conceptual understanding of math.

Mayim Bialik
Actress, Neuroscientist, and Texas Instruments Spokesperson, Los Angeles, California

Tom Reardon
Youngstown State University, Ohio

Four Seasons 2/3 (Convention Center)

58 Math Matters: TIPS and Tools for Practices and Problem Solving
(General Interest) Session
Explore the TIPS (think–ink–pair–share) and tools (materials) that matter most in math instruction to develop students’ mathematical practices and problem-solving skills in using representations, routines, and reasons.

Mari M. Westerhausen
Edison Elementary–PESD 1, Phoenix, Arizona

Mile High 4 A/B (Convention Center)

59 Vision to Action Leadership: Growth, Responsibility, and Accountability
(General Interest) Session
What are we doing as mathematics leaders to identify and nurture emerging teacher leaders? As a mathematics education community, we have a responsibility to help each other build capacity and to offer professional mathematics learning and support. Explore concrete ways to help teachers and leaders build knowledge and influence.

Suzanne Mitchell
National Council of Supervisors of Mathematics, Denver, Colorado

Centennial Ballroom F (Hyatt Regency)

60 Common Core State Standards Lessons and Activities Based on Great Literature
(Pre-K–2) Session
Good literature can offer many meaningful contexts for mathematics. A story can form connections to the variety of situations in which people use math for real purposes, make learning personal, and even make math fun. Come explore lesson plans and activities based on classic stories and characters, and the Common Core State Standards.

M. W. Penn
Author, Hamden, Connecticut

107/109 (Convention Center)

61 Getting Number Bonds to Stick Like Glue
(Pre-K–2) Session
Inspired by the highly successful strategies from Singapore, this session will focus on high-interest and engaging concrete, pictorial, and abstract tasks that lead to genuine understanding and recall of the critical number combinations up to ten. These activities are appropriate for whole groups, small groups, and centers—and they are kid approved.

Catherine Kuhns
Country Hills Elementary, Coral Springs, Florida

Mineral Hall F/G (Hyatt Regency)

62 Two-Step Story Problems in Operations and Algebraic Reasoning, Grades K–2
(Pre-K–2) Session
Any story can cause young students to struggle. Standard 2.OA.1 expects students to represent and solve two-step story problems. Learn about the various structures involved in two-step word problems and walk away with ideas about how to scaffold student experiences for success.

Melissa Hedges
Mequon-Thiensville School District, Mequon, Wisconsin

Beth Schefelker
Milwaukee Public Schools, Wisconsin

Mile High 4 E/F (Convention Center)
9:30 A.M.—10:30 A.M.

63 **Developing Algebraic Thinking in Elementary School**

(Pre-K–5) Session

Absorb research-based knowledge about the development of children’s algebraic thinking and ways to support that thinking in elementary school classrooms. I will share examples from teachers’ classroom practice.

Megan Franke
University of California, Los Angeles

203 (Convention Center)

64 **Meeting the Common Core State Standards’s Math Fact Fluency Challenge**

(Pre-K–5) Session

Will your students be ready for computer-based tests that directly assess fact fluency via timed response items? This session summarizes the latest need-to-know research in math fact fluency and how it develops—or fails to develop—in elementary school students. I will present successful classroom techniques validated in large-sample studies.

Paul Cholmsky
ExploreLearning, Charlottesville, Virginia

Capitol Ballroom 4 (Hyatt Regency)

65 **Engaging Activities + Effective Instructional Strategies = Numerically Nimble Students**

(3–5) Session

Improve students’ numeric competence with strategies that promote greater sense making and student participation. Discover more effective ways to differentiate instruction and efficiently implement the Common Core State Standards. Generous handouts include engaging activities to enhance mathematical reasoning and improve students’ number sense and computation.

Leigh Childs
San Diego County Office of Education, California

501/502 (Convention Center)

66 **How Children’s Literature Affects Students’ Engagement during Mathematics Instruction**

(3–5) Research Session

Discuss integrating children’s literature in mathematics as a curricular approach that you can use to introduce various mathematical concepts. Children’s literature not only provides a context for students; research suggests it may also improve academic engagement of students with challenging behaviors and mathematical difficulties.

Jeremy Todd Whitney
University of Louisville, Kentucky

Amy Lingo
University of Louisville, Kentucky

405 (Convention Center)

67 **Exploring Multiple Ways to Multiply: Ideas to Engage All Learners**

(3–5, Preservice and In-Service) Session

Learners who use only traditional algorithms to multiply may follow procedures in the absence of deep understanding. In the spirit of the Standards for Mathematical Practice, this session will introduce engaging representations of multiplication, including Ancient Egyptian, Russian Peasant, lattice, partial products, visual models, and memory aids.

William Lacefield
Mercer University, Atlanta, Georgia

Mile High 2 C (Convention Center)

68 **Don’t Just Use Data: Consume, Critique, Care**

(3–8) Session

Read the world through the lens of data. Use the context of texting in conjunction with data analysis to broaden students’ perceptions of statistics. Generate, explore, and analyze text-messaging data. Scrutinize map charts that depict state rules on texting bans. Transition from being mere users of data to being caring, critical consumers of data.

Nirmala Naresh
Miami University, Oxford, Ohio

205 (Convention Center)
9:30 A.M.–10:30 A.M.

69 Developing a Growth Mindset in Struggling Math Students

(6–8) Session

Perseverance is the one Common Core State Standards math practice that weaves through all the others. It’s also a key trait that many struggling students lack. For them, struggle leads to resignation. Get practical, research-based guidance on building a growth mindset—resilience, perseverance, and grit—in those students who need it most.

David Dockterman
Harvard Graduate School of Education, Cambridge, Massachusetts
605 (Convention Center)

70 Integrating Mathematics and English

(6–8) Session

Many people think you’re either an English person or a math person. Well, you can be both. Learn how to cover math and English standards by using research papers, vocabulary exercises, storytelling, and math articles. The approach is perfect for a summer school program.

Monique Renee Despres Hodziewich
Saddle Mountain Unified School District, Tonopah, Arizona
705/707 (Convention Center)

71 Proportional Reasoning? Creating Viable Arguments through Inquiry and Investigation

(6–8, Preservice and In-Service) Session

Explore effective strategies to give students a conceptual basis for promoting understanding of ratio concepts, relationships, and connections between proportional relationships, lines, and linear equations. Learn strategies to promote student understanding of these relationships through artifacts, modeling, questioning, and English Language Arts standards.

Kathryn S. Williams
Jefferson County Public Schools, Louisville, Kentucky
Robyn Whelan
Jefferson County Public Schools, Louisville, Kentucky
703 (Convention Center)

72 A Rationale for Irrationals: Convincing Students That Irrationals Exist

(6–12) Session

Although π often is students’ first introduction to irrational numbers, we will explore an alternative activity for introducing and justifying the need for irrational numbers. Through an iterative process of generating increasingly better partitions of a number, we will engage in an unintended exploration of π.

Nicholas H. Wasserman
Southern Methodist University, Dallas, Texas
401/402 (Convention Center)
9:30 A.M.–10:30 A.M.

73 Fostering Discourse through Exploration with Technology
(6–12) Session
Classroom discourse is a key to developing deep understanding. With the right problems, exploring with technology can foster an environment filled with rich discussions and excited students. We will share two examples that can lead to dynamic discussions, engage your students, and develop their knowledge of big ideas.

Bob Horton
Clemson University, South Carolina
Leigh Haltiwanger
Clemson University, South Carolina

Mile High 3 B (Convention Center)

74 Algebraic Thinking When Solving Equations and Doing Word Problems
(9–12) Session
What does it mean to think algebraically? We’ll explore this question by looking at student solution strategies for solving particular equations and doing word problems. Research indicates that some solution strategies are common in algebra classrooms, and some are uncommon. We’ll ask ourselves why.

Daniel I. Chazan
University of Maryland, College Park

207 (Convention Center)

75 Moneyball in the Classroom: Using Baseball to Teach Statistics
(9–12) Session
As illustrated in the movie Moneyball, understanding the power of statistical analysis can be rewarding. Using a formula from the movie, we will learn how to make predictions, calculate residuals, and develop the concept of least squares. We will also use activities to explore regression to the mean and least-squares regression lines.

Josh Tabor
Canyon del Oro High School, Oro Valley, Arizona

Capitol Ballroom 1–3 (Hyatt Regency)

76 Exploring Sequences and Series through Multiple Representations
(9–12) Session
The study of sequences and series can be introduced as early as algebra 1. See how using multiple representations helps make the learning of sequences and series more engaging for students. Discover how to help students make connections with prior learning while laying the groundwork to study more advanced mathematics.

Richard L. Parr
Rice University, Houston, Texas
Anne Papakonstantinou
Rice University, Houston, Texas

Centennial Ballroom B/C (Hyatt Regency)

77 I See It: The Power of Visualization
(9–12) Session
What does it mean to “see” the math? Taking concepts typically taught only symbolically, we’ll explore tasks that can engage students to reason and make sense of mathematical concepts through visual representations. The nature of these tasks will include concrete patterning, dynamic graphing, geometric representation, and more.

Marc Garneau
Education Services–Surrey School District, Canada

505 (Convention Center)

78 Murder, Mirrors, and Mythbusters: A Hands-On History of Conics
(9–12) Session
Was Tycho Brahe murdered? Did Archimedes use burning mirrors to repel Roman invaders? These questions offer motivating contexts to study conic sections. Develop the equations of conics through paper folding and string constructions, and enjoy historical vignettes related to conics.

Brian D. Sharp
Indiana University of Pennsylvania, Indiana, Pennsylvania

Mile High 2 A (Convention Center)
9:30 A.M.–10:30 A.M.

79 Forensic Photography: CSI for the Eccentricity (9–12, Higher Education) Session

Our brain convinces us from experience that a round conference table observed from a distance actually has a circular tabletop. However, in a 2-D photograph taken from that perspective, the perimeter looks elliptical. Finally, a practical use of eccentricity. Learn to use photos forensically to deduce camera angles, lengths, and distances.

Mike Reiners
Christ’s Household of Faith School, Saint Paul, Minnesota

702 (Convention Center)

80 The Mathematics of “Angry Birds” (9–12, Higher Education) Session

We will use the popular game “Angry Birds” as motivation for explorations of projectile motion, focusing on parametric relations to develop a model for motion. The exploration will study how the variables of angle and initial velocity affect the graph, the motion, and the game. We’ll check the results for motion in other images and video captures.

John J. Diehl
Retired, Hinsdale Central High School, Illinois

Ismail Zamora
Hinsdale South High School, Darien, Illinois

601 (Convention Center)

81 A Research-Based Learning Progression for Beginning Algebra (9–12, Preservice and In-Service) Research Session

A learning progression from equivalent expressions to solving linear equations was designed on the basis of research literature and later tested in a ninth-grade classroom. Explore research-based tasks, techniques, and theories to support students’ change in representational fluency using CAS and paper and pencil as tools.

Nicole L. Fonger
Western Michigan University, Kalamazoo

102 (Convention Center)

82 Preparing for Your Institution’s NCATE Program Review (Higher Education) Session

Learn to navigate the NCATE/CAEP program review process and prepare the required documents. Get the latest information about the overall program review system and what is needed to prepare mathematics education program reports. We will explore report templates, 2003 program standards, newly approved 2012 program standards, and mistakes to avoid.

Judy O’Neal
NCTM NCATE SPA Coordinator, Dahlonega, Georgia

Centennial Ballroom D (Hyatt Regency)

83 Using Smartpens to Enhance Student Reasoning in a Proofs Course (Higher Education, Preservice and In-Service) Session

Smartpens record students’ thought processes as they work through proofs. Instructors use the saved pencasts to gain insight into student reasoning and make corrections if necessary. Such an approach is not possible with finished written work.

Dan Radelet
Indiana University of Pennsylvania

Francisco Alarcon
Indiana University of Pennsylvania

709/711 (Convention Center)

84 Will This Way Work? Preservice Teachers Validate Their Solution Strategies (Preservice and In-Service) Session

Rich mathematical problems can lead to multiple solution strategies, each of which should be defended by its author. Explore examples of preservice K–8 teacher reasoning, spanning problems involving multiplication, proportional reasoning, statistics, discrete math, and geometry.

Dave Kennedy
Shippensburg University of Pennsylvania

108 (Convention Center)
85
Building a Firm Foundation: Teaching for Depth of Understanding
(Pre-K–2) Gallery Workshop
The depth of conceptual understandings in the primary grades is vital to success in later grades. Examine the importance of our role in building a firm conceptual foundation for pre-K–16 success. We will focus on number and operations and the development of related language.
Sandy Atkins
Creating AHAs, St. Petersburg, Florida
Mile High 1 E/F (Convention Center)

86
Building Common Core State Standards Skills, One Cabin at a Time
(Pre-K–2) Gallery Workshop
Lincoln Logs have been a popular construction toy. Using this interest and integrating math and social studies skills lays the groundwork for a Common Core State Standards in Mathematics lesson. Take a project from start to finish while learning the skills of counting money, making change, skip counting, addition, subtraction, and coordinate grids.
Cindy Cliche
McFadden School/Middle Tennessee State University, Murfreesboro
Mile High 3 A (Convention Center)

87
Camping In: Math Style
(Pre-K–5) Gallery Workshop
Are you hiking through the world of mathematics looking for great ideas? Join us and camp in, math style. Hike to math trail posts (stations), complete rich problems in your camp journal, and earn your camp badges. Fill your backpack with great ideas for the classroom or a family math night. I will provide handouts and s’mores.
Kelli Shrewsberry
Teaching and Learning Collaborative, Columbus, Ohio
Mile High 2 B (Convention Center)

88
Engaging Children with Number Sense, Geometry, Problem Solving, and Discourse
(Pre-K–5) Gallery Workshop
Learn strategies, including use of manipulatives, to develop number sense, place value, estimation, geometry, and problem solving. I will demonstrate the power of mathematical discourse to develop concepts, reasoning, and mathematics vocabulary. I will engage attendees with hands-on activities.
Donna L. Knoell
Consultant, Shawnee Mission, Kansas
Mineral Hall A–C (Hyatt Regency)

89
Pattern and Place-Value Connections
(Pre-K–5) Gallery Workshop
Explore engaging activities and instructional strategies using pattern to help students in grades 1–3 develop place-value understanding and number sense. Take home many ready-to-implement ideas to guide your students to conceptual understanding. See ah moments happen in your classroom.
Susan Kunze
Bishop Unified School District, California
Michelle Kubiak
Bishop Unified School District, California
607 (Convention Center)

90
Promoting Mathematical Reasoning, Validation, and Communication through Differentiated Learning Centers
(Pre-K–5) Gallery Workshop
Learning centers are a great way for students to explore number concepts, and they offer an opportunity for teachers to observe student thinking. Learn ways to encourage students to reason through mathematical situations, validate their thinking, and communicate their thoughts via differentiated, standards-based learning centers.
Kris Jarboe
Kentucky Center for Mathematics, Highland Heights
Linda Montgomery
Morehead State University, Kentucky
111/113 (Convention Center)
9:45 A.M.–11:00 A.M.

91 Fear Not the Fraction
(3–5) Gallery Workshop
Elementary-level students need experiences with multiple models of fractions to gain a deep understanding of the concept and proficiency with skills, such as finding equivalence and operating. We will explore which model is most appropriate for each purpose and will relate and classify all fraction types.

James L. Burnett
ORIGO Education, St. Charles, Missouri

110/112 (Convention Center)

92 From Seeing to Convincing: Language of Visual Reasoning and Proof
(3–5) Gallery Workshop
“I don’t know how to explain it; I just see it!” Explore ways you can support students in developing the language of reasoning and proof in geometry and measurement. You will also examine grade-appropriate activities that will help students move from solving to proving their solutions to themselves and others.

Polina Sabinin
Bridgewater State University, Massachusetts

Capitol Ballroom 5–7 (Hyatt Regency)

93 Crush Fractions with Technology: Show Me and I Get It
(3–5, Preservice and In-Service) Gallery Workshop
Technology affords us ways to represent fractions that supplement other resources and other modes of teaching, including hands-on fraction models, pictorial representations, and symbolic number work. You will take away free printed manipulatives and resources to reinvigorate your teaching of fractions.

Peter S. Price
Educator, Sheldon, Australia

708/710/712 (Convention Center)

94 Making Our Base-Ten System Concrete and Comprehensible
(3–5, Preservice and In-Service) Gallery Workshop
The foundation of mathematics is a conceptual understanding of our base-ten system. Such groundwork includes identifying numerals used in base ten, connecting symbolic representations of the number 10 with concrete representations, and switching bases to more fully understand the challenges students face in the classroom.

Stacy K. Keller Boote
University of North Florida, Jacksonville

406/407 (Convention Center)

95 Connecting Fractions, Measurement, and Number Lines with Manipulatives and Technology
(3–8) Gallery Workshop
Use hands-on manipulatives and technology to build meaning for fractions and the number line from length measurement, addressing the Common Core State Standard’s treatment of these topics. We will also address research on student understanding about length measurement and number lines.

Nicholas J. Gilbertson
Michigan State University, East Lansing

D. Lee Clark
Michigan State University, East Lansing

Jia He
Michigan State University, East Lansing

403/404 (Convention Center)
9:45 A.M.–11:00 A.M.

96
Mathematics Coaches Need Professional Development Too
(3–8) Gallery Workshop
To increase their effectiveness, mathematics coaches need professional development that increases their mathematics content and coaching knowledge. Participate in hands-on activities in number and operations content that are hard to teach and in activities to increase your own coaching knowledge.

Arlene P. Mitchell
RMC Research Corporation, Denver, Colorado

Elizabeth Burroughs
Montana State University, Bozeman

Clare E. Heidema
RMC Research Corporation, Denver, Colorado

506/507 (Convention Center)

97
Properties of Quadrilaterals: Helpful Tips for Teaching and Learning
(3–8) Gallery Workshop
More than 70 percent of grades 4–8 students (NAEP 2009, 2011) failed the items related to properties of quadrilaterals. This topic is crucial for students’ success in geometry and measurement. We will give you math activities about quadrilaterals and their properties, as well as develop lesson ideas to take back.

Aina K. Appova
Ohio State University, Columbus

Tetyana Berezovski
St. Joseph’s University, Philadelphia, Pennsylvania

503/504 (Convention Center)
9:45 A.M.—11:00 A.M.

98
Unpacking Geometry Problems from Boxes You Create
(3–8) Gallery Workshop
Transform greeting cards into boxes while discovering the properties and concepts to solve related problems. We will make predictions and conjectures about parallelograms, rectangles, squares, and other quadrilaterals. We will explore ratio, proportion, area, and volume, along with nontraditional problems to bring back to the classroom.

Nicholas J. Restivo
Mathematical Olympiads for Elementary and Middle Schools, Bellmore, New York

104/106 (Convention Center)

99
Analyzing a Progression of Proportional Reasoning Strategies
(6–8) Gallery Workshop
Proportional reasoning is a key feature of the middle school Common Core State Standards for Mathematics. Using information from the research base and the Common Core State Standards, we will construct a progression highlighting changes in student thinking from informal to formal understanding by sorting and ordering student thinking strategies, mathematical models, and word problems.

Michele B. Carney
Boise State University, Idaho

Gwyneth Hughes
Boise State University, Idaho

Mile High 1 A/B (Convention Center)

100
Teaching and Assessing Statistical Reasoning Conceptually
(6–8, Preservice and In-Service) Gallery Workshop
Discuss the types of knowledge and thinking teachers need to develop to teach and assess statistics conceptually, as articulated in the Common Core State Standards. We will use examples from NCTM’s Developing Essential Understanding of Statistics for Teaching Mathematics as well as the National Science Foundation–funded LOCUS project.

Tim Jacobbe
University of Florida, Gainesville

Gary Kader
Appalachian State University, Boone, North Carolina

Christine Franklin
University of Georgia, Athens

603 (Convention Center)

101
Connecting Geometry and Algebra through Reasoning and Proof
(6–12) Gallery Workshop
Experience hands-on activities through modeling that provide convincing arguments for justifying the reasoning for algebraic and geometric proofs.

Lawrence Linnen
Metropolitan State University Denver, Colorado

Centennial Ballroom G/H (Hyatt Regency)

102
Let’s Go Bungee Jumping
(6–12) Gallery Workshop
Develop a mathematical model (an equation) to describe the amount of stretch in a bungee cord of varying length. I will also share several other fun mathematical modeling activities ready for classroom use.

Shelton J. Ford
Fayetteville State University, North Carolina

Mile High 3 C (Convention Center)
9:45 A.M.–11:00 A.M.

103
Making Cents of Common Core State Standards Statistics Standards

(6–12) Gallery Workshop

The Common Core State Standards require students to make inferences and justify conclusions from sample surveys, experiments, and observational studies. We will address this standard in a way that non-statistics teachers can implement. Through spinning pennies and simulations, see how to lead students in a statistical significance test.

Doug Tyson
Central York High School, York, Pennsylvania

Jason M. Molesky
Lakeville Area Public Schools, Minnesota

201 (Convention Center)

104
Multisensory Algebra: Building Solutions, Proof by Construction

(6–12) Gallery Workshop

Students benefit from using manipulatives that provide tactile kinesthetic links to abstract calculations. Construct models of algebraic functions to illustrate concepts and function solutions. We will model linear, quadratic, and exponential functions by using common objects and manipulatives. Focus will be on regular, learning disability, and English language learner classes.

Marilyn L. Zecher
The Multisensory Training Institute of The Atlantic Seaboard Dyslexia Education Center, Rockville, Maryland

Mile High 4 C/D (Convention Center)

105
Strategies to Engage Algebra Learners: Puzzles That Promote Mathematical Reasoning

(6–12) Gallery Workshop

Algebra students, accelerated or struggling, need engaging tasks that show that effort pays off as they learn, do, and enjoy mathematics. Puzzles are an ideal context to develop algebraic reasoning and problem-solving strategies. Come solve and design puzzles that improve algebraic understanding, intuition, logic, confidence, and stamina.

Mary K. Fries
Education Development Center, Waltham, Massachusetts

Jane M. Kang
Education Development Center, Waltham, Massachusetts

E. Paul Goldenberg
Education Development Center, Waltham, Massachusetts

Centennial Ballroom E (Hyatt Regency)

106
Verify It: Using Technology Models

(6–12) Gallery Workshop

We will share how you can use technology to give access to struggling and English language learner students, as well as enhance and extend content for the mathematically savvy student. Create simulations and geometric models to represent real-world activities such as skateboarding. Represent generated data algebraically. Make connections between symbols and quantities.

Kathleen McKinley
School District of Lancaster, Pennsylvania

Alwina Green
School District of Philadelphia, Pennsylvania

704/706 (Convention Center)

107
Where Do Those Polygon Area Formulas Come From?

(6–12) Gallery Workshop

Participate in hands-on derivations of area formulas for polygons such as parallelograms, triangles, trapezoids, and more. We believe students will retain the area formulas longer if they can derive them.

Betty B. Long
Appalachian State University, Boone, North Carolina

Deborah A. Crocker
Appalachian State University, Boone, North Carolina

103/105 (Convention Center)
Help students showcase their knowledge with SAT Subject Tests™

The SAT Subject Tests in Mathematics can help your students stand out on their college applications.

Visit us at www.SATSubjectTests.org/teachers

Stop by booth 1534 to receive a FREE Teacher’s Guide to the SAT Subject Tests in Mathematics.
9:45 A.M.–11:00 A.M.

108  Access Proof through Geometric Models
(9–12) Gallery Workshop
Use origami, constructions, and 3-D models to illustrate proofs of geometric theorems. Provide access for English language learners and special education students. Receive proven lessons that bring access to deductive reasoning to your classroom. Discuss the implications of the Common Core State Standards for Mathematics in transforming the geometry classroom.

Frank A. Carrillo
Central Region High School #16A, Los Angeles, California

Mineral Hall D/E (Hyatt Regency)

109  Exploring AP Calculus with Colorful Calculator Investigations
(9–12) Gallery Workshop
Explore activities involving limits, derivatives, and integrals through engaging hands-on activities and graphing calculators with enhanced color graphics. We will also use data collection devices as related to calculus topics.

Sondra Dempsey
Oxford City School System, Alabama

Deedee Stanfield
Oxford City School System, Alabama

Centennial Ballroom A (Hyatt Regency)

110  How Do You Use Statistical Reasoning to Formulate Convincing Conclusions?
(9–12) Gallery Workshop
Engage in problem-based, student-centered tasks that exemplify Common Core State Standards. Using participant-collected data, we will use simulations and graphical displays to help decide whether differences between treatment means are significant. Bring your own laptop to use the free apps in Core Math Tools, available at the NCTM website.

Beth E. Ritsema
Western Michigan University, Kalamazoo

Alden J. Edson
Western Michigan University, Kalamazoo

Four Seasons 4 (Convention Center)

10:00 A.M.–11:00 A.M.

110.1  Summing It Up: What We Know About the New Assessments
(General Interest) Exhibitor Workshop
New assessments aligned with the Common Core State Standards (CCSS) will be available online in 2014–2015. Learn about the assessment approach of the Partnership for Assessment of Readiness for College and Careers (PARCC) and what mathematics educators can expect to see in the new assessments.

Pearson
Upper Saddle River, New Jersey

301 (Convention Center)

110.2  Mathematical Coaching in the Era of the Common Core
(General Interest) Exhibitor Workshop
For mathematics coaches and teacher leaders, this session will share the most effective tools and activities for coaching for professional learning—all designed to help shift classroom practice in ways that nurture the development of the Common Core State Standards Mathematical Practices.

Pearson
Upper Saddle River, New Jersey

302 (Convention Center)

110.3  Cracking the Code of Algebra without Cracking One’s Head
(3–8) Exhibitor Workshop
How does Hands-On Equations enable 80% of inner-city fourth graders to succeed with such basic equations as $4x + 3 = 3x + 9$? If algebra is a foreign language to your students, this session is for you.

Borenson and Associates
Allentown, Pennsylvania

303 (Convention Center)
10:00 A.M.–11:00 A.M.

**110.4 Moving Math Forward in the Middle Grades**

*(6–8) Exhibitor Workshop*

Help your students gain a deeper understanding of mathematics in the middle grades with Math Innovations. The research-based curriculum provides a student-centered approach that balances concept and skill development as students broaden their conceptual understanding of mathematics.

Kendall Hunt Publishing Co.
Dubuque, Iowa

304 (Convention Center)

11:00 A.M.–12:00 P.M.

**111 Clueless: Unintended Consequences of Teaching Clues/Keys for Solving Problems**

*(General Interest) Session*

Sometimes our efforts to help students deal with word problems actually obstruct mathematics learning. Developing mathematical habits of mind has to go beyond translating words and looking for clues. How can we help all students look past translation and learn to think about the mathematics in a problem?

Cathy L. Seeley
Past President, National Council of Teachers of Mathematics; Charles A. Dana Center at the University of Texas at Austin

Four Seasons 1 (Convention Center)

**112 Dynamic Math Leadership: How Can We Promote It?**

*(General Interest) Session*

We will present several leadership frameworks in order to explore options for how you can sustain or improve your leadership potential and relationship with others, as well as encourage others to assume leadership positions. Engage in activities to help your team, organization, and department work together more effectively.

NCTM Affiliate Services Committee
National Council of Teachers of Mathematics, Reston, Virginia

207 (Convention Center)

114 **K–16 Algebraic Thinking: A Mathematical Perspective**

*(General Interest) Session*

Research on algebraic thinking has grown considerably in recent years. Explore research findings from the perspective of mathematics, using the Common Core State Standards for Mathematical Practice as a lens.

Mark Driscoll
Education Development Center, Waltham, Massachusetts

205 (Convention Center)
11:00 A.M.–12:00 P.M.

115 Singing Out about Ongoing Challenges in Teaching Mathematics
(General Interest) Session
Reflect on integrated mathematics, transition paths from high school to college mathematics, cultural attitude toward mathematics, the Common Core State Standards, the hard work and commitment of mathematics teachers, and other current issues. Join us as we inform, provoke, and entertain on big issues through the medium of music.

J. Michael Shaughnessy
Past President, National Council of Teachers of Mathematics; Portland State University, Oregon

Judi Zawojewski
Illinois Institute of Technology, Chicago

Centennial Ballroom D (Hyatt Regency)

116 Teaching Mathematics to English Language Learners: Going Beyond Good Teaching
(General Interest) Session
What strategies must we use to ensure that English language learners (ELLs) have access to high-quality mathematics and the opportunity to develop necessary mathematical practices and language? I will use video clips and cases to highlight K–12 strategies and instructional tools that are effective in teaching ELLs at the various stages of language development.

Nora Ramirez
Nora Ramirez Consulting, Tempe, Arizona

Capitol Ballroom 4 (Hyatt Regency)

117 Measuring Length and Time in the Common Core State Standards, Grades K–1
(Pre-K–2) Session
For measuring length, the Common Core State Standards requires that first graders be taught transitivity and the need for equal units. This teaching is unnecessary because Piaget reported in 1948 that, without any instruction, children demonstrate transitivity by grade 2 and unit iteration after grade 3. The Common Core State Standards also confuses measuring time with telling time.

Constance Kamii
University of Alabama at Birmingham

709/711 (Convention Center)

118 Developing “Math Sense”: Pre-K–Grade 2 Students Make Sense of Mathematics
(Pre-K–2, Preservice and In-Service) Session
We will share tasks designed to help pre-K–grade 2 students engage in mathematics, focusing on Standard 1: making sense of problems and persevering in solving them. We will also share considerations for effective implementation and examples of student work. Join us to see how pre-K–grade 2 students can develop these important practices.

Johnna Bolyard
West Virginia University, Morgantown

Sarah Selmer
West Virginia University, Morgantown

Lauren LaRosa
West Virginia University, Morgantown

705/707 (Convention Center)

Don’t forget your name badge! Badges are needed to attend presentations and explore the Exhibit Hall.
119  
**Elementary Teachers’ Learning, Understanding, and Classroom Use of Learning Progressions**  
*(Pre-K–5) Research Session*

In the National Science Foundation–funded Cognition-Based Assessment project, twenty-seven teachers studied—and used in their classrooms—an integrated system of research-based learning progressions, assessment tasks, and instructional materials. I will describe ways that teachers learned, understood, and used these materials throughout five years of the project.

**Michael T. Battista**  
Ohio State University, Columbus

120  
**Classroom Norms to Support Student Reasoning and Proof**  
* (3–5) Session

Learn how one fourth-grade teacher creates classroom norms that promote student-centered reasoning and proof. The presentation will include video examples of student interactions, insights from the classroom teacher, and a handout offering suggestions for teachers wanting to create similar settings for their own students.

**Michele Heron**  
Kent State University at Stark, North Canton, Ohio  
**Lisa Host**  
New Philadelphia City Schools, Ohio

121  
**How Do You Know? Teaching Children to Reason Mathematically**  
*(3–5) Session*

Explore student-tested ideas for activities that help elementary-age children learn to reason mathematically. Learn strategies you can use to ask questions and create tasks to strengthen students’ abilities to use the mathematical processes of reasoning and proving.

**Elaine A. Tuft**  
Utah Valley University, Orem

123  
**Building After-School Programs: Playing with Mathematics to Reinforce Number Sense**  
*(3–5, Preservice and In-Service) Session*

Explore a university/K–5 after-school program designed to enhance the number sense of students and the competency of preservice teachers. Attendees will learn steps to create a similar program, unique features of the math methods course tied to the program, and effective mathematical activities for at-risk/English language learner students.

**Elizabeth K. Ward**  
Texas Wesleyan University, Fort Worth  
**Elisabeth Johnston**  
Slippery Rock University, Pennsylvania

124  
**Learning about Student Understanding with the “Show Me” iPad App**  
*(3–8) Session*

Students’ attention to precision, engagement level, and perseverance have increased with the use of iPads. I will share what I have learned about students’ mathematical understanding during response-to-intervention instruction. We will discuss students’ recordings using the Show Me app and what can be learned from them.

**Jenny Jorgensen**  
Yarmouth School Department, Maine
11:00 A.M.–12:00 P.M.

125 Lesson Learning from Interviews about Numerical Reasoning
(3–8) Session
Learning to reason numerically is essential for students’ success with math. Learn about the specific strategies and understandings essential for numerical proficiency. Videotapes of student interviews illustrate the importance of emphasizing reasoning mentally.

Marilyn Burns
Math Solutions, Sausalito, California

Four Seasons 2/3 (Convention Center)

126 Considering Students’ Ideas on Graphs of Linear Functions
(6–8) Session
We will analyze individual interviews where middle school students graphically represented stories about how three people save money over a year. Teachers and researchers analyze the influence of previous teaching and the relevance of findings for planning lessons on nonlinear functions.

Analucia D. Schliemann
Tufts University, Medford, Massachusetts

Capitol Ballroom 1–3 (Hyatt Regency)

127 Pants on Fire
(6–8) Session
Learn how to incorporate justification, reasoning, and proof into your existing curriculum. You will discover simple, no-cost strategies and walk away with hints, blacklines, and classroom routines that will infuse your lessons with student opportunities to improve the Common Core State Standards mathematics practices of making arguments, justification, and proof.

Laura O. Godfrey
Madison Metropolitan School District, Wisconsin

505 (Convention Center)

128 Pattern Block Frenzy: Proportional Reasoning with Technology
(6–8) Session
Students often struggle with making sense of ratios and proportions. Learn how a group of sixth graders used virtual pattern blocks to develop proportional reasoning. Their work reveals a variety of creative solutions made possible by the dynamic nature of virtual manipulatives, worthwhile mathematical tasks, and rich classroom discussions.

Katie L. Anderson
Utah State University, Logan

108 (Convention Center)

129 Using Desirable Difficulties to Motivate Reasoning and Challenge Thinking
(6–8, Preservice and In-Service) Session
Being good at math is not evidenced by what you know, but by what you do when you don’t know. Let’s assist students in constructing and applying “new” knowledge in ways different from those in which it was first learned. Those who express reluctance to look at math in alternative ways may be signaling an unrecognized confusion that is already present.

William R. Speer
University of Nevada, Las Vegas

401/402 (Convention Center)

130 Exploring Students’ Readiness to Learn Slope
(6–12) Session
Our formative assessment instrument was developed to be sensitive to common misconceptions about covariation and proportional reasoning that affect students’ readiness to understand slope. We will share aspects of the assessment, our findings, and suggested activities to help you address these misconceptions.

Angela Broaddus
Center for Educational Testing and Evaluation, University of Kansas, Lawrence

Susan Gay
University of Kansas, Lawrence

Centennial Ballroom F (Hyatt Regency)
11:00 A.M.–12:00 P.M.

130.1 Removing Barriers to Reasoning and Sense Making in the Classroom
(6–12) Session
Examine common shortcuts that misrepresent mathematics in the grades 6–12 curriculum. We will discuss how they limit students’ ability to reason and make sense of mathematical concepts and how you can avoid using shortcuts to help students build a conceptual understanding of mathematical concepts.

Daniel Ilaria
West Chester University, Pennsylvania

Centennial Ballroom B/C (Hyatt Regency)

131 How Do We Know What We Think We Know?
(9–12) Session
How much evidence do we require to believe a statement? How sure do we need to be to act on information? What role does time pressure play in our decision? We will explore different situations and consider the role of proofs, the Internet, and technology.

Kurt Mederer
Greens Farms Academy, Westport, Connecticut
Joel Padilla
Convent of the Sacred Heart, Greenwich, Connecticut
Andrew M. Byrne
Darien Public Schools, Connecticut

405 (Convention Center)

132 Using Problem-Based Learning Tasks to Foster Reasoning and Proof
(9–12) Session
We will share teacher-designed problem-based learning (PrBL) mini-units grounded in the Common Core State Standards and Mathematical Practices. These mini-units typically take three to five instructional periods and can be a great way to foster students’ reasoning and proof skills. We share design ideas, resources, and some of our units.

Enrique Galindo
Indiana University, Bloomington
Julie Evans
Bloomfield Junior/Senior High School, Indiana
Jason Walton
White River Valley Junior/Senior High School, Switz City, Indiana

Mile High 2 C (Convention Center)

133 Calculus Animations with GeoGebra
(9–12, Higher Education) Session
GeoGebra is a free, Web-based software that does dynamic geometry and graphing. The dynamic feature of the software allows for animations that can illustrate many topics in calculus. I will show some animations I have used as well as feature instruction on how to create animations that the audience suggests.

Kevin W. Hopkins
Southwest Baptist University, Bolivar, Missouri

Mile High 4 A/B (Convention Center)

134 Calculus In Motion: Improving Calculus Understanding through Interactive Computer Animations
(9–12, Higher Education) Session
Explore interactive computer animations (Sketchpad) that bring calculus to life as the study of motion and change. When you pair animations with a reasoning–questioning teaching strategy, understanding soars because all students see it with their own eyes. Topics include limits, derivatives, integrals, related rates, volumes, and more.

Audrey M. Weeks
Calculus in Motion, Burbank, California

Mineral Hall F/G (Hyatt Regency)

135 Function Foundations
(9–12, Higher Education) Session
Functions are foundational for secondary mathematics and beyond. Yet, students often fail to move beyond a fragile understanding of this concept. I will present research-based and classroom-tested means to assess your students’ thinking about functions and help them build more robust foundations on which to build future success.

Daniel J. Ross
Maryville College, Tennessee

102 (Convention Center)
11:00 A.M.–12:00 P.M.

136 **How to Prove Things**
(9–12, Higher Education) Session

How do we prove claims in math? What strategies are available? When should we use each? This session offers a comprehensive guide to proof strategies, such as reductio ad absurdum and strong induction, and explains how to know which one to use. Leave with useful resources for teaching students how to prove things.

Stuart Gluck
Johns Hopkins University Center for Talented Youth, Baltimore, Maryland

Carlos Rodríguez
Johns Hopkins University Center for Talented Youth, Baltimore, Maryland

501/502 (Convention Center)

137 **Preparing Secondary-Level Math Teachers to Work with English Language Learners**
(Higher Education, Preservice and In-Service) Session

Teachers are often unprepared to work with English language learners (ELLs) in high school math classrooms. An innovative, two-way, content-based instruction approach to building ELLs’ language and content knowledge enables teachers to address the needs of this growing population of students through interdisciplinary teacher collaboration.

Margo DelliCarpini
Lehman College, City University of New York, Bronx

Orlando B. Alonso
Lehman College, City University of New York, Bronx

601 (Convention Center)

138 **Mentor-Guided Lesson Study: Voices from the Field**
(Preservice and In-Service) Session

Discuss effective mentoring of novice teachers, including a new form of prospective teacher development: mentor-guided lesson study. Learn about current research on implementing mentor-guided lesson study and share your experiences and insights.

Jennifer L. Nimtz
Michigan State University, East Lansing

Kristen Bieda
Michigan State University, East Lansing

703 (Convention Center)

11:30 A.M.–12:00 P.M.

139 **Fraction Addition under the Common Core State Standards for Mathematics**
(General Interest) Burst

Under the Common Core State Standards for Mathematics (CCSSM), which topics related to fraction addition will elementary teachers cover? Which skills can high school teachers hope that students will have already practiced? Within and beyond CCSSM, how can we teach addition of ratios of integers with methods that extend to ratios of polynomials? We will look at various perspectives.

J. Bradford Burkman
Louisiana School for Math, Science, and the Arts, Natchitoches

506/507 (Convention Center)
11:30 A.M.–12:00 P.M.

140
Is Graduate Study in Mathematics Education Right for You?
(General Interest) Burst
If you have ever considered graduate study in mathematics education, then this informative presentation is for you. Learn about such details as program requirements, teaching and research opportunities, financial support, thesis/dissertation requirements, and future career options.

Amy Ellis
University of Wisconsin–Madison
Anita Wager
University of Wisconsin–Madison
Eric Knuth
University of Wisconsin–Madison

704/706 (Convention Center)

141
Learning Online and Outdoors: Integrating Geocaching into the Mathematics Classroom
(General Interest) Burst
Geocaching is a high-tech treasure hunt with many opportunities for mathematics education. From geospatial awareness to decryption, students use a variety of mathematical skills to find hidden treasures in the great outdoors. Alternatively, MathCaching websites award virtual treasures on the basis of content-specific capabilities.

Lucy Bush
Mercer University, Atlanta, Georgia
Jeffrey Hall
Mercer University, Atlanta, Georgia

Mile High 1 E/F (Convention Center)

142
MET Grants and Scholarships: What They Are, How to Apply
(General Interest) Burst
Don’t miss out. NCTM’s Mathematics Education Trust (MET) supports teachers with funds for materials, development of lessons, conferences, courses, professional development and in-service, and action research. Learn what’s available and how to apply. You’ll hear tips for choosing the most appropriate award for you and enhancing your chances to win it.

Mathematics Education Trust
National Council of Teachers of Mathematics, Reston, Virginia

406/407 (Convention Center)

143
PLC: The Practices, the Lessons, the Collaborative
(General Interest) Burst
Learn how you can bring the mathematical practices to life while crafting research lessons as a member of our online lesson study collaborative. This PLC values teachers as professionals and offers intellectually stimulating opportunities to increase math knowledge for teaching with a focus on student understanding.

Hope M. Yursa
Drexel University, Philadelphia, Pennsylvania
Jason Silverman
Drexel University, Philadelphia, Pennsylvania

Mineral Hall A–C (Hyatt Regency)

144
Spreadsheet Simulations and Modeling Used as Proof
(General Interest) Burst
We will examine using spreadsheets as a model to prove. We will investigate various probability aspects and misconceptions by using spreadsheets, with reference to the Birthday problem and its extensions, the Monty Hall scenario, and other practical probability scenarios. These spreadsheet applications are in a user-friendly format.

John K. Ley
Xavier College, Sydney, Australia

Centennial Ballroom G/H (Hyatt Regency)
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That’s the sound of your hard work paying off — the moment a concept becomes understanding.

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TI provides thousands of activities designed by educators and researchers to simplify lesson planning, enhance assessment and promote mastery of tough-to-teach/tough-to-learn concepts from middle grades to college.

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Best of all, TI support and professional development are with you every step of the way so you can get your students to “I get it!”

Add up the benefits at Booth 217 today.
11:30 A.M.–12:00 P.M.

145 Can Primary Students Really Defend Their Work in Mathematics? Yes. (Pre-K–2) Burst
Learn three successful ways that young children can “argue” and “defend” their solutions to problems. These ways include number talks, pictures, and games. I will share student work, video, and students engaged in defending their work.
Jean Morrow
Emporia State University, Kansas
Mile High 2 B (Convention Center)

146 Connecting the Visual Arts to Mathematics with Paul Klee Masterpieces (Pre-K–2) Burst
Embrace NCTM Standards by using the visual arts as a teaching tool in pre-K–grade 2. View images of Paul Klee’s artwork and discover and explore fractions, probability, counting, and shapes.
Jennifer L. Albritton
All Saints’ Episcopal School, Fort Worth, Texas
Annabelle G. Gallo
All Saints’ Episcopal School, Fort Worth, Texas
Mile High 1 A/B (Convention Center)

147 Guided Math: Incorporating Literacy Practices into Mathematical Instruction (Pre-K–5) Burst
Many resources related to guided reading flood the educational landscape. Hear the experience of how a numeracy consultant designed and delivered guided math to struggling primary students on the basis of literacy research, and how such an approach can be applied in a classroom setting.
David A. R. Costello
Western School Board, Summerside, Canada
Centennial Ballroom A (Hyatt Regency)

148 “Knock Some Sense” into Your Warm-Ups (Pre-K–5) Burst
Number sense, that is. This presentation includes number sense routines that wake up students’ minds and bodies. Learn how incorporating movement into warm-ups can increase motivation, deepen student understanding of number relationships, and close the math experience gap. Walk away with an array of activities to amp up your math class.
Renee L. Snyder
Gahanna-Jefferson Public Schools, Gahanna, Ohio
Devin E. Anderson
Gahanna-Jefferson Public Schools, Gahanna, Ohio
Susan M. Signet
Gahanna-Jefferson Public Schools, Gahanna, Ohio
503/504 (Convention Center)

149 Response to Intervention: We Need It Now (Pre-K–5) Burst
Are you struggling to implement a Common Core State Standards–plus curriculum (Common Core State Standards + existing curricular standards) while juggling the need to offer effective intervention to your students? Explore place value, whole-number operations, and equivalent fractions as pivotal topics for your intervention efforts.
Beth Kobett
Stevenson University, Baltimore, Maryland
Francis (Skip) Fennell
Past President, National Council of Teachers of Mathematics; McDaniel College, Westminster, Maryland
Four Seasons 4 (Convention Center)

150 Sir Cumference Gets His Just Desserts (Pre-K–5) Burst
Join author Cindy Neuschwander on a delicious journey of gathering, recording, and interpreting data in several forms with her newest book, *Sir Cumference and the Off-the-Charts Dessert*. It’s a sweet math treat.
Cindy Neuschwander
Dublin Unified School District, California
Centennial Ballroom E (Hyatt Regency)
11:30 A.M.–12:00 P.M.

151 Early Algebra: How Soon Is Too Soon?
(3–5) Burst
Early algebra is gaining more relevance in mathematics education, especially with the implementation of the Common Core State Standards in most of the United States. This study offers some insight about the ability of students younger than 12 years to develop abstract solutions to a concrete problem-solving task without having explicitly been taught algebra.

Ute Lentz
University of North Carolina at Charlotte

Mile High 3 A (Convention Center)

152 Walking, Talking, Seeing, and Doing Math: A University Math Trail
(3–5, Preservice and In-Service) Burst
Explore using a math trail at a university campus as a way to encourage preservice elementary teachers to consider math outside the classroom. Try a few questions from a “virtual” form of the math trail and gain insight into how this activity was designed and used in an elementary methods course.

Christine L. Latulippe
Norwich University, Northfield, Vermont

603 (Convention Center)

153 Visual Vocabulary: Are They Getting the Picture?
(3–8) Burst
Your students seem to understand math concepts during hands-on activities, yet they don’t test well. Is vocabulary the problem? Math terms with multiple meanings could be muddying the waters. Learn how using powerful visuals, mnemonics, and easy strategies to intentionally focus on vocabulary during math instruction can make a huge difference.

Theresa Tefertiller
Consultant, Klein, Texas

201 (Convention Center)

154 Using Paper Folding to Explore Area for Grades 6–8
(6–8) Burst
We will derive formulas for areas of figures by using paper folding. Once students see how the formulas are derived from a rectangle (or note card), they will remember the formulas and understand how and why they are used.

Cathy Banks
Texas Woman’s University, Denton

Mile High 4 C/D (Convention Center)

155 Mathematical Reasoning and Proof: Letting Students Write Their Own Story
(6–12) Burst
Writing helps students enhance their mathematical reasoning and proof. This presentation shares an instructional way to use story writing in math classrooms. We will use samples of student writing to show how students develop informal proofs written in story form to justify their mathematical reasoning.

Young Rae Kim
University of Minnesota, Minneapolis

Mi Sun Park
University of Minnesota, Minneapolis

Tamara J. Moore
University of Minnesota, Minneapolis

111/113 (Convention Center)

156 Using Public Policy to Promote Writing in the Math Classroom
(6–12) Burst
Explore several projects that enable students to apply math concepts in realistic public policy settings. These projects not only offer a high-interest context to motivate student writing about mathematical ideas but also illustrate the application of math to questions of public policy and social justice.

Aaron Orzech
Harvard Graduate School of Education, Cambridge, Massachusetts

110/112 (Convention Center)
11:30 A.M.–12:00 P.M.

157 Math Journal 2.0: Jump-Start Your Students’ Reflections
(9–12) Burst
Reflection is a vital component of student learning. Have your students leave the journal notebook behind and reflect in an online blog. One hundred students in a small school in East Harlem blogged twice weekly for five months and saw a dramatic improvement in retention and test scores. Learn what you need to start math blogs now.

John Schnatterly
Central Park East High School, New York, New York
103/105 (Convention Center)

158 Review Strategies for AP Calculus
(9–12) Burst
Are you tired of reviewing for the AP exam the same way every year? Do you want new approaches to review and enhance the material your students need to know? Come and learn just a few ways to help your students prepare for the AP exam.

Sam V. Gero
Fairfax County Public Schools, Lorton, Virginia
708/710/712 (Convention Center)

159 A New “Sage” on the Stage
(9–12, Higher Education) Burst
Sage is a powerful computer algebra system available as a free download. Discuss activities you can use in a variety of classes, such as algebra, trigonometry, calculus, and discrete mathematics. I will also share examples of projects that you can enact in these and more advanced courses.

Joe A. Stickles
Millikin University, Decatur, Illinois
403/404 (Convention Center)

160 Making the Most of Mentoring: A Reciprocal Learning Experience
(9–12, Preservice and In-Service) Burst
The enormous responsibility of mentoring interns and beginning teachers can be overwhelming, especially in mathematics education. Are you making the most of your experience? Are you learning as much as you are trying to provide? Learn strategies and ideas for an effective and rewarding mentoring experience.

Ellen Burleson Matheny
University of Tennessee, Knoxville
607 (Convention Center)

161 Concept Mapping in Probability and Statistics
(Higher Education) Burst
Teachers or researchers can develop their own assessment instruments by using Inspiration 6, a computerized visual learning tool that inspires students to develop and organize their ideas. The computerized constructions provide the interface upon which students and teachers together can construct probability and statistics models and methods.

Alisa S. Izumi
Western Governor’s University, Salt Lake City, Utah
104/106 (Convention Center)

162 Connecting Undergraduate Content to Practice
(Higher Education) Burst
“When are we ever going to use this?” is not just a question for K–12 mathematics. Future mathematics teachers often ask their undergraduate professors the same thing. I will briefly describe a majors-based freshman learning community and the ongoing connections made using a content portfolio assignment.

Janet A. White
Millersville University of Pennsylvania
Mineral Hall D/E (Hyatt Regency)
163 Interactions between Teachers’ Goals and Mathematical Knowledge for Teaching
(Higher Education, Preservice and In-Service) Research Burst

We share our findings regarding how some teachers’ goals for student learning shifted in the context of using a research-based conceptual curriculum, and how these goal structures related to their mathematical knowledge for teaching and stated instructional goals during professional development sessions.

Frank S. Marfai
Arizona State University, Tempe

Marilyn P. Carlson
Arizona State University, Tempe

164 Learning to Teach Together: What Worked in a Coteaching Project
(Higher Education, Preservice and In-Service) Burst

Teacher candidates and cooperating teachers coplanned and cotaught mathematics lessons in urban middle schools and high schools by using a variety of coteaching strategies. Find out what worked and what didn’t as they embarked on a journey to strengthen teacher preparation and increase student learning.

Ruth Yopp
California State University, Fullerton

Mark Ellis
Board of Directors, National Council of Teachers of Mathematics; California State University, Fullerton

164.1 Prepare Your Students for Algebra Success
(General Interest) Exhibitor Workshop

Despite a variety of approaches to attack the problem, the algebra fail rate has remained stubbornly high in many of our schools. Learn about onRamp to Algebra, Pearson’s new solution using explicit instruction, peer-assisted learning, and independent practice with scaffolded supports.

Pearson
Upper Saddle River, New Jersey

164.2 Math Upgrade: Elementary Success Using Songs, Video, and Games
(Pre-K–5) Exhibitor Workshop

Math Upgrade is an exciting alternative for elementary math success. Find out how teachers transform their classes by using interactive whole-class lessons. Learn how schools move every student up to proficiency with high-interest online courses both at school and at home. Join us for math, music, and fun.

Learning Upgrade LLC
Escondido, California

164.3 New K–5 Math Curriculum for Building Mathematical Thinkers
(Pre-K–5) Exhibitor Workshop

Bridges in Mathematics, second edition, is a comprehensive K–5 curriculum that equips teachers to fully implement the Common Core State Standards in a manner that is rigorous, coherent, engaging, and accessible to all learners. Preview new materials, view video clips of lessons, and meet the program authors.

Math Learning Center
Salem, Oregon

164.4 CCSS Mathematical Practices? Trust CPM’s 20 Years of Writing Experience
(6–12) Exhibitor Workshop

Try some lessons and take home samples of CPM’s Core Connections series. The third generation of CPM blends Common Core State Standards content and practice standards in a coherent sequence from sixth grade through algebra 2. Course elements include problem solving, mathematical thinking, problem-based lessons, and mathematical discourse in a student-centered format.

CPM Educational Program
Sacramento, California
165 Meeting the Challenges of the Common Core State Standards (General Interest) Session

Powerful mathematics instruction starts with high standards and classroom materials that meet those standards. But the richest math learning environments have other important characteristics as well. Learn “what counts” in mathematics instruction aimed at producing mathematical thinkers and problem solvers.

Alan Schoenfeld is the Elizabeth and Edward Conner Professor of Education and Affiliated Professor of Mathematics at the University of California, Berkeley. His interests include problem solving, diversity in math education, assessment, and effective teaching. Alan has been involved in NCTM activities for more than thirty years, including his work as one of the authors of Principles and Standards for School Mathematics.

Alan H. Schoenfeld
University of California, Berkeley

Four Seasons 2/3 (Convention Center)

166 Redefining “Help”: Research-Based Strategies to Help All Students Learn (General Interest) Session

How can we help students? Engaging students in productive struggle and making relationships explicit make a difference, to name a few. Explore ways to help all students become competent and confident in mathematics.

Jennifer M. Bay-Williams
University of Louisville, Kentucky

Centennial Ballroom B/C (Hyatt Regency)

167 Standards for Preparing Future Mathematics Teachers (General Interest) Session

NCTM has revised the standards for NCATE’s program review process. Review the new standards and how these changes will influence the review process as NCATE transitions to CAEP.

Judy O’Neal
NCTM NCATE SPA Coordinator, Dahlonega, Georgia

207 (Convention Center)

Get the Buzz at NCTM’s Member Showcase

Learn about the latest math buzz and maximize your membership experience at the NCTM Member Showcase located in the BuzzHub area of the Exhibit Hall:

- Pick up teaching tools to take home—classroom activities, newsletters, and sample journals.
- Learn about exclusive member-only online benefits, including lesson plans, tips to make your job easier, and journal articles.
- Join or renew your membership in Denver and get a free T-shirt. (Limited quantities.)
- Plus, come see us for a free math giveaway.
12:30 P.M.–1:30 P.M.

168 Developing Strategic Reasoning in Learning the Basic Facts
(Pre-K–2) Session
Learn how to develop reasoning and thinking strategies that greatly increase young students’ fluency in addition and subtraction word problems and basic fact knowledge.

Edward C. Rathmell
University of Northern Iowa, Cedar Falls
Larry P. Leutzinger
University of Northern Iowa, Cedar Falls

107/109 (Convention Center)

169 Language Is the Core for Mathematical Concepts
(Pre-K–2) Session
Language bridges the gap between concrete representation and abstract mathematical notation. In early childhood, the material, mathematical, and symbolic language stages support deep understanding of concepts. Learn how language is used to teach the operations and measurement concepts with stories and related materials.

Rosemary Reuille Irons
Queensland University of Technology, Brisbane, Australia

Capitol Ballroom 4 (Hyatt Regency)

170 Prove It to Myself and Others
(Pre-K–2) Session
What do reasoning and proof look like in the early grades? How will the abilities developed in these areas transfer to formal proof in later grades? What is the role of the Standards for Mathematical Practice in the development of early abilities to reason and prove? We will address these and other essential questions.

Linda K. Griffith
University of Central Arkansas, Conway

405 (Convention Center)

171 Fraction Misconceptions: Importance for Clarity in Language and Representation
(3–5) Session
I will relay findings from a mixed-methods study on misconceptions in third-grade mathematics, particularly with fractions. We will explore several themes, such as the importance of teacher clarity in both language use and representation. I will also explore several examples and make suggestions for practice.

Holly Henderson Pinter
University of Virginia, Charlottesville

Mile High 3 B (Convention Center)

172 Introducing Area Measurement by Using Equipartitioning
(3–5) Research Session
Why do students struggle with area measurement and the meaning of a “square unit”? It might be because instruction rushes from tiling to generalizing that area = length × width without giving students a strong internal measurement structure. We will investigate an area-comparison task that might help, as well as explore connections to the Common Core State Standards.

Kenny Huy Nguyen
Catlin Gabel School, Portland, Oregon

Mile High 2 C (Convention Center)

173 Reasoning in the Elementary Classroom: It’s Easier Than You Think
(3–5) Session
Mathematical reasoning is not only one of the NCTM Process Standards but also an important practice in the Common Core State Standards. We will share several simple strategies from both the Singapore and U.S. perspectives on modifying tasks and questions to bring reasoning to the instructional forefront.

Berinderjeet Kaur
National Institute of Education, Singapore

Denisse R. Thompson
University of South Florida, Tampa

205 (Convention Center)
12:30 P.M.–1:30 P.M.

174 **Using Argumentation to Enhance Elementary Students’ Understanding of Mathematics**

**(3–5) Session**

Students need opportunities to construct mathematical arguments, but how is this implemented? I will present sample lessons about the arithmetic properties taught, with emphasis on mathematical argumentation. Learn how to modify your own math lessons to improve learning while incorporating reasoning.

Chepina Rumsey  
Kansas State University, Manhattan

709/711 (Convention Center)

175 **Measure Up: Garden-Based Learning for Length, Area, and Volume**

**(3–5, Preservice and In-Service) Session**

Explore the concept of garden-based learning to develop students’ abilities in measurement: length, area, and volume. Raised-bed and container gardens coupled with trellises offer a rich infrastructure. In the context of a school–university partnership, learning ensues year round because of strong community involvement, teacher leadership, and small grants.

James A. Rye  
West Virginia University, Morgantown

Sarah Selmer  
West Virginia University, Morgantown

Sarah Kane  
North Elementary School, Morgantown, West Virginia

102 (Convention Center)

176 **Developing Good Questions for Reasoning and Proof**

**(3–8) Session**

What is reasoning and proof? What questioning strategies can you use to develop “reasoning and proof thinking” in your classroom? Find out how you can help your students to improve their reasoning and proof abilities.

DesLey V. Plaisance  
Nicholls State University, Thibodaux, Louisiana

605 (Convention Center)

177 **Motivating Students with Concept Development Games**

**(3–8) Session**

The Common Core State Standards are taught through a conceptual approach. Students must work with manipulatives to build skills and conceptual knowledge. Students need to engage in mathematics lessons, and games are motivational. Participants explore concept games that make student thinking visible.

Ted H. Hull  
LCM: Leadership • Coaching • Mathematics, Pflugerville, Texas

Don S. Balka  
TODOS: Mathematics for ALL, LaPaz, Indiana

Ruth Harbin Miles  
Mary Baldwin University, Charlottesville, Virginia

Capitol Ballroom 1–3 (Hyatt Regency)

178 **Powerful Practices to Make Mathematics More Accessible to Struggling Learners**

**(3–8) Session**

Experience powerful approaches for teaching math to struggling students, with or without disabilities, as part of high-quality Tier 1 instruction. Use an Accessibility Planner to identify potential barriers in lessons and align accessibility strategies with students’ math strengths and difficulties. Leave with ideas to try with your students.

Amy Brodesky  
Education Development Center, Waltham, Massachusetts

Emily Fagan  
Education Development Center, Waltham, Massachusetts

501/502 (Convention Center)

179 **Ensuring That All Your Students Are Common Core State Standards Ready**

**(6–8) Session**

Learn how to ensure that all students are prepared for the forthcoming Common Core State Standards Assessments. We will analyze the content knowledge and mathematical practices that middle school students need to know and demonstrate, and we will highlight effective instructional practices and strategies to prepare them for these assessments.

Diane J. Briars  
Consultant, Pittsburgh, Pennsylvania

Four Seasons 1 (Convention Center)
12:30 P.M.–1:30 P.M.

180 Getting Serious about Games in Middle-Grades Math
(6–8) Session

Play a little, learn a little. Presenters share findings from a national math challenge featuring Lure of the Labyrinth, an online game where students navigate a graphic novel by using mathematical thinking. Participate in group game play and learn what impact the game had on more than 10,000 middle grades students and their teachers.

Scot Osterweil
Education Arcade @ MIT, Cambridge, Massachusetts

Centennial Ballroom D (Hyatt Regency)

181 Socratic Seminar in Math: Development of Math Reasoning Collaboratively
(6–8) Session

Are you struggling to figure out how to teach, assess, and use the mathematical practices in the Common Core State Standards? Using Socratic Seminars (SS) in math can do exactly that. You will gain insight in preparation, design, and implementation of SS in assessing math understanding, all while helping your teens to independently collaborate and think mathematically.

Ryan M. Higgins
Community Montessori Charter Public School, New Albany, Indiana

Mile High 4 E/F (Convention Center)

182 Transforming My View about Reasoning and Proof in Geometry
(6–8, Preservice and In-Service) Session

Students who experience proof as a process of coming to understanding, rather than as another topic to learn, get more out of geometry class. Explore how to unpack mathematical ideas and how to support students to reason mathematical knowledge, using tasks to explore geometric ideas in ways that explain and convince.

Zulfiye Zeybek
Indiana University, Bloomington

Enrique Galindo
Indiana University, Bloomington

Mark Creager
Indiana University, Bloomington

Mile High 2 A (Convention Center)

183 English Language Learners in Mathematics: Success from Day One
(6–12) Session

English language learners benefit from engaging, research-based methods that offer access to challenging content. Learn how to determine appropriate placement in math courses; teach engaging, standards-based math lessons that scaffold instruction; and develop appropriate assessments based on the Common Core State Standards.

Susan Miller-Curley
Miller-Curley Educational Consulting, Denver, Colorado

Maria Thomas-Ruzic
University of Colorado, Boulder

702 (Convention Center)

184 Keeping It Real: Teaching Math through Real-World Topics
(6–12) Session

How long does burning off a Big Mac take? In basketball, should you ever foul at the buzzer? Explore real-world lessons that teachers can immediately use to address the Common Core State Standards in a fresh, new way. Learn to foster a rigorous understanding of math while challenging students to think about the world more critically.

Karim Kai Ani
Mathalicious, Alexandria, Virginia

Mile High 1 C/D (Convention Center)

185 Mathematical Modeling with Latin Squares: Implementing the Common Core State Standards
(6–12) Session

Use manipulatives to solve recreational problems before attempting a real-world scheduling problem, all involving Latin squares. These activities illustrate implementation of math practice and literacy standards from the Common Core State Standards. We will also discuss a National Science Foundation–funded Maths Camps project in Australia using the same problems.

Lisa A. Lishak
Loachapoka High School, Alabama

Beth Hickman
Alabama Math, Science, and Technology Initiative—Auburn University

703 (Convention Center)
12:30 P.M.–1:30 P.M.

186 Reimagining High School Geometry
(6–12) Session

Geometry remains a vital mathematical experience. Our access to 21st-century resources and thinking means, however, that it must change. We will challenge your conception and share ours of a more active, exciting geometry course including elements of design thinking, an expansive attitude toward proof, and more emphasis on real problem solving.

John Threlkeld
Colorado Academy, Denver

Pete Horsch
Colorado Academy, Denver

Mile High 4 A/B (Convention Center)

187 How and Why: Use Graphing Calculators for Reasoning and Proof
(9–12) Session

Graphing calculators have not been extensively used for reasoning and proof. Explore algebra 1, algebra 2, and geometry Common Core State Standards–based reasoning and proof problems. Then we will discuss why and how to use the graphing calculator. The problems will come from various NCTM publications and from Common Core State Standards sample assessment problems.

Kathleen Cage Mittag
Retired, University of Texas at San Antonio

505 (Convention Center)

188 New Pathways for Students Needing Four Years of Mathematics Credits
(9–12) Session

“Advanced Algebra with Financial Applications” and “Hands-On Statistics” are two motivating, rigorous mathematics courses that allow students who would have struggled in algebra 2 and precalculus a chance to succeed in, and appreciate the utility of, mathematics in their daily lives. We will present outlines and activities for both courses.

Robert Gerver
North Shore Schools, Glen Head, New York

Richard J. Sgroi
Retired, Bedford Public Schools, New York

203 (Convention Center)

189 How to Decide whether a Company Has Sex Bias
(9–12, Higher Education) Session

Statistics is more than mean, median, and mode. It is used to make decisions, inferences, and extrapolations, as well as determining correlation. Students need to be able to apply—and know when not to apply—statistics. We will consider three activities or contexts that make students think about how and when to apply statistics.

Erin R. Richgels
North Pole High School, Alaska

Amber R. Severson
Anoka-Ramsey Community College, Cambridge, Minnesota

Glen W. Richgels
Bemidji State University, Minnesota

Centennial Ballroom F (Hyatt Regency)

190 Proof by Osmosis?
(9–12, Higher Education) Session

Osmosis is an apparently effortless absorption of ideas, feelings, attitudes, and so on. Proof in mathematics should be taught as a result of reasoning, not simply learned by students through osmosis.

Johnny W. Lott
Past President, National Council of Teachers of Mathematics; Retired, University of Montana, Missoula

401/402 (Convention Center)

191 To Teach Proof, Must We Also Teach Logic?
(9–12, Higher Education) Session

The reasoning used in mathematical proof is based on linguistic and logical conventions that are rarely made explicit to students. Familiarity with basic logical principles can help resolve the mystery—both for what teachers say in class and for the mathematical tasks students are asked to perform by themselves.

Susanna S. Epp
DePaul University, Chicago, Illinois

705/707 (Convention Center)
12:30 P.M.–1:30 P.M.

**192**

*Creating Teacher Leaders: Professional Development Lessons Learned*

*(Higher Education, Preservice and In-Service)* Session

President Series Presentation

Explore the structure of a two-year professional development program focused on creating teacher mentors to influence mathematics instruction and learning in classrooms, schools, and districts. Hear from participants and program leaders about what they learned about coaching, mentorship, leadership, and mathematics.

Mary B. Swarthout
Research Council on Mathematics Learning; Sam Houston State University, Huntsville, Texas

108 (Convention Center)

**193**

*Does What We Believe about Algebra Really Matter to Students?*

*(Preservice and In-Service)* Research Session

Explore a new instrument to measure teachers’ self-efficacy in teaching algebra. Engage in algebraic tasks, questions, and discussions designed to offer a venue for preservice and in-service teachers to examine their beliefs about teaching and learning algebra and the potential impact on student learning.

Trena L. Wilkerson
Baylor University, Waco, Texas

Bill Jasper
Sam Houston State University, Huntsville, Texas

Sarah Quebec-Fuentes
Texas Christian University, Fort Worth, Texas

Mineral Hall F/G (Hyatt Regency)

1:00 P.M.–2:00 P.M.

**194**

*Engaging Prospective Teachers in Generating Conjectures That Call for Proof*

*(Preservice and In-Service)* Session

Engaging prospective secondary mathematics teachers (PSMTs) in reasoning and proof starts with their generating and testing their own conjectures. Everyday classroom situations and experimentation with technology can serve as venues for these conjectures, as seen in our work with PSMTs. We will discuss characteristics of promising situations.

M. Kathleen Heid
Pennsylvania State University, State College

601 (Convention Center)

**194.1**

*Pearson’s CMP3: Get Connected*

*(General Interest)* Exhibitor Workshop

Experience CMP3, the newest edition of the inquiry-based Connected Mathematics Project. See what’s new, including updated Common Core State Standards–aligned content and easy-to-use mobile tools that help with classroom management and capture student work on the go.

Pearson
Upper Saddle River, New Jersey

301 (Convention Center)

**194.2**

*Think Through Math*

*(General Interest)* Exhibitor Workshop

Come hear the latest from Think Through Math.

Think Through Math
Pittsburgh, Pennsylvania

303 (Convention Center)
1:00 P.M.–2:00 P.M.

**194.3**  
Meeting the Needs of Mathematically Talented Students  
(Pre-K–5) Exhibitor Workshop

Support your talented K–5 students with award-winning Project M2 and Project M3. These Common Core State Standards–aligned supplemental units will motivate high-ability learners and can increase math achievement in students through engaging, real-world investigations. Learn about each program’s instructional design and get a sample lesson you can use.

Kendall Hunt Publishing Co.  
Dubuque, Iowa

304 (Convention Center)

**194.4**  
Algebra Upgrade: Interactive Lessons Using Songs, Video, and Games  
(6–12) Exhibitor Workshop

Algebra and Pre-Algebra Upgrade feature music and animation to make challenging concepts understandable. Find out how teachers transform their classes by using interactive whole-class lessons and individual online courses. Join us for algebra, music, and fun.

Learning Upgrade LLC  
Escondido, California

302 (Convention Center)

1:00 P.M.–2:15 P.M.

**195**  
Building Number Sense in Pre-K–Grade 2  
(Pre-K–2) Gallery Workshop

Developing early numeracy concepts is essential for a higher-level understanding of our number system. Teachers’ knowledge of early number concepts is central for students’ learning. Engage in an environment to practice early numeracy concepts that will become routines or workstations in the mathematics classroom.

Cynthia Hillman-Forbush  
Hillman-Forbush Associates, Houlton, Maine

Mile High 2 B (Convention Center)

**196**  
Delving Deeper into Pattern Block Designs: Can You Prove It?  
(Pre-K–2) Gallery Workshop

You will combine two-dimensional shapes, recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different to develop the background for initial understandings of properties such as symmetry and congruence.

Wanda C. Noblin  
Spartanburg District Three, South Carolina

Beverly C. Vogt  
Consultant, Parkville, Missouri

Mile High 4 C/D (Convention Center)

**197**  
Shuffling into Math: Games for Response to Intervention  
(Pre-K–2) Gallery Workshop

Come prepared to play card and dice games that help you teach all students in your class. Concepts covered include numeration, operations, place value, and more. Get ideas to adapt activities, assessment, and journal writing/response. Experience the power of games as a teaching strategy to reach all learners.

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

Centennial Ballroom A (Hyatt Regency)

**198**  
Successful Strategies to Master Multiplication  
(Pre-K–5) Gallery Workshop

Students encounter situations that involve multiplication daily. Explore a range of flexible thinking strategies that can help develop the basic multiplication facts. See practical ways to develop multiplication facts through visual materials and games.

Peter Stowasser  
ORIGO Education, St. Charles, Missouri

603 (Convention Center)
1:00 P.M.–2:15 P.M.

199 Using Household Items to Engage Students in Meaningful Mathematics
(Pre-K–5) Gallery Workshop
What do paper plates, index cards, cotton swabs, and coffee stirrers have in common? They are inexpensive and readily available. Learn strategies to turn these everyday items into engaging tools to help your students make connections to mathematical concepts, including time, geometry, multiplication, and division.
Lisa A. Brooks
University of Central Florida, Orlando
607 (Convention Center)

200 Fracturing Misconceptions in Fractions
(3–5) Gallery Workshop
Let’s help all students understand. This gallery workshop will give you ideas to teach fractions and help even your lowest-scoring students understand them. You will see how to reduce fractions conceptually, how to build number sense with fractions, and how to lead students to develop their own fraction algorithms. We will also cover discussion and reasoning.
Diane J. Fischer
Rockford Public Schools, Illinois
103/105 (Convention Center)

201 Can You Find Pi in the Pumpkin Patch?
(3–8) Gallery Workshop
Incorporate math content and students’ excitement of picking pumpkins by engaging them in the classroom with metric tape measures, rulers, circular objects, and calculators to complete a data sheet to discover pi. Move to the real world of a local orchard to use those same tools and data sheet to measure pumpkins and apples in the orchard to find pi.
Judy K. Ackermann
Mascoutah School District 19, Illinois
Mile High 3 A (Convention Center)

202 Geometry Gems: Dissections That Promote Mathematical Thinking and Spatial Reasoning
(6–8) Gallery Workshop
Geometric dissections involve cutting a figure into parts that are rearranged to form another figure. The mathematics is based on the theorem that any polygon can be transformed into any other of the same area by cut and paste. We will design and construct 2- and 3-D dissection puzzles and explore their mathematics and history.
Patricia S. Baggett
New Mexico State University, Las Cruces, New Mexico
Andrzej Ehrenfeucht
University of Colorado, Boulder
Mineral Hall A–C (Hyatt Regency)

203 Geometry on a Shoestring Budget
(6–8) Gallery Workshop
The most profound, interactive, and dynamic activities in geometry don’t require expensive technologies—just the strings on your shoes. Intriguing—though cheap and nontraditional—geometric manipulatives come from common materials such as paper, golf balls, dowels, and string, proving that you can have the road to reasoning and proof on a dime.
David K. Masunaga
Iolani School, Honolulu, Hawaii
503/504 (Convention Center)

204 Statistical Reasoning in the Middle School
(6–8) Gallery Workshop
The Common Core State Standards call for more statistics content in the middle grades. Explore informal and preformal tasks designed to support student understanding, and incorporate them into a learning progression leading to the formal statistics students will use in high school and beyond.
Raymond Johnson
University of Colorado at Boulder
Susan Thomas
University of Colorado at Boulder
Mineral Hall D/E (Hyatt Regency)
Bridge the Gap to Common Core State Standards!

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Grade 4 shown.

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205 Ti-Nspired for the Middle Grades: Common Core State Standards–Based Investigations
(6–8, Preservice and In-Service) Gallery Workshop
Engage in several TI-Nspire activities designed for middle-grades students to explore the Common Core State Standards for Mathematics. Explorations will relate to geometry and functions. These activities are part of the Math Nspired resources on education.

Ann M. Schlemper
Columbia College, Missouri

Capitol Ballroom 5–7 (Hyatt Regency)

206 Algebra Reasoning, Common Core State Standards, English Language Learners: Analyzing Motion Graphs
(6–12) Gallery Workshop
We will use calculator-based rangers to create motion graphs that support English language learners in making connections between motion in 3-D space and how that is displayed on a distance–time graph. We will work with linear equations, domain/range, independent/dependent variables, intersecting lines, slope, parallel and perpendicular lines, and more.

Angela Thompson
University of California, Santa Cruz
Alex Radosavljevic
University of Illinois at Chicago

506/507 (Convention Center)

207 Do the Function Dance with Sketchpad 5
(6–12) Gallery Workshop
How better to explore rate of change than as independent and dependent variables dancing together? We’ll vary x and y by doing both real and computer-based dances of geometric, linear, quadratic, exponential, and composite functions. Bring your laptop or iPad with Sketchpad. Leave with classroom-ready activities suitable for geometry and algebra.

Scott Steketee
KCP Technologies, Philadelphia, Pennsylvania
Daniel Scher
KCP Technologies, Emeryville, California

708/710/712 (Convention Center)

208 Flying through the Common Core State Standards: Aviation-Based Lessons for Integrated Mathematics
(6–12) Gallery Workshop
Discover the materials created by Kenan Fellow Allison George. Through the lens of aviation, we will explore inquiry-based lessons applicable to both traditional and integrated math teachers. You will leave with three units (one each for Integrated Math 2, 3, and 4) and the foundation to develop your own.

Allison M. George
Winston-Salem/Forsyth County Schools, North Carolina

111/113 (Convention Center)

209 From the Fundamental Counting Principle to Infinity and Beyond
(6–12) Gallery Workshop
Students struggle with finding sample spaces and knowing when using permutations, combinations, or other strategies is appropriate. Yet without mature counting techniques, probability is impossible to calculate. Solve a counting problem, explore the mathematics within, and discuss implications for teaching counting.

Patrick M. Kimani
California State University, Fullerton
Sarah Anderson
Magnolia Elementary School District, Anaheim, California

Four Seasons 4 (Convention Center)

210 Racecars, Pennies, and Men with Hats: Teaching Algebra for Understanding
(6–12) Gallery Workshop
Experience three hands-on mathematical tasks used to build students’ conceptual understanding. We will explore rate of change, exponential growth, and compound inequalities. We will also discuss ways to incorporate reasoning and sense-making skills into daily lessons and assessments.

Amy Nebesniak
Washburn University, Lawrence, Kansas
Darla Berks
Lincoln Public Schools, Nebraska

Centennial Ballroom E (Hyatt Regency)
1:00 P.M.–2:15 P.M.

211

Strike a Pose: Modeling in Algebra
(6–12) Gallery Workshop

The pressure is higher than ever to include modeling in mathematics. Explore what linear and quadratic modeling looks like in the algebra curriculum. With minimal, inexpensive supplies, we will collect and analyze data and then use transformations to fit student models, using photos and technology.

Jennifer North Morris
Consultant, Tucson, Arizona

Brenda Elmore
Lakeside Middle School, Anderson, South Carolina

Mile High 3 C (Convention Center)

212

Algebra 2 and Trigonometry: Wrap Your Brain and Hands Around It
(9–12) Gallery Workshop

Participate in some fun, quick activities to engage you and your students. Discover how simple things such as M&Ms, toothpicks, paper plates, party paper, rope, cone cups, movement, and singing will spice up your teaching and help your kids retain what they learn. Wrap your brain and hands around several activities, including the trig hand jive.

Gary Kubina
Retired, Mobile, Alabama

406/407 (Convention Center)

213

Making Sense of Statistical Inference
(9–12) Gallery Workshop

Inference makes up about half of most introductory statistics courses, including AP Statistics. Explore some of the issues that make confidence intervals and hypothesis tests so difficult for students. Then we will examine strategies and classroom-ready resources to help students do inference successfully.

Daren Starnes
The Lawrenceville School, New Jersey

Centennial Ballroom G/H (Hyatt Regency)

214

NASA’s Exploring Space through Algebra 1
(9–12) Gallery Workshop

And we have liftoff. We will introduce you to algebra 1 lessons created from real data based on NASA’s human spaceflight projects. The problems were developed by math educators who collaborate with scientists and engineers. The opportunity to analyze real data will inspire students.

Monica Trevathan
NASA Human Research Program Education and Outreach, Houston, Texas

Paulette Granger
NASA Johnson Space Center, Houston, Texas

Mile High 1 E/F (Convention Center)

215

Rocket into Quadratics
(9–12) Gallery Workshop

Explore pre-engineering project-based work for algebra to pre-calculus. We will design, build, and launch paper rockets. This easy, low-cost, multiday project uses air pressure to creatively explore functions/modeling. Further discussion will include CAD 3-D visualization, balsa wood bridges, rollercoaster and catapult design, and robotics and bioengineering projects.

Patricia W. Lytton
Regional Technical Education Consortium at Lane Community College, Eugene, Oregon

110/112 (Convention Center)

216

Teaching the Common Core State Standards Statistics Strand with the TI-Nspire
(9–12) Gallery Workshop

Learn how to introduce your students to various Common Core State Standards statistical concepts with hands-on activities and then use the TI-Nspire to make the statistics come alive. We will explore (1) multiple graphs of different data types, (2) measures of center and spread, (3) probability simulations, and (4) sampling methods and distributions.

Sharon E. Bruce
Colorado Springs Christian School, Colorado

201 (Convention Center)
1:00 P.M.–2:15 P.M.

217 **Fundamental Theorem of Calculus: Integration and Differentiation; Activities Using Technology**  
(9–12, Preservice and In-Service) Gallery Workshop  
Working through a series of paper-pencil and TI-84 technology–based classroom activities, you will experience hands-on investigations designed to help students improve their conceptual understanding of the fundamental theorem of calculus. Activities focus on connections between integral defined functions and the derivatives of these functions.  
Mike Koehler  
Blue Valley North High School, Overland Park, Kansas  
104/106 (Convention Center)

218 **Teaching Content through Problem Analysis: Driven by Common Core State Standards for Mathematical Practices**  
(9–12, Preservice and In-Service) Gallery Workshop  
Experience learning functions with deep understanding through problem analysis, whereby we mine a typical school math problem for the rich mathematics that can be found when it is solved in multiple ways, using multiple representations, and connected to related ideas with the Mathematical Practices all in use.  
Alyson E. Lischka  
Kennesaw State University, Georgia  
Mary Garner  
Kennesaw State University, Georgia  
Sarah Ledford  
Kennesaw State University, Georgia  
704/706 (Convention Center)

219 **Research in Algebraic Thinking: Continuing the Conversation**  
(Preservice and In-Service) Gallery Workshop  
Meet the speakers in smaller, interactive groups to facilitate discussion about the sessions and future work.  
Megan Franke  
University of California, Los Angeles  
Mark Driscoll  
Education Development Center, Waltham, Massachusetts  
Daniel I. Chazan  
University of Maryland, College Park  
403/404 (Convention Center)

2:00 P.M.–3:00 P.M.

220 **An English-Language-Learning Instructional Model for Mathematics That Works**  
(General Interest) Session  
Mastering mathematical reasoning and proof for English language learners (ELLs) requires academic discourse skills. Learn about an instructional model that supports the development of these skills and leads to high academic achievement and proficiency. Leave with an understanding of key instructional principles that make mathematics accessible to ELLs.  
Erin R. Mayer  
Albuquerque Public Schools, New Mexico  
Lisa M. Meyer-Jacks  
Dual Language Education of New Mexico, Albuquerque  
Gregg W. McMann  
Springer Municipal Schools, New Mexico  
Centennial Ballroom D (Hyatt Regency)

221 **Common Core State Standards, Mathematics, and Response to Intervention: The Mysterious Trio**  
(General Interest) Session  
The Common Core State Standards and a response to intervention framework are now required in most schools, but few resources are available to help teachers integrate them. The Common Core State Standards content, strategies, and resources presented will help you engage your students, using interventions aligned with the Common Core State Standards as you implement.  
Dolores T. Burton  
New York Institute of Technology, Old Westbury  
John Kappenberg  
New York Institute of Technology, Old Westbury  
Mile High 2 A (Convention Center)
222
Creating Higher-Achieving Math Students in the App Generation
(General Interest) Session
We are in an era when desktop and laptop computers are being replaced by smartphones and tablet computers. Explore the apps that can potentially increase student performance in high-stakes math tests based on the Common Core State Standards. We will share an up-to-date list of apps.
Gary G. Bitter
Arizona State University, Tempe
Rusen Meylani
Arizona State University, Tempe
Capitol Ballroom 4 (Hyatt Regency)

223
Eight Instructional Practices to Promote Grades K–8 Number Sense
(General Interest) Session
It is time for NCTM’s focus on reasoning and sense making in high school to extend to grades K–8. To improve student achievement, we must consider both content and instructional process. What are some characteristics of classrooms that implicitly build student sense making and understanding? Let’s start with number and operations.
Linda M. Gojak
President, National Council of Teachers of Mathematics; John Carroll University, University Heights, Ohio
Four Seasons 2/3 (Convention Center)

224
Enhancing Mathematics Curricula and Instruction to Facilitate Students’ Participation
(General Interest) Session
Facilitating participation in mathematics classrooms is vital to student success. I will share how mathematics teachers learned to facilitate student participation by using research-based strategies and watching videos of their lessons filmed by students wearing head-mounted cameras.
Kathryn Chval’s research focuses on effective preparation models and support structures for teachers; effective elementary teaching of underserved populations, especially English language learners; and curriculum standards and policies. Before joining the University of Missouri, Chval served as the acting section head of the Teacher Professional Continuum program in the Division of Elementary, Secondary, and Informal Education at the National Science Foundation. She spent twelve years at the University of Illinois at Chicago directing NSF-funded curriculum and professional development projects after teaching at the elementary level.
Kathryn Chval
University of Missouri, Columbia
Mile High 1 C/D (Convention Center)

225
Developing Children’s Algebraic Thinking through Problem-Based Function Tasks
(Pre-K–5) Session
Functional thinking is a crucial domain by which children can develop algebra understanding and engage in the Common Core State Standards Mathematical Practices. Knowing characteristics of tasks that can effect functional thinking is essential. Examine the components of a research-based instructional sequence designed to develop children’s functional thinking.
Maria Blanton
TERC, Cambridge, Massachusetts
Angela Murphy Gardiner
TERC, Cambridge, Massachusetts
Barbara M. Brizuela
Tufts University, Medford, Massachusetts
Mile High 2 C (Convention Center)
“Seeing” Arguments in Early Grades (Pre-K–5) Session

The Common Core State Standards calls for all students to construct arguments yet gives few details about what constitutes an argument. Research has developed ways of describing and classifying arguments in early grades (e.g., Krummheuer 2007; Yackel 2002). We can make connections to practice by considering how research helps us “see” arguments in classrooms.

David A. Yopp
Montana State University, Bozeman

226 “Seeing” Arguments in Early Grades (Pre-K–5) Session

405 (Convention Center)

Teaching Mathematics through Problem Solving in the Common Core State Standards Classroom (Pre-K–5) Session

Using videos, examine how elementary schoolchildren can engage in the mathematical practices as envisioned in the Common Core State Standards and NCTM’s Process Standards. Learn how to use problem solving as the core of your curriculum to engage students in modeling, using tools, developing reasoning, and communicating effectively.

Melanie R. Wenrick
California State University, Fresno

Jean Behrend
California State University, Fresno

505 (Convention Center)

Empowering Students: Social Justice Mathematics Teaching in Elementary Classrooms (3–5 Session)

Explore teaching for social justice. We will engage in hands-on activities that show how to incorporate mathematics lessons to empower students to understand, analyze, and critique the world around them by using mathematics. You will also receive resources to help plan more lessons.

Courtney A. Koestler
University of Arizona, Tucson

Mathew D. Felton
University of Arizona, Tucson

Mineral Hall F/G (Hyatt Regency)

228 Empowering Students: Social Justice Mathematics Teaching in Elementary Classrooms (3–5 Session)

230 The Prime Online Stance: Teacher Inquiry and Response to Intervention (3–5, Preservice and In-Service) Session

Response to intervention is a framework including research-based instruction, progress monitoring, and data analysis for instructional decision making. Explore Prime Online, an online professional development program focusing on teacher inquiry for collecting data and making instructional decisions regarding student progress.

Stephen J. Pape
Johns Hopkins University, Baltimore, Maryland

Cynthia Griffin
University of Florida, Gainesville

Nancy Fichtman
University of Florida, Gainesville

401/402 (Convention Center)

229 Does Your Curriculum Speak to You? Considerations for Effective Use (3–5, Preservice and In-Service) Session

We present four different curriculum programs through a teacher’s eye to provide key ideas for effective use of curriculum materials. Discover how Investigations, Math Trailblazers, Scott Foresman–Addison Wesley Mathematics, and Math in Focus speak to teachers. Learn to “listen” to the curriculum for support and guidance on teaching mathematics.

Ok-Kyeong Kim
Western Michigan University, Kalamazoo

Dustin O. Smith
Western Michigan University, Kalamazoo

Napthalin A. Atanga
Western Michigan University, Kalamazoo

702 (Convention Center)

231 Doing What Works: Focus on Problem Solving in Grades 4–8 (3–8 Research Session)

The Doing What Works website translates research-based practices into tools to support and improve classroom instruction on topics such as mathematical problem solving, teaching fractions, critical foundations for algebra, and response to intervention. Explore the Institute of Education Sciences Practice Guide for Improving Mathematical Problem Solving in Grades 4 Through 8.

Clare E. Heidema
RMC Research Corporation, Denver, Colorado

703 (Convention Center)
232
Money and Math: A Financial Classroom Management Strategy
(3–8) Session
Can financial literacy go beyond the math classroom? Can teachers motivate and engage their students by incorporating financial literacy concepts in their classroom? Learn how several teachers from Ontario use a system that teaches financial reasoning, problem solving, and critical thinking in a setting that prepares students for the real world.

Alain Girouard
CFORP, Ottawa, Canada

203 (Convention Center)

233
When Arguing Is a Good Thing: The Case of Fractions
(3–8) Session
According to the Common Core State Standards, students in fifth and sixth grade must make sense of fraction multiplication and division. Prepare to meet these standards while exploring classroom-tested problems that encourage students to construct viable arguments and critique the reasoning of others as they reason abstractly and quantitatively about fractions.

Juli K. Dixon
University of Central Florida, Orlando

501/502 (Convention Center)

234
Direct Variation Is Not a Slippery Slope
(6–8) Session
I will share a series of carefully designed activities that help students make sense of slope as a constant rate of change. We will connect slope and direct variation. We will also use applications of skate ramps, TV screens, and protein shakes, as well as discuss inverse variation.

Laurie Boswell
The Riverside School, Lyndonville, Vermont

Centennial Ballroom B/C (Hyatt Regency)

235
Giving Effective Feedback for Students to Help Refine Their Reasoning
(6–8) Session
Our middle graders can benefit from an early exposure to deductive reasoning. I will report young adolescents’ learning behavior in deductive reasoning (such as the law of detachment), share their common mistakes in using deductive reasoning, and demonstrate how effective feedback plays a significant role in improving student skills.

Woong Lim
Kennesaw State University, Georgia

709/711 (Convention Center)
2:00 P.M.–3:00 P.M.

236 Powerful Strategies to Develop Algebraic Thinkers in Middle School
(6–8) Session
Learn how students can gain a solid understanding of linear functions, by first studying in–out boxes (as functions), then number sequences, then finite differences to find the general term, then arithmetic sequences, and finally slope, $f(x)$ intercept, and graphs. We will explore powerful applications.

John J. Kerrigan
Professor Emeritus, West Chester University, Pennsylvania
601 (Convention Center)

237 Proportional Reasoning: It’s Much More than Cross-Multiplying
(6–8) Session
Proportional reasoning is a major focus and integrative theme of the middle grades Common Core State Standards. We will investigate activities from the free, online Scale City and the program Math Innovations that develop understanding of proportionality through reasoning and problem solving, not rote memorization of rules and definitions.

Linda Jensen Sheffield
Northern Kentucky University, Highland Heights
705/707 (Convention Center)

238 Teaching Rational Numbers to the iGeneration
(6–8) Session
Explore how to engage and motivate the teaching of rational numbers to the iGeneration. The Common Core State Standards has clearly placed a focus on the understanding of rational numbers, so this session offers you strategies, videos, and formative assessments that can lead to building better facility with rational numbers.

Eric Milou
Rowan University, Glassboro, New Jersey
Four Seasons 1 (Convention Center)

239 All CAS, All the Time: Three Schools’ Journeys to Implementation
(6–12) Session
Three different high schools adopted CAS handhelds across all math courses. Find out why and how we made the switch. We’ll discuss issues of curriculum, teaching, finances, logistics, and public relations. We’ll tell you what worked, what surprised us, and how we managed.

Phil Gartner
Glenbrook South High School, Glenview, Illinois
Steve Viktora
New Trier High School, Winnetka, Illinois
P. J. Karafiol
Chicago Public Schools, Illinois
Mile High 4 E/F (Convention Center)

240 Math Activities That Promote Academic Discourse for English Language Learners
(6–12) Session
Research shows that English language learners acquire English proficiency when given ample opportunities to practice and apply their reading, writing, speaking, and listening skills. Experience activities that promote the use of social and academic language and the required mathematical practices of the Common Core State Standards.

Amy Serda-King
The Learning Buzz, San Antonio, Texas
207 (Convention Center)

241 Preparing for the Common Core State Standards by Using a SMART Board
(6–12) Session
Understanding is at the core. Use SMART Board technology to develop and deepen the understanding of important mathematical concepts. Create engaging, interactive lessons to build skills. Dynamic graphing programs tie concepts together. Add an individual response system for formative assessment to allow all students to participate.

Linda Treiman
Mercer County Community College, West Windsor, New Jersey
Mile High 4 A/B (Convention Center)
2:00 P.M.–3:00 P.M.

**242**  
*Advanced Quantitative Reasoning: Meaningful Mathematics for High School Seniors*  
*(9–12) Session*  
NCTM says, “Every student should study mathematics every year through high school, progressing to a more advanced level each year.” This talk presents rich problems that seniors find engaging; that connect a wide range of mathematics, statistics, and modeling; and that leverage mathematical action technologies and classroom discourse.  
*Gregory D. Foley*  
Ohio University, Athens  
*Daniel A. Showalter*  
Ohio University, Athens  
205 (Convention Center)

**243**  
*Statistical Reasoning: Convincing Evidence versus Proof*  
*(9–12) Session*  
Understanding the distinction between convincing evidence and proof is essential for students learning inferential methods in statistics. We will address ways to develop students’ understanding of this distinction and will explore implications in terms of the conclusions that can be drawn based on data from statistical studies.  
*Roxy Peck*  
California Polytechnic State University, San Luis Obispo  
107/109 (Convention Center)

**244**  
*Where Does It Fall, or Not: Exponential Functions*  
*(9–12) Session*  
The Common Core State Standards expect our students to “distinguish between situations that can be modeled with linear functions and with exponential functions.” We will explore the progression of modeling with both linear and exponential models before moving into quadratic functions in an algebra 2 course.  
*Paul A. Kennedy*  
Colorado State University, Fort Collins  
*Janet Oien*  
Poudre School District, Fort Collins, Colorado  
Capitol Ballroom 1–3 (Hyatt Regency)

**245**  
*Modeling and Analysis of Biological Content to Enhance Mathematics*  
*(9–12, Higher Education) Session*  
In mathematics, student cognition of calculations may be enhanced by a direct application and understanding of pertinent biological concepts. We developed and tested a one-week curriculum applicable for a grades 9–12 or college-level mathematics course, using a data-driven biogeographic model of the theory of island biogeography.  
*Jana F. G. Eggleston*  
Old Dominion University, Department of Biological Sciences, Norfolk, Virginia  
*Holly Gaff*  
Old Dominion University, Department of Biological Sciences, Norfolk, Virginia  
*Ginger S. Watson*  
Old Dominion University, Department of STEM Education and Professional Studies, Norfolk, Virginia  
108 (Convention Center)

**246**  
*Technology in Support of Proof*  
*(9–12, Higher Education) Session*  
Technology can provide a “conjecture generator,” where we use its power to find mathematical patterns that might lead to the formulation of a conjecture. Proving such a conjecture is often viewed outside the use of technology. We will examine several examples where technology offers powerful hints to mathematical structure that aid in proof.  
*Thomas Dick*  
Oregon State University, Corvallis  
605 (Convention Center)

**247**  
*Writing to Promote Conceptual Understanding in College Algebra*  
*(9–12, Higher Education) Session*  
Knowing the procedures is only part of the story. Successful students also demonstrate conceptual understanding. We will explore the successes and challenges of incorporating writing about vocabulary and concepts in college algebra by looking at results from tasks used to foster students’ communication ability and conceptual understanding.  
*Susan Gay*  
University of Kansas, Lawrence  
*Ingrid Peterson*  
University of Kansas, Lawrence  
Mile High 3 B (Convention Center)
2:00 P.M.–3:00 P.M.

**248**

**Constructing Arguments: Preservice Teachers’ Understanding of a Common Core State Standards Mathematical Practice**

(Higher Education, Preservice and In-Service) Session

One of the Common Core State Standards’s Mathematical Practices focuses on students’ constructing viable arguments and critiquing the arguments of others. This presentation spotlights preservice teachers’ beliefs and perspectives on what constitutes a viable argument and what this might look like in a classroom.

Mary Pat Sjostrom
Chaminade University, Honolulu, Hawaii

Cory A. Bennett
Idaho State University, Pocatello

**Centennial Ballroom F (Hyatt Regency)**

**249**

**Doctorates in Mathematics Education: A Shortage Continues and Jobs Exist**

(Preservice and In-Service) Session

Learn about the shortage of doctorates in mathematics education and hear results from research on job opportunities. We will suggest factors to consider when choosing a doctoral program, as well as challenges of K–12 classroom teachers returning as graduate students and then transitioning into a career in higher education.

Robert Reys
University of Missouri, Columbia

Bob Glasgow
Southwest Baptist University, Bolivar, Missouri

Christa Jackson
University of Kentucky, Lexington

102 (Convention Center)

2:30 P.M.–3:30 P.M.

**249.1**

**Pearson High School Math and the Common Core**

(General Interest) Exhibitor Workshop

Learn how this blended print and digital curriculum not only engages grades 8–12 students but also infuses Common Core State Standards and Mathematical Practices throughout each lesson to ensure all learners acquire the critical knowledge and skills necessary to succeed in college and in their careers.

Pearson
Upper Saddle River, New Jersey

301 (Convention Center)

**249.2**

**Teach Math Like Never Before, Using Tried-and-True Classroom Strategies**

(General Interest) Exhibitor Workshop

The Conceptua Math online curriculum for grades K–8 uses interactive, visual representations that engage teachers and students in math curriculum like never before.

Conceptua Math
Petaluma, California

303 (Convention Center)

**249.3**

**Common Core Math: Challenges and Opportunities**

(Pre-K–5) Exhibitor Workshop

Implementing the Common Core State Standards can be challenging during times of decreased funding. See how ORIGO Education has built on its reputation of innovation to develop Stepping Stones, an online K–5 core program that turns challenges into opportunities. You’ll get a coupon to unlock ORIGO’s full suite of digital products.

ORIGO Education
St. Charles, Missouri

302 (Convention Center)
2:30 P.M.–3:30 P.M.

249.4 CW
Discover New Ways to Make High School Math Meaningful
(6–12) Exhibitor Workshop
The Discovering Mathematics series draws on the teaching experience of noted algebra and geometry authors and engages students as they connect mathematics to their own experiences. Learn how each program’s engaging student investigations develop the Common Core State Standards Mathematical Practices and make math meaningful for all learners.

Kendall Hunt Publishing Co.
Dubuque, Iowa

304 (Convention Center)

2:45 P.M.–4:00 P.M.

250
The Power of Ten: Framing Student Understanding
(Pre-K–2) Gallery Workshop
This hands-on presentation uses ten frames as a valuable teaching tool you can incorporate in the classroom. We will address Mathematical Practices, emphasizing reasoning. We will explore a variety of activities, including basic, games, and open-ended problems. Video clips and student work will give you glimpses of how this could look in the classroom.

Lisa Rogers
Math Solutions, Sausalito, California

Amy C. Mayfield
Math Solutions, Sausalito, California

Mile High 1 A/B (Convention Center)

251
We Have Selected a Good Task; Now What?
(Pre-K–2) Gallery Workshop
Explore lessons using strategies to promote class discussion when students engage in well-designed tasks. We will share teachers’ effective use of the five practices—anticipating, monitoring, selecting, sequencing, and connecting—identified in the NCTM publication 5 Practices for Orchestrating Productive Mathematics Discussions.

Melfried Olson
University of Hawaii, Honolulu

Fay Zenigami
University of Hawaii, Honolulu

607 (Convention Center)

253
Using Children’s Literature to Promote Reasoning in the Early Grades
(Pre-K–5) Gallery Workshop
Children’s literature can offer a context from which to engage children in developing reasoning skills. You will have the opportunity to experience these activities and learn more about their potential for the classroom.

Sandi Cooper
Baylor University, Waco, Texas

Erin Spencer
Baylor University, Waco, Texas

111/113 (Convention Center)

254
Defining Quadrilaterals: What Is a Trapezoid, Anyway?
(3–5) Gallery Workshop
We will build common understandings of special quadrilaterals on the basis of their properties and formal definitions. We will develop a hierarchy connecting all quadrilaterals through our reasoning and proof and show how classroom discourse can help all students convince each other of their thinking.

Nita Walker
Santa Ana USD, California

Barbara Post
Retired, Orange, California

Mile High 4 C/D (Convention Center)

Create your personal conference planner; visit www.nctm.org/denver/
NEW TITLES ON THE COMMON CORE

**NEW | Connecting the NCTM Process Standards and the CCSSM Practices**
By COURTNEY KOESTLER, MATHEW D. FELTON, KRISTEN N. BIEDA, AND SAMUEL OTTEN
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FRANCES CURCIO, SERIES EDITOR

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EDITED BY PEGGY HOUSE
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By DANNY MARTIN, JULIA AGUIRRE, AND KAREN MAYFIELD-INGRAM
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**NEW | The 75th Anniversary NCTM Yearbook**
Defining Mathematics Education: Presidential Yearbook Selections 1926–2012
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ROSE MARY ZBIEK, SERIES EDITOR

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  BY ROXY PECK, ROB GOULD, AND STEPHEN MILLER
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  BY AMY ELLIS, KRISTEN BIEDA, AND ERIC KNUTH
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BARBARA DOUGHERTY, SERIES EDITOR

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Visit www.nctm.org/catalog for tables of content and sample pages.

For more information or to place an order, please call (800) 235-7566 or visit www.nctm.org/catalog.
2:45 P.M.—4:00 P.M.

255  Making Sense of Multiplication and Division
(3–5) Gallery Workshop
Explore ways to help students understand multiplication and division of whole numbers, fractions, and decimals. The Common Core State Standards suggests new ways of reasoning about, representing, and computing with these operations, offering new opportunities for students to better understand them. Activities will include hands-on activities and games.

Janet H. Caldwell
Rowan University, Glassboro, New Jersey

104/106 (Convention Center)

256  Measurement: Line Segments to Rectangles to Rectangular Prisms
(3–5) Gallery Workshop
We will focus on length, area, and volume as measurements in one, two, and three dimensions, respectively. Through hands-on experiences with line segments, rectangles, and rectangular solids, using tiles and cubes, you will experience these measurements as a sequence, where each step depends on the one that came before.

Richard Thiessen
AIMS Education Foundation, Fresno, California

Capitol Ballroom 5–7 (Hyatt Regency)

257  Developing Mathematical Reasoning across the Strands with Pattern Blocks
(3–5, Preservice and In-Service) Gallery Workshop
Pattern blocks were developed more than fifty years ago. Students of all ages gain mathematical insights while building and solving puzzles. Working totally hands-on, discover the unique properties of these six blocks. Strengthen mathematical reasoning for concepts involving number and numeric operations, geometric concepts, and algebraic reasoning.

Peggy McLean
Peggy McLean Consulting, San Carlos, California

110/112 (Convention Center)

258  Mathematical Practice: 3E, Eight Exemplars That Enhance Understanding
(3–5, Preservice and In-Service) Gallery Workshop
Explore the eight Standards for Mathematical Practice found in the Common Core State Standards. Engage in exemplary activities and take-back examples to enhance understanding, provide meaning in context, and demonstrate the power of these practices as students are learning mathematics.

Carolyn M. Moore
McGraw-Hill, Columbus, Ohio

103/105 (Convention Center)

259  Rock with Scissors and Paper: Spatial Reasoning in Your Hands
(3–8) Gallery Workshop
President Series Presentation
Strengthen students’ spatial reasoning and visual thinking through paper folding and cutting. Solve puzzles, create pop-ups, and engage students with activities that connect geometry and folk craft spanning centuries and cultures. Experiment with iPad apps to create equal and congruent shapes. Leave with classroom-ready materials.

Sara Normington
Council of Presidential Awardees in Mathematics, Portland, Oregon

Lynn Patterson
Murray State University, Kentucky

Jennifer Rising
Council of Presidential Awardees in Mathematics, Chicago, Illinois

201 (Convention Center)

260  Saving the Planet with Math
(3–8) Gallery Workshop
Being good environmental stewards and global citizens requires an understanding of math concepts, such as large numbers, growth patterns, measurement, probability, algebra, and more. Discover creative hands-on math activities that include science and social studies content about the world around us. Get a free CD of activities.

Lindsey Bailey
Population Connection, Washington, D.C.

704/706 (Convention Center)
2:45 P.M.—4:00 P.M.

261 Making Sense of Algebra with Realistic Mathematics Education
(6–8) Gallery Workshop
Realistic Mathematics Education (RME) is a philosophy of math education that has guided the Netherlands to two top-five Programme for International Student Assessment rankings in the past 10 years. Learn about RME and explore a series of informal, preformal, and formal tasks designed to support student understanding of algebra.

Mieke Abels
Freudenthal Institute, Utrecht, the Netherlands

Michael S. Matassa
University of Colorado at Boulder

Raymond Johnson
University of Colorado at Boulder

Mile High 3 A (Convention Center)

262 Prop Up Problem Solving with Proportional Reasoning
(6–8) Gallery Workshop
Proportional reasoning is one of the most important middle school topics we teach. Create and use easy-to-manage, inexpensive to prepare, hands-on activities to help your students understand proportionality and its connections to many prealgebra topics.

Gail R. Englert
Blair Middle School, Norfolk Public Schools, Virginia

Centennial Ballroom E (Hyatt Regency)

263 They’re the Same but Different? Building Multiple Representations of Proportionality
(6–8) Gallery Workshop
Bring ratios to life with register tape, yarn, stickers, and more. Leave with hands-on, classroom-ready tasks focused on multiple representations of equivalent ratios. You will also discover the many connections between ratios, double number lines, proportionality, and graphing on a coordinate plane.

Sami Briceno
Carnegie Learning, Pittsburgh, Pennsylvania

Kasey Bratcher
Carnegie Learning, Pittsburgh, Pennsylvania

603 (Convention Center)

264 From Tiles to Equations: Algebraic Reasoning for All Learners
(6–12) Gallery Workshop
Come see how to use manipulatives, motion detectors, TI-Nspire handhelds, Internet resources, software, and TI-Navigator to investigate patterns and relationships that lead to understanding of algebraic concepts. We will show ways to engage all learners by using manipulatives and technology for instruction and assessment.

Ruth Casey
Teachers Teaching with Technology, Frankfort, Kentucky

Margaret Bambrick
Volusia County Schools, DeLand, Florida

403/404 (Convention Center)

265 mARTh: Using Creative Expression to Connect Students to Mathematical Concepts
(6–12) Gallery Workshop
Many young students say they don’t get math. By using art in a project-based learning model, students can connect with mathematical topics in a visual, kinesthetic way. mARTh makes math fun, hands-on, and beautiful.

Hannah McNeill
Watershed School, Boulder, Colorado

503/504 (Convention Center)
2:45 P.M.–4:00 P.M.

266 Solve Real Problems with Geometry and Algebra

(6–12) Gallery Workshop

Use right, acute, and obtuse angles to construct quadrilaterals and visually prove the Pythagorean theorem. Use circumference measurements, algebra, and reasoning to solve authentic bicycle racing problems. Apply genealogy and population growth to exponential equations so your students can mathematically predict the future.

Mary Kay Bacallao
Mercer University, Macon, Georgia

Mile High 3 C (Convention Center)

267 Calculus Lab Time: Determining Volume for a Solid of Revolution

(9–12) Gallery Workshop

Use a common object with circular cross sections for a hands-on integral lab. Measure the object, calculate a piecewise function to model its radius, and use calculus to find volume. Compare your result with the volume by displacement. Using the 3-D object to find the 2-D generating curve strengthens visualization skills by reversing the usual approach.

Karen Hyers
Tartan High School, Oakdale, Minnesota

Mineral Hall D/E (Hyatt Regency)

268 Ideas for Revisiting Geometry Proofs in Algebra Class

(9–12) Gallery Workshop

Competent algebra students know whether two lines are parallel or perpendicular by looking at the slopes, but can these students also communicate how slope values connect to geometry-based proofs of parallelism and perpendicularity? Participate in activities that offer ways for algebra students to revisit geometric concepts and proofs.

Andre Mathurin
Bellarmine College Preparatory, San Jose, California

506/507 (Convention Center)

269 Creatively Integrating Multiple Technologies Using Color: iPads, SMART Boards, TI-Emulators

(9–12, Preservice and In-Service) Gallery Workshop

Connect graph, table, equation, and words—interactively. Model equations on top of color photos. Cleverly use TI emulators for the 84 and Nspire CX. Incorporate iPad apps in your classroom effortlessly. Use color to distinguish concepts and make mathematical connections. Get the free TI Document Player. Obtain more than two hundred classroom-ready activities.

Tom Reardon
Youngstown State University, Ohio

708/710/712 (Convention Center)

270 Pirate Geometry

(9–12, Preservice and In-Service) Gallery Workshop

Investigate activities with a pirate buried treasure theme that you can use to teach rectangular, polar, spherical, and 3-D coordinate systems. The focus is on reasoning and problem solving while having fun playing games and solving pirate buried treasure puzzles.

Michael Serra
Author, San Francisco, California

Four Seasons 4 (Convention Center)

271 The Standard Deviation: A Hands-On, Conceptual Approach

(9–12, Preservice and In-Service) Gallery Workshop

Discover a conceptual approach to calculate the mean and standard deviation by using color tiles. We will use a hands-on approach to create a concrete model of each step in calculating the standard deviation. We then discuss how these physical representations relate to the handwritten algorithms.

Melissa B. Hanzsek-Brill
St. Cloud State University, Minnesota

Susan K. Haller
St. Cloud State University, Minnesota

Centennial Ballroom A (Hyatt Regency)
272 Using High-Cognitive-Demand Tasks to Explore Reasoning and Proof
(9–12, Preservice and In-Service) Gallery Workshop
Engage with tasks around reasoning and proof and think about what makes a task challenging. We’ll share our experiences with using the tasks with preservice and in-service teachers as well as share how these tasks worked with the teachers’ students. We will discuss challenges in maintaining the high cognitive demand of the tasks while teaching.

Rachael Eriksen Brown
Knowles Science Teaching Foundation, Moorestown, New Jersey

Jennifer L. Mossgrove
Knowles Science Teaching Foundation, Moorestown, New Jersey

273 New Teacher Workshop and Kickoff
(Preservice and In-Service) Gallery Workshop
Do you have questions on how to make it all work? Together we have answers and ideas on management, parents, homework, keeping your sanity, and more. Join others still in school, just starting, in their early career, or looking for help. Receive gifts, prizes, and good ideas.

David Barnes
National Council of Teachers of Mathematics, Reston, Virginia

274 Promoting Student Reasoning and Understanding by Using Representational Pathways
(Preservice and In-Service) Gallery Workshop
Representational pathways can be used to translate standards and content goals into instructional sequences that are student centered and more likely to support student understanding of mathematics. Collaboratively design representational pathways that you can use to inform instruction and assessment.

David C. Webb
University of Colorado at Boulder

275 Building a Smarter Balanced Assessment System: Summative, Interim, and Formative
(General Interest) Session
The Smarter Balanced Assessment Consortium Theory of Action calls for full integration of the learning and assessment systems to support decision making and higher-quality instruction. Explore how the summative, interim, and formative components inform student progress with respect to the Common Core State Standards for Mathematics.

Gail M. Pagano
Connecticut State Department of Education, Hartford

276 Developing Metacognition: The Key to Successful Problem Solving
(General Interest) Session
How do students successfully access and transfer relevant mathematical knowledge to new problems? Successful problem solvers are metacognitive—they know how to think as they plan, monitor, and evaluate their solutions. Explore strategies to support students’ development of metacognitive problem-solving skills with the authors of an NCTM book.

Kathy Ernst
Consultant, West Brattleboro, Vermont

Sarah Ryan
University of Delaware, Newark

277 Increasing Equity Awareness and Transforming Practice
(General Interest) Session
President Series Presentation
Teachers of all students, particularly underrepresented students, need to be well versed in a variety of instructional strategies that teach concepts and skills at appropriate grade levels, are suitable to overcome any language barriers, and focus on the Standards for Mathematical Practice. I will share ideas, strategies, and activities.

Don S. Balka
TODOS: Mathematics for ALL, LaPaz, Indiana
3:30 P.M.–4:30 P.M.

278
Learn↔Reflect Reflection Session
(General Interest) Session
This culminating session for those who attended the Learn↔Reflect sessions will be a facilitated discussion of the four reflection questions.
NCTM Professional Development Services Committee
National Council of Teachers of Mathematics, Reston, Virginia
Mile High 1 C/D (Convention Center)

279
Math and Geography: Using Google Earth to Investigate Mathematics
(General Interest) Session
Google Earth is more than virtual field trips. See demonstration lessons on measurement, algebra, data analysis, geometry, and more, accessible through this free resource. Leave with engaging and real-world application lessons you can use immediately, for grades 1–8.
Hillary Wolfe
Teacher Created Materials Publishing and Shell Education, Huntington Beach, California
Karie Feldner Gladis
Teacher Created Materials Publishing, Huntington Beach, California
Centennial Ballroom D (Hyatt Regency)

280
Mathematical Practices: An Opportunity for English Language Learners
(General Interest) Session
Asking students to “construct viable arguments and critique the reasoning of others” presents a challenge to English language learners, but it also offers an opportunity to develop language skills. We will examine tasks at various grade levels to identify language and mathematical demands and opportunities for students.
Ana E. England
University of California, Santa Cruz
107/109 (Convention Center)

281
Mathematizing the World: Seeing Reasonable Math All Around Us
(General Interest) Session
Mathematizing—the quantification of things happening all around us, such as music, sunlight, rain, and coffee—enables construction of mathematical understanding that lasts. Consider the pervasive nature of math and, more important, the role of recognizing this presence in constructing understanding. Leave with a set of examples and ideas.
Mark Roddy
Seattle University, Washington
Mile High 4 A/B (Convention Center)

282
Progress Monitoring in Mathematics: Applications for Response to Intervention
(General Interest) Session
We will focus on progress monitoring within response to intervention. I will show measures for progress monitoring, and we’ll discuss considerations for selecting measures. I will also share case studies illustrating the use of progress monitoring to support individual students in Tier 2 and Tier 3 interventions.
Anne Foegen
Iowa State University, Ames
501/502 (Convention Center)

283
The Gamification of Math: Research, Gaming Theory, and Math Instruction
(General Interest) Session
This session draws on recent cognitive research to dissect and demonstrate the potential power (and pitfalls) of tapping gaming theory for math teaching and learning. What does it mean to leverage adaptive leveling, immediate feedback, transparent progress, and intriguing math tasks to build resiliency and conceptual and procedural fluency?
Alex Sarlin
Educational Technology and Gaming Consultant, Brooklyn, New York
David Dockterman
Harvard Graduate School of Education, Cambridge, Massachusetts
Mile High 4 E/F (Convention Center)
284  
**What Is Mathematical Reasoning, Anyway?**  
(General Interest) Session  
Although mathematical reasoning is a ubiquitous concept in math education, it is rarely defined. What is mathematical reasoning, and in what sense(s) should we nurture it as math educators? Drawing on scholarly research and examples from practical classroom lessons, I present a thought-provoking account of mathematical reasoning.

Carlos Rodriguez  
Johns Hopkins University Center for Talented Youth, Baltimore, Maryland

284.1  
**Making iPad Part of the Math Equation**  
(General Interest) Session  
iPad inspires creativity and hands-on learning by bringing math concepts to life. Explore math apps, books, and educational content available to revolutionize student learning. Learn to create engaging Multi-Touch content by using iBooks Author and iTunes U. See how these tools help transform the way teachers teach and the way students learn.

Speaker To Be Determined

285  
**Building Bridges: Math and Literature for All Students**  
(Pre-K–5) Session  
I will introduce mathematical concepts through children’s literature. Students will experience mathematical ideas in real-world situations. This integration enhances the learning of every child and offers a smooth introduction to the learning of mathematical concepts.

Sally C. Mayberry  
Florida Gulf Coast University, Fort Myers

286  
**Mastering Mental Mathematics Is Core: Number Facts and Beyond**  
(Pre-K–5) Session  
Mental mathematics is an essential life skill and core for higher mathematics. It begins with a focus on a proven way to learn number facts. This foundation stresses thinking strategies that can extend to greater numbers. I will outline the steps to develop the strategies for number facts and beyond as well as show practical examples.

Calvin Irons  
Queensland University of Technology, Brisbane, Australia

287  
**Engaging Reluctant Problem Solvers: How Do You Do It?**  
(3–5) Session  
Do you have students who are reluctant to engage in math? My previous work has shown the potential of tasks without words to engage reluctant problem solvers. Come learn about other specific tasks to help students become less reluctant to engage in the mathematics classroom.

Sydney Margaret Holbert  
University of Mississippi, Oxford

288  
**Reasonin’, wRitin’, and aRithmetic: The New 3 Rs**  
(3–8) Session  
Writing can develop students’ mathematical reasoning skills in grades 3–8, and this session illustrates the types of writing assignments that help students learn most effectively. Sample worthwhile questions and examples of the results are included to guide teachers’ use of this approach.

Bob Drake  
University of Cincinnati, Ohio

Lynn Columba  
Lehigh University, Bethlehem, Pennsylvania

284 (Convention Center)  
285 (Convention Center)  
286 (Convention Center)  
287 (Convention Center)  
288 (Convention Center)
3:30 P.M.–4:30 P.M.

289 Math Classroom Routines That Support Reasoning (6–8) Session

Students are expected to understand numbers and the meanings of operations, compute fluently, reason, and make reasonable estimates. The Common Core State Standards have raised expectations for middle school students. Explore routines that help students think flexibly about number and meet the expectations of the Common Core State Standards.

Genni Steele
Math Solutions, Sausalito, California
Le’Vada Gray
Math Solutions, Sausalito, California

108 (Convention Center)

290 STEM Is Hot in Hot Springs (6–8, Preservice and In-Service) Session

What do geothermal energy, melting ice, dentistry, disease, and flight have in common? All are core concepts in integrated science, technology, engineering, and mathematics (STEM) lessons developed by rural Montana teachers. Video, photos, and student work illustrate how multidisciplinary teams bring standards and STEM to life in the classroom.

Jennifer Luebeck
Montana State University, Bozeman

405 (Convention Center)

291 Reasoning about Quantities that Change Together (6–12) Research Session

Students can draw on informal reasoning and life experience to make sense of quantities and their relationships. I will share student work along with video episodes of middle and high school students reasoning about quantities that change together. Learn ways to support and inquire into your students’ reasoning.

Heather Lynn Johnson
University of Colorado Denver

Centennial Ballroom F (Hyatt Regency)

292 Using Teacher- and Student-Made Videos in the Mathematics Classroom (6–12) Session

Fascinated by YouTube videos and Khan Academy? Wonder how people do that? Explore the use of software to create your own videos for student learning and assessment. The effective use of software for this purpose can help to differentiate instruction and reach diverse populations of students.

Janet B. Andreasen
University of Central Florida, Orlando

Deborah McGinley
Orange County Public Schools, Orlando, Florida

Zyad Bawatneh
University of Central Florida, Orlando

601 (Convention Center)
3:30 P.M.—4:30 P.M.

293 Is That Always True? (9–12) Session

By investigating geometric problems informally with interactive geometry software, students often asked, “Is that always true?” Motivating proof in this way engaged students in proving. I will share classroom examples and experiences.

William Caroscio
Retired, Elmira Southside High School, New York

709/711 (Convention Center)

294 Learn It First, and then Prove It (9–12) Session

For students, proving something in mathematics may be likened to crossing a raging river. If we first provide a lifeline to the other side, the student is less likely to be swept away. Come see how you can do this, from the quadratic formula in algebra 1 through identities in trig to the fundamental theorem in calculus.

Paul A. Foerster
Alamo Heights High School, San Antonio, Texas

401/402 (Convention Center)

295 Playful Projects (9–12) Session

Teachers at the Boston Arts Academy are teaching the traditional math frameworks but also trying to explore the beauty, playfulness, and art in math. We will share some playful assignments and discuss how to develop and assess open-ended assignments. Projects include Functional Art, Songwriting Statistics, and Quadratic Rockets.

Mark J. Lonergan
Boston Arts Academy, Massachusetts

Ibeth Jaime
Boston Arts Academy, Massachusetts

Tess Mandell
Boston Arts Academy, Massachusetts

102 (Convention Center)

296 Rainforests and Fast Food: Modeling Deforestation with a TI-Nspire (9–12) Session

Explore rainforest loss and America’s love affair with fast food by using a TI-Nspire to model data and draw interesting conclusions.

Chris Henderson
Lawrence County Board of Education, Moulton, Alabama

Capitol Ballroom 4 (Hyatt Regency)

297 Real Math, Real Life: A Course for High School Students (9–12) Session

Explore a new type of high school course available for free online. The new course emphasizes the real-life applications of mathematics and requires no algebra. Topics include business and consumer math, taxation, probability, statistics, sports and fitness, and patterns in nature.

Ron Larson
Pennsylvania State University, Erie

Mile High 3 B (Convention Center)

298 Preservice Teachers’ Mathematics Education Perceptions (Higher Education) Session

Aspiring K–8 teachers often have misconceptions about the mathematics knowledge and skill required to become a teacher. In a three-course math sequence at a historically black university, preservice teachers develop the conceptual knowledge needed to teach mathematics. We examine their evolving perceptions and discuss the findings.

Nicola D. Edwards-Omolewa
Delaware State University, Dover

Kathleen M. Fick
Methodist University, Fayetteville, North Carolina

Delayne Y. Johnson
Delaware State University, Dover

702 (Convention Center)
3:30 P.M.—4:30 P.M.

**300**

Professional Development Integrating Mathematical and Teaching Practices (Preservice and In-Service) Session

We present a distinctive form of professional development experience for elementary teachers focused on teaching practices and mathematics practices, featuring Web-based materials for facilitators and teachers. Explore these materials and discuss the benefits and challenges of this form of practice-based professional development.

Timothy A. Boerst  
University of Michigan, Ann Arbor

Meghan Shaughnessy  
University of Michigan, Ann Arbor

Kara Suzuka  
University of Michigan, Ann Arbor

**703 (Convention Center)**

**301**

Raising Awareness of the Opportunity Gap in Mathematics Classrooms (Preservice and In-Service) Session

Opportunity gaps exist in the quality of mathematical tasks and discourse provided to students from a variety of backgrounds. We will discuss an activity used with our preservice teachers, along with their work, to highlight the increased awareness of such gaps that preservice and in-service teachers might gain after engaging in this exercise.

Kelly W. Edenfield  
Carnegie Learning, Pittsburgh, Pennsylvania

Wendy B. Sanchez  
Kennesaw State University, Georgia

**505 (Convention Center)**

**4:00 P.M.—5:00 P.M.**

**301.1**

Improving Student Success through Better Engagement: MathXL for School (General Interest) Exhibitor Workshop

Through rich multimedia resources, 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.

Pearson  
Upper Saddle River, New Jersey

**301 (Convention Center)**

**301.2**

“Opening” Developmental Mathematics: New Resources for New Approaches (General Interest) Exhibitor Workshop

Discover media-rich, open educational resources to support new instructional models. Produced with a generous Gates Foundation grant and distributed through the nonprofit NROC Project, this new program aims to open doors to educational and career opportunities for financial-disadvantaged learners struggling with mathematical literacy.

NROC  
Marina, California

**303 (Convention Center)**

**301.3**

Math Buddies: The Digital Singapore Math Solution in Action (Pre-K–5) Exhibitor Workshop

Learn how teachers are effectively integrating Math Buddies in school to make teaching math easier. The latest K–5 digital curriculum from Marshall Cavendish Education, Math Buddies is well aligned with the Common Core State Standards and integrates multimedia with instructional pedagogy from our Singapore Math texts—Math in Focus and Primary Mathematics.

Marshall Cavendish Education  
Tarrytown, New York

**304 (Convention Center)**

**301.4**

Conquer Times Tables in Only Three Weeks—Guaranteed (3–8) Exhibitor Workshop

Take part in the fun, multisensory, hands-on approach of teaching the times tables in only three weeks. Learn to teach 10s, 11s, and 12s in less than one minute. You’ll see other Common Core State Standards–aligned products to teach addition, subtraction, and division.

Rhymes ‘n’ Times  
Lewisville, Texas

**302 (Convention Center)**

Visit the NCTM Bookstore and save 25% off the list price of all publications and specialty items!
NCTM’s 2013 Annual Meeting and Exposition
April 17–20 • Denver, Colorado

The journal editors from Teaching Children Mathematics, Mathematics Teaching in the Middle School, and Mathematics Teacher will be giving a series of mini-sessions to help you write or referee for one of NCTM’s school journals. Inside of 15 minutes, you’ll discover how to submit your ideas for publication, volunteer as a referee, or polish an existing manuscript. The editors will explain the peer-review process, answer your questions, point you in the right direction, and allay any fears you may have about getting started. All for a price that can’t be beat—free!

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**Get Published**
Discover how simple it is to turn your ideas into articles.
*Presented by Sara-Lynn Gopalkrishna, MTMS editor*

- **Thursday, April 18:**
  10:40–10:55 a.m. and 1:10–1:25 p.m.
- **Friday, April 19:**
  10:30–10:45 a.m. and 1:50–2:05 p.m.

**Be a Journal Referee**
Find out how critiquing manuscripts can help your career.
*Presented by Albert Goetz, MT editor*

- **Thursday, April 18:**
  11:05–11:20 a.m. and 1:35–1:50 p.m.
- **Friday, April 19:**
  11:20–11:35 a.m. and 2:40–2:55 p.m.

**Avoid Writing Pitfalls**
Learn hints on steering clear of those pesky manuscript potholes.
*Presented by Beth Skipper, TCM editor*

- **Thursday, April 18:**
  11:30–11:45 a.m. and 2:00–2:15 p.m.
- **Friday, April 19:**
  10:55–11:10 a.m. and 2:15–2:30 p.m.
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—Wendy Ward Hoffer

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HIGHLIGHTS
Iris M. Carl Equity Address (Presentation 411)
NCTM Business Address (Presentation 460)
NCTM Immediate Past President’s Address (Presentation 513)
New Teacher Celebration (Presentation 595)

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7:00 a.m.–4:00 p.m.

EXHIBIT AND BUZZHUB HOURS
10:00 a.m.–6:00 p.m.

BOOKSTORE HOURS
7:30 a.m.–6:30 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.
8:00 A.M.–9:00 A.M.

302
Convince Me: Coaching Tools to Support Effective Questioning and Discourse
(General Interest) Session

Questioning and discourse are crucial in supporting student development of the Common Core State Standards Mathematical Practices. We will share and discuss tools to use in professional development and the coaching cycle related to questioning and discourse. You will leave with a collection of tools.

Maggie B. McGatha
University of Louisville, Kentucky

Jennifer M. Bay-Williams
University of Louisville, Kentucky

Jon Wray
Board of Directors, National Council of Teachers of Mathematics; Howard County Public Schools, Ellicott City, Maryland

Centennial Ballroom D (Hyatt Regency)

303
ICME-12 Report on Second-Language Learners
(General Interest) Session

Learn from participants at the 2012 International Congress on Mathematical Education in South Korea, sharing what they learned from mathematics educators in other countries about teaching mathematics to second-language learners.

David Bressoud
Macalester College, Saint Paul, Minnesota

Mile High 2 C (Convention Center)

304
The Teaching and Learning of Proof: Research Insights
(General Interest) Session

We will discuss research concerning the teaching and learning of proof, as well as give an overview of the day’s proof-focused presentations and respond to questions.

E. Paul Goldenberg
Education Development Center, Waltham, Massachusetts

Patricio Herbst
University of Michigan, Ann Arbor

Eric Knuth
University of Wisconsin–Madison

Mile High 1 C/D (Convention Center)

304.1 FA
PARCC: An Interactive Progress Update
(General Interest) Session

A representative from the Partnership for the Assessment of Readiness for College and Careers, a 23-state consortium building assessments based on the Common Core State Standards, will share the latest news on the consortium’s work, allowing ample time for questions and answers.

Doug Sovde
Achieve Inc., Washington, D.C.

Four Seasons 1 (Convention Center)

305
Commonsense Number-Sense Strategies for Pre-K–Grade 1 Students
(Pre-K–2) Session

Subitizing, number lines, and linear board games are all linked to development of number sense in young learners. Explore strategies to develop number sense by working with “circle number lines,” board games, “foamies,” and sequenced “subite” challenges that make learning fun and engaging.

Ken Newbury
Young People’s Press, San Diego, California

703 (Convention Center)

306
Adopting Singapore Math: A Case Study
(Pre-K–5) Session

Six years ago, Keys School in Palo Alto, California (K–8), adopted Singapore Math. We will present data, experiences, and film clips of math classes. We will summarize the overwhelming benefits of Singapore Math, the obstacles we had to overcome, and the best methods of implementing this acclaimed math curriculum.

Kathleen Jalalpour
Keys School, Palo Alto, California

Corrinne Lieu
Keys School, Palo Alto, California

702 (Convention Center)
To be good at fractions, kids need to develop a specific set of skills and abilities. We’ll identify what those skills are, which Common Core State Standards are crucial at each grade level, and how teachers can use number lines and other tools to give students a better, more intuitive understanding of fractions.

Greg Tang
Scholastic, New York, New York

From STEM to STEAM: The Arts and Creativity in Math
(Pre-K–5) Session
Young students need to be excited about math. They need to be fully engaged in creating math models, making up math stories, doodling and sketching, and using multiple means of expression to think about math. Let’s work together to get the arts—artistic expression and creative thinking—into our everyday math instruction.

Stuart J. Murphy
Author, Boston, Massachusetts

Lesson Study: Teacher Insight into the Common Core State Standards Mathematical Practices
(Pre-K–5) Session
Lesson study offers a unique opportunity to help teachers unpack the meaning of the Common Core State Standards math practices to improve their classroom instruction. Watch selected video clips showing the growth of teachers engaged in this learning goal, and witness how they discovered strategies to better reach the needs of all students.

Anne Nesbitt
Westport Public Schools, Connecticut
Allison Moran
Westport Public Schools, Connecticut
Nancy Kovacic
Westport Public Schools, Connecticut

Standards for Mathematical Practice in Elementary School Classrooms
(Pre-K–5) Session
Previewing a new book from NCTM, we will draw connections among the Standards for Mathematical Practice, the NCTM Process Standards (NCTM 2000), and the strands of proficiency from Adding It Up (National Research Council 2001). A highlight of the session will be discussing how to implement the mathematical practices in elementary school classrooms.

Mathew D. Felton
University of Arizona, Tucson
Courtney A. Koestler
University of Arizona, Tucson

Maximizing Learning during Mathematical Discourse: Teaching Children Argument and Critique
(3–5, Preservice and In-Service) Session
Learn strategies to invigorate mathematical discourse and inspire productive argumentation and critique for all students. Analyze video footage of classroom discourse and practice new techniques while reflecting on ways to increase the effectiveness of discourse. We will focus on social behaviors, discourse procedures, and raising expectations.

Claudia M. Bertolone-Smith
Douglas County School District, Minden, Nevada
Teruni Lamberg
University of Nevada, Reno
Marlene Moyer
Douglas County School District, Minden, Nevada

Developing Spatial Sense in 3-D
(3–8) Session
Explore tasks that engage students in solving problems involving regular solids. These tasks develop students’ spatial sense as they work with the array structure of three-dimensional objects.

Sandy Davis Trowell
Valdosta State University, Georgia
Anne Reynolds
Kent State University, Ohio
313  Pump Up the Volume (Measurement)  
(3–8) Research Session  
Discover new ways to enhance your volume measurement instruction with hands-on tasks. We will share video of students engaged in nonroutine tasks designed to promote understanding of what volume formulas mean and why they work. Investigate students’ strategies and leave with new volume tasks that will help you enact the Common Core State Standards in your classroom.  
Cheryl L. Eames  
Illinois State University, Normal  
Melike Kara  
Illinois State University, Normal  
Jeffrey E. Barrett  
Illinois State University, Normal  
8:00 A.M.–9:00 A.M.

315  Coteaching in the Algebra Classroom  
(6–8) Session  
I will share coteaching strategies that worked in the algebra classroom for students of various ability levels. I will also model effective coteaching strategies and skills.  
Erin K. Colantonio  
Hatboro-Horsham School District, Horsham, Pennsylvania  
203 (Convention Center)

316  Understanding Infinity: Cantor’s Diagonal Proof for Middle School Students  
(6–8) Session  
Infinity is fascinating, yet students rarely learn much about it until college. Can we teach infinity meaningfully to younger students? Explore several ways to incorporate ideas of infinity, including countable versus uncountable sets and Cantor’s diagonal argument, into middle-grades classrooms.  
Amber Wagner  
Johns Hopkins Center for Talented Youth, Baltimore, Maryland  
Alden Moylan  
Johns Hopkins Center for Talented Youth, Baltimore, Maryland  
108 (Convention Center)

317  Building Engineers in Middle School through STEM Activities  
(6–8, Preservice and In-Service) Session  
STEM education challenges teachers to integrate science, technology, engineering, and math concepts into the classroom. Learn about the engineering design process and identify how students can implement it to engage in hands-on activities in engineering. See how to develop math students into strong engineers.  
Mary C. Enderson  
Old Dominion University, Norfolk, Virginia  
Mile High 3 B (Convention Center)

317.1  The Panoramic View of Eighth-Grade Algebra  
(6–12) Research Session  
Equity Strand Presentation  
This study captures the voices of eighth-grade students experiencing algebra for the first time. Uniquely, this study chronicles a fundamental change in the lives of urban middle school students while also addressing who and what thrives or withers under educational mandates.  
Lesa M. Covington Clarkson  
University of Minnesota, St. Paul  
Quintin Love  
University of Minnesota, St. Paul  
709/711 (Convention Center)

318  Constructing Beams and Modeling with Algebra  
(6–12) Session  
Students develop algebraic thinking by constructing beams, analyzing data, finding patterns, and representing patterns with recursive and explicit equations.  
Amber R. Severson  
Anoka-Ramsey Community College, Cambridge, Minnesota  
Erin R. Richgels  
North Pole High School, Alaska  
Glen W. Richgels  
Bemidji State University, Minnesota  
Centennial Ballroom F (Hyatt Regency)
319
Ending Algebraic Misconceptions: Building Correct Knowledge by Showing Incorrect Examples
(6–12) Research Session

In alignment with the Common Core State Standards, using worked examples with self-explanation tasks uses reasoning skills and can increase learning in algebra 1 courses. We will highlight incorrect examples. Learn about two projects that used these strategies in classrooms and how you can apply them to your own classroom.

Karin E. Lange
Temple University, Philadelphia, Pennsylvania

Kelly M. McGinn
Temple University, Philadelphia, Pennsylvania

Julie L. Booth
Temple University, Philadelphia, Pennsylvania

Mineral Hall F/G (Hyatt Regency)

320
Proportion: Ratio = Ratio
(6–12) Session

What is in the clusters for both grades 6 and 7 of the Common Core State Standards, a foundational basis for understanding percents and much of algebraic thinking and scientific reasoning? Ratio and proportion. Join us to explore effective teaching strategies, problem types, and research on teaching and learning ratio and proportion.

Mary Ann Matras
East Stroudsburg University, Pennsylvania

505 (Convention Center)

321
How Big Is a Carbon Footprint?
(9–12) Session

Earth is getting warmer. How do we know? Explore how mathematical reasoning, in the form of modeling, supports the claim of global warming and gives insight into how to counteract it. Use concepts from algebra and statistics to investigate how individual actions can have significant consequences.

Benjamin J. Galluzzo
Shippensburg University, Pennsylvania

Jean M. McGivney-Burelle
University of Hartford, West Hartford, Connecticut

Rikki Wagstrom
Metropolitan State University, Saint Paul, Minnesota

205 (Convention Center)

322
Making Sense of Similarity
(9–12) Session

Here are some classroom-tested activities and investigations that can deepen student understanding of similarity, a much-misunderstood concept at the core of geometry and of advanced mathematics. We will make important connections between similarity and arithmetic, fractions, proportions, algebra, and trigonometry.

Loring Coes
Rocky Hill School, East Greenwich, Rhode Island

405 (Convention Center)

323
Inspiring Investigations of Quadrilaterals and Their Properties
(9–12) Session

Participants will use the Geometry utility on the TI-Nspire handheld to construct various quadrilaterals and dynamically transform them to explore properties of the quadrilateral family. We will focus on an interactive approach to enhance your students’ abilities to visualize and conjecture, using reasoning to prove properties they have discovered.

Ilene Hamilton
Retired, Adlai Stevenson High School, Lincolnshire, Illinois

107/109 (Convention Center)

324
Overcoming Challenges to Develop Mathematically Promising Students in Urban Schools
(9–12) Session

We will (1) explore cultural and social issues in urban schools to serve the needs of mathematically promising students better, (2) develop strategies to keep up with the changing dynamic in math classrooms and strengthen students’ belief and ability to do well in mathematics, and (3) help students develop their mathematical potential fully.

Pinghsiu Lee
Houston Independent School District, Texas

102 (Convention Center)
8:00 A.M.–9:00 A.M.

325
Role of Reasoning and Proof on the SAT
(9–12) Session
How can students demonstrate their ability to reason and to prove statements on a standardized test such as the SAT? How can they construct viable arguments and critique the reasoning of others? How does the SAT address the Standards for Mathematical Practice of the Common Core State Standards? Come hear the answers to these questions and more.

Robin K. O’Callaghan
The College Board, New York, New York
Andrew D. Schwartz
The College Board, New York, New York

601 (Convention Center)

326
Technology: A Portal to Exploration and Discovery
(9–12, Higher Education) Session
Technology affords unique opportunities for exploration and discovery and fosters the development of greater in-depth understanding. Experience how this is possible when investigating the meanings of fractional exponents and logarithms. Technology enables the connection between the two to be made effectively and efficiently.

Kenn L. Pendleton
Montgomery College, Germantown, Maryland

705/707 (Convention Center)

327
Van Hiele through Volume
(9–12, Preservice and In-Service) Session
Using the case study of volume, we will step through the Van Hiele levels of thought. Using physical and instructional technology (3-D modeling), we will go from a wet “level one” demo through multiple perspectives on Cavalieri’s principle (levels three and four), finishing up with abstraction to non-Euclidean volume.

Lloyd Hugh Allen
Baltimore County Public Schools, Towson, Maryland

401/402 (Convention Center)

328
Making Elementary Mathematics Accessible to English Language Learners
(Preservice and In-Service) Session
Like all students, English language learners (ELLs) must learn and develop proficiency in mathematics. But at the same time they must interpret English and share mathematical thinking in English. Learn strategies to teach mathematics concepts together with language to ensure that ELLs learn mathematical concepts with accurate meaning.

Anne M. Goodrow
Rhode Island College, Providence
Lisa B. Owen
Rhode Island College, Providence

Mile High 4 E/F (Convention Center)
8:00 A.M.–9:15 A.M.

330  
Japanese Manipulatives Develop Reasoning and Proof in the Primary Grades  
(Pre-K–2) Gallery Workshop

Learn how the Japanese manipulative kit helps develop students’ number sense and mathematical reasoning in the primary grades. Participate in hands-on activities using Japanese manipulatives to learn how students reason through and represent problem situations and decomposition strategies to enact content and practices from the Common Core State Standards.

Mary N. Leer  
VERA Consulting, LLC, Lancaster, Pennsylvania

Makoto Yoshida  
William Paterson University, Wayne, New Jersey

Mile High 1 A/B (Convention Center)

331  
M3: Making Measurement Meaningful  
(Pre-K–2) Gallery Workshop

Experience hands-on, Standards-based activities that facilitate developing measurement concepts. Participate in interactive activities that explore measurement attributes such as length, capacity, and area and the associated tools while correlating with the Common Core State Standards.

Latrenda Knighten  
Board of Directors, National Council of Teachers of Mathematics; East Baton Rouge Parish School System, Louisiana

Centennial Ballroom E (Hyatt Regency)

332  
Stop! Help! I Thought You Understood Multistep Word Problems  
(Pre-K–2) Gallery Workshop

This interactive presentation will focus on the concrete and representational forms of multistep problem-solving techniques. Engage in making sense of practical problems that address students’ misconceptions. We will investigate students’ inappropriate use of operations.

Laura Gray  
Norfolk Public Schools, Virginia

Brenda Dorman  
Norfolk Public Schools, Virginia

607 (Convention Center)

333  
How Many Aliens? Developing Algebraic Thinking in the K–6 Classroom  
(Pre-K–5) Gallery Workshop

Participate in an early algebraic learning experience for the K–6 level. Through manipulatives, representations, and collaboration, we will do an interactive minilesson based on spaceships and aliens, showing how rich mathematical tasks lay the foundation for algebraic thinking such as number sense and mathematical reasoning.

Wayne Snyder  
Claremont Graduate University, California

Lorelei Coddington  
Claremont Graduate University, California

Kristen Baldridge  
Claremont Graduate University, California

506/507 (Convention Center)

334  
Preparing for the Work of Effective Mathematics Instruction  
(Pre-K–5) Gallery Workshop

There are practices central to the daily work of teaching. Advanced, intentional planning is essential to effective mathematics instruction. Explore how to actively engage students. We will emphasize selection and implementation of worthwhile tasks.

John Sutton  
RMC Research Corporation, Denver, Colorado

Arlene P. Mitchell  
RMC Research Corporation, Denver, Colorado

406/407 (Convention Center)

335  
Successful Mathematics Programs in Title I Elementary Schools  
(Pre-K–5) Gallery Workshop

This program will feature two Colorado Distinguished Title I Schools: Montview Math and Health Science Elementary School, in Aurora, Colorado, and Heritage Elementary, in Pueblo, Colorado. These schools have implemented successful elementary school mathematics programs in schools with many families living in poverty.

Gail Pauley  
Office of the Superintendent of Public Instruction, Special Programs and Federal Accountability, Olympia, Washington

Nancy Konitzer  
Arizona Department of Education, Phoenix

Mile High 4 C/D (Convention Center)
8:00 A.M.–9:15 A.M.

336  
**Do Operations with Integers Sink Your Students’ Boat?**  
*(3–8) Gallery Workshop*

Turn a sinking boat into a game about adding and subtracting integers. Learn this and three other specialized board game activities that model all operations with integers. You will also see how you can change the rules of the games to emphasize or reinforce specific concepts. We will share all materials along with examples of student work.

Aran Glancy  
University of Minnesota, Minneapolis

Young Rae Kim  
University of Minnesota, Minneapolis

Tamara J. Moore  
University of Minnesota, Minneapolis

104/106 (Convention Center)

337  
**Exploring Reasoning and Communication with Problems from Singapore Classrooms**  
*(3–8) Gallery Workshop*

Experience mathematical reasoning and communication by solving problems taken from Singapore classrooms. Learn three strategies to enhance reasoning and communication: the use of questions, concrete materials, and visuals. We will use geometry and measurement problems across grade levels.

Ban Har Yeap  
Marshall Cavendish Institute, Singapore, Singapore

Capitol Ballroom 5–7 (Hyatt Regency)

338  
**What Does Number Sense for Fractions Look Like?**  
*(3–8) Gallery Workshop*

We will share student videos and classwork to describe what fraction number sense looks like for how students with number sense order fractions, estimate fraction addition and subtraction, and explain how to operate with fractions meaningfully. We will share activities to support number sense.

Kathleen Cramer  
University of Minnesota, Minneapolis

Terry Wyberg  
University of Minnesota, Minneapolis

Christina Miller  
University of Minnesota, Minneapolis

111/113 (Convention Center)

339  
**Is There Another Way to Teach Fraction Division?**  
*(6–8, Preservice and In-Service) Gallery Workshop*

Division by fractions (Common Core State Standards, grade 6) is typically taught from a quotitive view: 2/3 divided by 1/4 becomes, “How many 1/4s are in 2/3?” The partitive view works well in many instances, and most students can readily understand it. Come test out these strategies, models, and activities for your classroom.

Sarah K. Westbrook  
Georgia College and State University, Milledgeville

Joy Black  
University of West Georgia, Carrollton

Mile High 2 B (Convention Center)

340  
**Standards for Mathematical Practice: Planting the SEED of Success**  
*(6–8, Preservice and In-Service) Gallery Workshop*

Actions speak louder than words. Experience proven strategies for addressing the Common Core State Standards for Mathematical Practice. Learn questioning techniques to promote conceptual understanding and procedural fluency, while creating the context to enable students to reason mathematically and construct proofs.

William J. Glee  
Project SEED, Berkeley, California

Tim Davidson  
Project SEED, Berkeley, California

403/404 (Convention Center)
8:00 A.M.–9:15 A.M.

341  
**Using Technology to Drive Inquiry in Mathematics**  
(6–8, Preservice and In-Service) Gallery Workshop  
How can technology foster inquiry in mathematics? We will share cognitively demanding mathematical tasks that rely on technology to promote mathematical inquiry.  
**Leigh Haltiwanger**  
Clemson University, South Carolina  
**Bob Horton**  
Clemson University, South Carolina  
503/504 (Convention Center)

342  
**Connect Four! Linking Graphical, Numerical, Algebraic, and Written Representations**  
(6–12) Gallery Workshop  
Using sets of cards, we will match graphs, tables of values, equations, and written descriptions of a variety of functions, including quadratic, polynomial, rational, radical, trigonometric, and exponential/logarithmic. See how to create your own set of cards by using the TI emulator and The Geometer’s Sketchpad.  
**Greg Faulhaber**  
Cincinnati Country Day School, Ohio  
Centennial Ballroom A (Hyatt Regency)

343  
**Cups, Ropes, and Licorice: Making Sense of Rate of Change**  
(6–12) Gallery Workshop  
Do you have a hard time making the connection between slope and rate of change in your algebra class? We will use cups, ropes, and licorice to demonstrate slope and rate of change, and you will leave with several concrete, hands-on ideas for teaching rate of change. We will use TI-84 calculators.  
**Jennifer M. Campbell**  
Wicomico County Public Schools, Salisbury, Maryland  
Mineral Hall A–C (Hyatt Regency)

344  
**Investigations of Paper Folding and Regular Polygons**  
(6–12) Gallery Workshop  
We will investigate the paper-folding activities found in chapter 4 of *Mathematical Reflections: In a Room with Many Mirrors*. First we will dive right into the procedures of the FAT (fold and twist) methods of folding regular polygons. We will explore this concept both on paper and with GeoGebra software.  
**Edward M. Knote**  
University of Central Florida, Orlando  
**Evonne Pankowski**  
Broward County Schools, Pines Middle School, Florida  
103/105 (Convention Center)

345  
**Motivating Students by Sparking Curiosity about the “Whys” in Mathematics**  
(6–12) Gallery Workshop  
Do you ever wonder how you can motivate students to ask you why a rule works in mathematics? Engage in a mathematical activity that shows how to easily spark students’ curiosity about mathematics. I will also offer examples and resources to bring back to the classroom.  
**Angie Hodge**  
University of Nebraska, Omaha  
Mile High 1 E/F (Convention Center)

346  
**Reasoning and Sense Making with At-Risk Students: It’s Possible**  
(6–12) Gallery Workshop  
Do you ever wonder how you can possibly teach the Common Core State Standards, reasoning and sense making, and the curriculum that your at-risk students need? We’ll look at activities guaranteed to engage your at-risk learners in reasoning and sense making while you address your curriculum.  
**Jenny Salls**  
Washoe County School District, Reno, Nevada  
**Christine D. Thomas**  
Georgia State University, Atlanta  
Mineral Hall D/E (Hyatt Regency)
347
Alternative Assessments in Geometry
(9–12) Gallery Workshop
Definitely not your traditional paper-pencil tests. The assessments include a scavenger hunt, photo search, and origami. Content assessed includes special segments of a triangle with points of concurrency, transformational geometry, and areas of regular and nonregular polygons. Bring laptops with The Geometer’s Sketchpad and we will model the hunt.
Janet C. Kagan
Hononegah High School, Rockton, Illinois
Mile High 3 C (Convention Center)

348
A Very Sweet Introduction to Recursion, Reasoning, and Sense Making
(9–12) Gallery Workshop
We will share mathematical questions, based on a simple algorithm for sharing candy, that offer students an opportunity to use recursion and a graphing calculator to obtain answers and results that are astonishing. The sharing of candy leads to a surprising equilibrium that can be used as the basis of a reasoning and sense-making activity.
Laurie Bass
Ethical Culture Fieldston School/Prentice Hall, Bronx, New York
Four Seasons 4 (Convention Center)

349
Common Core State Standards Statistics: What Nonstatisticians Should Know
(9–12) Gallery Workshop
The Common Core State Standards encourage us to teach statistical ideas in our high school math courses. Many of these ideas will be unfamiliar to teachers not well versed in statistics. We will carry out simulations that you can use in the classroom and will discuss how they can help students understand important statistical concepts.
Julie L. Graves
North Carolina School of Science and Mathematics, Durham
201 (Convention Center)

350
Discrete Mathematics for High School: A Problem-Based Approach
(9–12) Gallery Workshop
High school discrete math courses traditionally cover a range of topics, everything from fractals to statistics. College-level discrete math courses are more focused on mathematics associated with computer science. A problem-based approach introduces high school students to topics such as number theory, combinatorics, Boolean algebra, and proofs.
Mike Pugliese
Arvada West High School, Colorado
Mile High 3 A (Convention Center)

351
What’s So Cool about Sierpinski?
(9–12) Gallery Workshop
Want to build the amazing Sierpinski tetrahedron and really learn the mathematics behind it? Explore fractals and compare the volume of the Sierpinski tetrahedron and its complement while creating what you have seen in pictures. Take away an engaging lesson and resources. We will also share feedback from when students were challenged to think.
Rachelle D. Meyer
Baylor University, Waco, Texas
Shandi Spruill
Mesquite High School, Texas
Trena L. Wilkerson
Baylor University, Waco, Texas
704/706 (Convention Center)

352
Using Video Clubs to Examine Student Thinking about Algebra
(9–12, Preservice and In-Service) Gallery Workshop
Video clubs are a powerful way for teachers to work with colleagues to explore student thinking. Experience a new video club professional development program designed to foster substantive discussion of the teaching and learning of algebra. Explore tips to create and sustain video clubs.
Miriam Sherin
Northwestern University, Evanston, Illinois
Elizabeth Dyer
Northwestern University, Evanston, Illinois
Janet Walkoe
Northwestern University, Evanston, Illinois
708/710/712 (Convention Center)
8:00 A.M.–9:15 A.M.

353
Math SDI: Simply Do It
(Preservice and In-Service) Gallery Workshop

Specially designed instruction (SDI) is what makes special education special. Many teachers have students with an individualized education program for part of the school day. With the implementation of the Common Core State Standards, how are we to accelerate the learning of all K–12 students with math disabilities? Explore many ways to simply do it.

Karen Campbell
Green River Regional Educational Cooperative, Bowling Green, Kentucky

Mark E. Helton
Central Kentucky Special Education Cooperative, Lexington

603 (Convention Center)

8:30 A.M.–9:30 A.M.

353.1
Reach the Depths of Common Core State Standards with an Integrated Learning Approach
(General Interest) Exhibitor Workshop

Pearson Forward, a new K–5 instructional system, fosters math achievement starting in Kindergarten, by providing teachers with the tools to nurture thinking and academic success. The Common Core State Standards–aligned program, funded through a federal i3 grant, helps students reach a deeper understanding in math through integration of key subject areas and skills.

Pearson
Upper Saddle River, New Jersey

301 (Convention Center)

353.2
Meaningful Math Models in the Common Core State Standards
(Pre-K–5) Exhibitor Workshop

Students use simple math drawings to show the mathematical aspects of a situation. Students make math drawings on their MathBoards, where parts of a drawing can be pointed to while a student explains his or her solution method. Math drawings incorporate several of the Mathematical Practices. Come learn about math drawings and other math models.

Houghton Mifflin Harcourt
Boston, Massachusetts

304 (Convention Center)

353.3
Conquer Times Tables in Only 3 Weeks—Guaranteed
(3–8) Exhibitor Workshop

Take part in the fun, multisensory, hands-on approach of teaching the times tables in only three weeks. Learn to teach 10s, 11s, and 12s in less than one minute. You’ll see other Common Core State Standards–aligned products to teach addition, subtraction, and division.

Rhymes ‘n’ Times
Lewisville, Texas

302 (Convention Center)

353.4
What’s New at HP: Unveiling Graphing Excellence
(9–12, Higher Education) Exhibitor Workshop

Attend the unveiling of HP’s breakthrough calculator and discover new, exciting ways to approach mathematics learning. Receive free handouts, including a virtual calculator for PCs; one lucky winner will receive an exclusive class kit of HP’s new calculator with 8 hours of virtual professional development training.

Hewlett-Packard Calculators
Fort Collins, Colorado

303 (Convention Center)

9:30 A.M.–10:30 A.M.

354
Essential Mindsets for Tilling the Soil for the Common Core State Standards
(General Interest) Session

With the game-changing nature of the Common Core State Standards, leadership from all of us is a nonnegotiable element to shepherd and support their implementation. This session will answer the questions, “How should we be positioning ourselves?” and “What must we be doing?” so that we do not squander this once-in-a-lifetime opportunity.

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

Four Seasons 1 (Convention Center)
9:30 A.M.–10:30 A.M.

355 Fractions: The F Word in Mathematics
(General Interest) Session
We will focus on several aspects of fractions, including an in-depth look into the problems caused by language and symbolism. See the bigger picture of fractions as well as strategies focused on operations with fractions, including why we invert and multiply by the reciprocal when we divide by a proper fraction.
Concepcion Molina
SEDL, Austin, Texas
Capitol Ballroom 4 (Hyatt Regency)

356 Reaching Girls Online: Another Path to Math
(General Interest) Session
Equity Strand Presentation
Explore strategies to reach girls online by providing resources, networking opportunities, and monitored social networks as a modern way to enhance girls’ math learning and interest. We will address considerations for including parents and girls from varied backgrounds, and we will share useful resources.
Lynda R. Wiest
University of Nevada, Reno
Stephanie Vega
University of Nevada, Reno
Heather Glynn Crawford-Ferre
University of Nevada, Reno
505 (Convention Center)

357 Using Technology and Exemplary Problems from Illuminations to Motivate Students
(General Interest) Session
The 600 lessons and 100 apps on the Illuminations website (http://illuminations.nctm.org) contain rich mathematical tasks that allow for student investigation. Come be a student and try to solve some of these problems, and then discuss how you can use or modify them to motivate students in your class.
Patrick Vennebush
National Council of Teachers of Mathematics, Reston, Virginia
Mile High 4 A/B (Convention Center)

358 A Rainbow of Problem-Solving Strategies Used by K–2 Students
(Pre-K–2) Session
View and discuss video clips of K–2 students doing mathematics. Students will be solving a variety of problem types identified in Common Core State Standards. Student explanations are thought provoking and may bring a smile, an aha, or even a wow. You will leave eager to listen to your students as they solve problems in your classroom.
Linda L. Walker
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee
Charity Bauduin
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee
Capitol Ballroom 1–3 (Hyatt Regency)

359 How Classroom Discussion Promotes Functional Thinking in Grades K–2
(Pre-K–2) Research Session
All students have important things to say, but how do we get them to share their thoughts? Engaging students in meaningful discussion creates a student-driven classroom that fosters deeper functional thinking. Explore functional thinking activities and questioning techniques that enable peer discussion via inquiry-based questioning.
Angela Murphy Gardiner
TERC, Cambridge, Massachusetts
Barbara M. Brizuela
Tufts University, Medford, Massachusetts
709/711 (Convention Center)

360 Babies, Brain Science, and Elementary Mathematics: Research We Can Use
(Pre-K–5) Session
Elements of number, arithmetic, symmetry, transformations, probability, and even algebra are built into us as babies or developed early. Learn some of what’s known about language development; visual perception; and connections between emotion and memory, how it’s been discovered, and how you can use it to support mathematics learning in grades K–5.
E. Paul Goldenberg
Education Development Center, Waltham, Massachusetts
207 (Convention Center)
9:30 A.M.–10:30 A.M.

361  
Common Core State Standards and Problem Solving: Cultivating Student Engagement  
(Pre-K–5) Session

Develop mathematically proficient students by engaging them in well-designed tasks aligned with the Common Core State Standards for Mathematics. Investigate problems from geometry and data analysis, two important strands that require more emphasis. We will share student samples and ideas for 180 days of integrated problem solving.

Desiree Hertz  
The Riverside School, Lyndonville, Vermont

Laurie Boswell  
The Riverside School, Lyndonville, Vermont

401/402 (Convention Center)

362  
Pulling It All Together: Integrated Unit Planning around Common Core State Standards  
(Pre-K–5) Session

We can best teach the depth of the Common Core State Standards when they are integrated across the curriculum. Using literature, working on related mathematics, exploring relative science, examining social connections, and responding in writing can be overwhelming to lesson plan. Fortunately, the benefits of such teaching can be rewarding for both the teacher and students.

Jamie Lynn C. Galgana  
Clark County School District, Las Vegas, Nevada

Cyndi Giorgis  
University of Nevada, Las Vegas

Kelly Goodall  
University of Nevada, Las Vegas

Mile High 3 B (Convention Center)
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9:30 A.M.–10:30 A.M.

**363**
Diagnostic Interviews: An Assessment for Targeting Interventions for Struggling Students  
(3–5) Session

We will develop your understanding and use of diagnostic interviews to assess mathematics learning for at-risk students within a response to intervention model. We will share examples of diagnostic interviews linked to the Common Core State Standards as well as corresponding student responses.

Amy Lingo  
University of Louisville, Kentucky

Karen S. Karp  
University of Louisville, Kentucky  
Centennial Ballroom D (Hyatt Regency)

**364**
Put on Your Math Goggles: Seeing Mathematics in Art  
(3–5) Session

Bring the Standards to life by exploring fractions in the artwork of Paul Klee and Wayne Thiebaud. Engage in applications of multiplication and algebra by using Alexander Calder’s mobiles. Estimate and compute area and perimeter by using your own Mondrian-inspired masterpiece. Connect children’s literature that features the visual arts to math concepts.

Robin A. Ward  
Rice University School Mathematics Project, Houston, Texas  
205 (Convention Center)

**365**
Arithmetic Fluency and Differentiated Instruction through Alternative Algorithms  
(3–5, Preservice and In-Service) Session

Alternative algorithms are culturally relevant and support differentiation. Nontraditional algorithms encourage flexible thinking, and students can use them to convince themselves and others that an answer is correct. Explore several alternative algorithms that support learning whole-number operations.

Rachael M. Welder  
Hunter College, New York, New York

Christine L. Latulippe  
Norwich University, Northfield, Vermont  
Mile High 4 E/F (Convention Center)

**366**
What’s the Big Idea? Inquiry Method Builds Understanding of Fractions  
(3–5, Preservice and In-Service) Session

Explore problem-solving tasks to help third- and fourth-grade students develop deep understanding of basic fraction concepts. I will focus on implementing tasks in ways that build on children’s natural ways of thinking, emphasize reasoning, promote student discourse, and confront common misconceptions.

Wendy S. Bray  
University of Central Florida, Orlando  
Mineral Hall F/G (Hyatt Regency)

**367**
High-Impact Techniques for Asperger’s in the Classroom  
(3–8) Session

Finding high-impact math classroom techniques that enable Asperger’s students to succeed with little additional teacher preparation time required is difficult. We will discuss specific techniques gleaned from teacher interviews, and targeted manifestations that each addresses, from choosing and executing strategies to explaining and showing work.

Debbie Gochenaur  
Shippensburg University, Pennsylvania

Andrew Geesaman  
Shippensburg University, Pennsylvania  
Mile High 2 A (Convention Center)

**368**
Common Core State Standards Mathematical Practices in Action across the Middle Grades  
(6–8) Session

Learn how to help middle grades students think deeply about math concepts by using the Mathematical Practices, particularly making sense of the math, constructing and critiquing arguments, and using structure. Explore algebra activities across the middle grades to better prepare students for Common Core State Standards–based curriculum and assessments.

Katherine Gavin  
University of Connecticut, Storrs

Linda Jensen Sheffield  
Northern Kentucky University, Highland Heights  
Centennial Ballroom B/C (Hyatt Regency)
9:30 A.M.–10:30 A.M.

369  FA
Formatively Assess Reasoning and Proof
(6–8) Session
Explore formative assessment strategies designed to gather evidence about whether students are developing reasoning and sense making. We will examine observation protocols, the role of conjectures, sample prior assessment items and exit cards, and appropriate interventions should major misconceptions become evident.

Anne M. Collins
Board of Directors, National Council of Teachers of Mathematics; Lesley University, Cambridge, Massachusetts
Mile High 1 C/D (Convention Center)

370
Huh? What Does That Mean? Good Math Questions
(6–8) Session
We will explore two kinds of questions. Good math problems use questions that are open ended and encourage divergent thinking and strategies. We will look at and analyze examples of good math questions. Good teacher questions can lead students to deeper understanding of concepts and additional connections. What are those questions?

Chadley Anderson
Davis County School District, Farmington, Utah
102 (Convention Center)

371
Maintaining Motivation in Math: Easing the Transition to Middle School
(6–8) Research Session
Many students find the transition to middle school math demotivating because the abstract concepts are disconnected from their daily experience. Explore how recent research on academic motivation relates specifically to math achievement and how these results can guide the design of interventions to help maintain high levels of motivation.

Robert G. M. Hausmann
Carnegie Learning, Pittsburgh, Pennsylvania
Steve Ritter
Carnegie Learning, Pittsburgh, Pennsylvania
601 (Convention Center)

372
Singapore’s Visual Models to Reason and Make Sense of Problems
(6–8) Session
We will focus on the visual models and visualization used in the highly successful Singapore curriculum. These aspects offer students entry points to complex problems and develop deep understanding of topics such as operations with fractions, ratio, and algebraic manipulation. We will also discuss examples of their rich problems.

Andy Clark
Retired, Portland Public Schools, Oregon
705/707 (Convention Center)

373
Uncommonly Engaging: Real-World Math, Critical Thinking, Critical Issues
(6–8, Preservice and In-Service) Session
Use real-world data to teach foundational algebra through problem-solving exercises similar to what students will encounter in their professional and personal lives. Receive researched-based materials that use real data about issues such as climate change, finance, or sustainable design to engage students with the math in their world and the Common Core State Standards.

Dave Wilton
Facing the Future, Seattle, Washington
703 (Convention Center)

374
Connecting Math and Music
(6–12) Session
Rhythm, pitch, volume, and symbolic notation have strong connections to mathematics. Students are motivated to learn about music, and research shows that the academic study of music supports math achievement. Get an overview of the connections and many resources, as well as suggested classroom activities.

Lew Douglas
The Lawrence Hall of Science, University of California, Berkeley
108 (Convention Center)
9:30 A.M.–10:30 A.M.

375 Reasoning and Proof: The Role of Tasks and Questions
(6–12) Session
How do we choose tasks that engage students in reasoning and proof? How do we make sure the questions we ask probe to find out what students are thinking or push them to make connections? Explore examples from algebra, geometry, and statistics, and consider how interactive dynamic technology can support student learning.

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

Four Seasons 2/3 (Convention Center)

376 Not the Math Students Hate
(9–12) Session
Equity Strand Presentation
Students scream from the rooftops, “I hate math.” Because of this presentation, teachers will be able to make functions, slope, transformations, and quadratics relevant to students. By making connections, students will see their retention level improve, and they might say to their friends, “I can prove the importance of math.”

Frank R. Davis
DuSable Leadership Academy, Chicago, Illinois

405 (Convention Center)

377 The Many Roles of Proof in High School Mathematics
(9–12) Session
Building on research with focus groups of experienced teachers considering the functions that proof plays in mathematics, I discuss how teachers can incorporate proving in high school mathematics classrooms. Aided by research on cognition and classroom processes, I elaborate on how a teacher can navigate dilemmas and decisions that might ensue.

Patricio Herbst
University of Michigan, Ann Arbor

203 (Convention Center)

378 The Ubiquitous Particle Motion Question on the AP Calculus Exams
(9–12, Higher Education) Session
They are on every AP calculus exam, yet they are in very few textbooks. The motion of a particle, a car, a rocket, and even the chief reader makes for questions covering the full range of calculus concepts. Learn how the questions are versatile and can start with a graph, an equation, or a table of values.

Lin McMullin
Arkansas Advanced Initiative for Math and Science, Little Rock

Mile High 2 C (Convention Center)

379 Making Sense of a Stunning Approximation to the Sine Function
(9–12, Preservice and In-Service) Session
We will examine a little-known function that is a ratio of two quadratic functions. Discovered 1,400 years ago, it provides an exceptionally close approximation to the sine function. Using technology, we will see that the approximation is stunning. We will explore how to use the approximation as the basis of a reasoning and sense-making activity.

Ron Lancaster
Ontario Institute for Studies in Education of the University of Toronto, Canada

Centennial Ballroom F (Hyatt Regency)

380 Insights into a Three-Year Mathematics–Science Partnership
(Higher Education) Session
This presentation focuses on the results from an urban school, university mathematics–science partnership. We will present data from the teacher side of the desk and the student side of the desk. Although mathematics content was the project focus, pedagogical practices and student insights will provide a richer overview of the experience.

Tod Shockey
University of Toledo, Ohio

605 (Convention Center)
381  
**Developing Proof through Advanced Number Theory: Promys for Teachers**  
(Higher Education, Preservice and In-Service) Session  
Promys for Teachers is a six-week professional development program that uses number theory to immerse teachers in a culture of discovery. Analyze the structure used in the problem sets to promote teacher understanding and development of informal and formal proof and how that structure can be used in other content classes for teachers.

*Mary Elizabeth R. Matthews*  
Boston University, Massachusetts

*Matthew Chedister*  
Boston University, Massachusetts

**702 (Convention Center)**

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382  
**Building Mathematical Connections between School and Home: An Equity Approach**  
(Preservice and In-Service) Session  
Equity Strand Presentation  
Increase your equity awareness and enrich your instruction by learning strategies and activities that meaningfully involve students' ethnic and cultural heritage as part of their mathematical learning. Explore ways to create and maintain a working school–home relationship as an integral part of the mathematics classroom.

*Vessela Ilieva*  
Utah Valley University, Orem

**107/109 (Convention Center)**
9:30 A.M.–10:30 A.M.

383
Curriculum, Cognition to Cultural Relevance: Bridges over Troubled Waters
(Preservice and In-Service) Research Session
President Series Presentation
Explore findings and perspectives on (1) issues surrounding black children’s lack of access to high-quality mathematics, (2) cognitive training and mathematics achievement, and (3) using culturally specific pedagogy to improve mathematics achievement.

Cheryl M. Adeyemi
Benjamin Banneker Association; Virginia State University, Petersburg

Lee V. Stiff
Past President, National Council of Teachers of Mathematics; North Carolina State University, Raleigh

Ebony O. McGee
Northwestern University, Chicago, Illinois

501/502 (Convention Center)

9:45 A.M.–11:00 A.M.

384
Build Student Visual Schema for Solving Word Problems
(Pre-K–2) Gallery Workshop
Learn how to use interactive visual puzzles to offer all students access to word problems while promoting problem solving and algebraic thinking. Receive software and strategies to use in class for connecting visual models, word problems, and equations involving unknowns. Focus will be on K–2 addition and subtraction situations.

Erich Zeller
MIND Research Institute, Santa Ana, California

603 (Convention Center)

385
Number versus Numeral: Developing the Concept of Quantity
(Pre-K–2) Gallery Workshop
How can I help my students understand the concept of number as quantity more deeply? Engage in hands-on/minds-on investigations of numeration and examine the relationship between quantity and the symbolic representation of number to support the implementation of the Common Core State Standards for Mathematics in pre-K–grade 2 classrooms.

Andria Disney
Chandler Unified School District #80, Arizona

Capitol Ballroom 5–7 (Hyatt Regency)

386
The Ripple Effect: Inspiring Problem Solving across Grade Levels
(Pre-K–2) Gallery Workshop
You have your data; now what? This hands-on gallery workshop includes iPads and lessons that bring the mathematical practices to life. Experience how analyzing data and collaborating across grades encourages student reasoning and communication. Walk away with tiered lesson plans, iPad apps, literature connections, and snack-tivities.

Devin E. Anderson
Gahanna-Jefferson Public Schools, Gahanna, Ohio

Renee L. Snyder
Gahanna-Jefferson Public Schools, Gahanna, Ohio

Susan M. Signet
Gahanna-Jefferson Public Schools, Gahanna, Ohio

Four Seasons 4 (Convention Center)

387
How Big is Big?
Primary Measurement Activities
(Pre-K–5) Gallery Workshop
Teachable moments are in every primary classroom. Integrate measurement into other curriculum areas to bring meaning and depth to your lessons. Songs, literature, maps, and more offer a perfect opportunity for measurement. Clear up common misconceptions and make the ruler real.

Jeanine L. Haistings
William Jewell College, Liberty, Missouri

Mile High 3 C (Convention Center)
**388**
**Minilessons That Maximize Numerical Reasoning**
*(Pre-K–5) Gallery Workshop*

Wondering how to help your students develop numerical reasoning? Minilessons may be your answer. These brief, focused classroom conversations use representations, number strings, and questioning to develop number meanings, relationships, and operations. This gallery workshop demonstrates number minilessons and helps you develop your own.

Eula E. Monroe  
Brigham Young University, Provo, Utah

Damon L. Bahr  
Brigham Young University, Provo, Utah

104/106 (Convention Center)

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**389**
**Spacing Out: Spatial Reasoning and the Common Core State Standards**
*(3–5) Gallery Workshop*

Spatial reasoning seems to have disappeared during No Child Left Behind, but now it is back in the Common Core State Standards. Explore creative and fun activities that your students will love, first using paper and scissors, and later with iPad apps. The geometry standards will come alive for your students.

Jennifer Rising  
Council of Presidential Awardees in Mathematics, Chicago, Illinois

Peggy McLean  
Peggy McLean Consulting, San Carlos, California

Mile High 3 A (Convention Center)

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**390**
**The Proof Is in the Fractions**
*(3–5) Gallery Workshop*

Don’t let fractions divide learning, multiply problems, or fracture your math thinking actions. Learn to survive, and take home ready-to-use games and activities that make fractions come alive. Engage student thinking by playing games that prove fraction number sense.

Mary Petetti Doherty  
Council Rock School District, Newtown, Pennsylvania

Linda Morrin  
Council Rock School District, Newtown, Pennsylvania

201 (Convention Center)

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**391**
**I’m Ready for English Language Learners in My Classroom**
*(3–5, Preservice and In-Service) Gallery Workshop*

Engage in culturally responsive strategies for use with K–6 English language learners (ELLs). We will teach a math concept in a made-up language. After much laughter, assess strategies that helped you learn the math. Then take a grade-level math activity and apply the strategies to make it accessible to ELLs.

Eileen M. Cyr  
Springfield College, Massachusetts

Caroline Murphy  
Springfield College, Massachusetts

Elizabeth Miller  
Springfield College, Massachusetts

Centennial Ballroom A (Hyatt Regency)

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**392**
**Fractions Don’t Have to Be Irrational**
*(3–8) Gallery Workshop*

We will work with different models of fractions, examining and using both linear and area models. We will look at unit fractions as building blocks, equivalent fractions, decimals, and percents. The focus will be on making sense.

Al Mendle  
University of California, Davis

Mile High 1 A/B (Convention Center)

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**393**
**Fractions, Decimals, and Percents: A Seamless Connection**
*(3–8) Gallery Workshop*

Dividing? Move the decimal right? Left? What does this really mean? Connect fractions, decimals, and percents by using conceptual understanding, inspired by the Common Core State Standards, through mental math and hands-on activities you can use in your classroom tomorrow. These activities will encourage students to share ideas and critique each other’s reasoning.

Kim Edelson  
Deer Valley Unified School District, Phoenix, Arizona

JoAnn Bogner  
Deer Valley Unified School District, Phoenix, Arizona

Mile High 2 B (Convention Center)
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9:45 A.M.–11:00 A.M.

394

Fun, Fun, Fun with Math Games
(3–8) Gallery Workshop

Wondering how to review number and operations, algebra, geometry, measurement, and probability and statistics in new and exciting ways? Join us to have fun, fun, fun with engaging games that incorporate a variety of mathematical concepts. Leave with classroom-ready games that will motivate students to use their math skills competitively.

Susan Troutman
Rice University School Mathematics Project, Houston, Texas

Carolyn L. White
Rice University School Mathematics Project, Houston, Texas

406/407 (Convention Center)

395

Regular Polygons with Fraction Circles
(3–8) Gallery Workshop

Some Greeks constructed regular polygons by using tools other than ruler and compass. We follow this idea and use fraction circles (typically used in schools for fraction arithmetic) to construct and investigate properties of regular polygons. We also show how to quickly construct regular polygons with geometry software.

Armando M. Martinez-Cruz
California State University, Fullerton

Jose Contreras
Ball State University, Muncie, Indiana

Patrick M. Kimani
California State University, Fullerton

Mineral Hall D/E (Hyatt Regency)

396

Bar Modeling, Percent Decrease, and the Common Cold
(6–8) Gallery Workshop

For a STEM project, a team of middle and high school math and science teachers developed this lesson. It uses the investigative approach with an interactive computer simulation and the mathematical tool of a bar model to help students make sense of the variables that affect the spread of disease.

Kathleen Hill
Bissell School, Whitefish, Montana

Jennifer Luebeck
Montana State University, Bozeman

111/113 (Convention Center)

397

Interesting Probability Activities and Problems for the Classroom
(6–8) Gallery Workshop

We will focus on probability problems and activities that you can use in the classroom. I will present introductory activities as well as challenging problem solving. See hands-on activities that you can use to teach theoretical concepts.

Rick Billstein
University of Montana, Missoula

503/504 (Convention Center)

398

Irrational Numbers: Where Are You?
(6–8) Gallery Workshop

What and where are irrational numbers? Why do we need them? We will discover the need for irrational numbers and find their approximate location on a number line. We will also make connections to the Pythagorean theorem and the square root function. You will also use rational number approximations to discover the irrational number pi.

Vivian F. Cyrus
Morehead State University, Kentucky

Christie A. Perry
Morehead State University, Kentucky

704/706 (Convention Center)

399

Building Geometric Thinkers
(6–8, Preservice and In-Service) Gallery Workshop

Developing students’ geometrical thinking is critical in helping them become proficient mathematicians; a strong foundation in geometry also has implications in algebra, measurement, and proportional reasoning. We will focus on hands-on explorations that support students’ development of geometric thinking and reasoning.

Cory A. Bennett
Idaho State University, Pocatello

Mile High 4 C/D (Convention Center)
9:45 A.M.—11:00 A.M.

400 Playing with Blocks while Developing Algebraic Thinking
(6–8, Preservice and In-Service) Gallery Workshop
Develop mathematical understanding by making connections among arithmetic, geometry, and algebra through practical classroom activities. We will explore base-ten blocks, pattern blocks, plain blocks, and VisuAlgebra Blocks to create and discover algebraic relations. Explore thought-provoking activities you can use in your classroom.

John F. McAdam
Marist College, Poughkeepsie, New York
Mile High 1 E/F (Convention Center)

401 We Taught a Zoo
(6–8, Preservice and In-Service) Gallery Workshop
Go beyond paper and pencil: get yourself a zoo. We will share lessons that use live animals as a means of collecting data we can then interpret mathematically. Beetles will help us explore distance–time graphs, and snails will show us the value of comparing with percent. We will share lesson plans and tips about classroom pets.

Lynn Kirby
University of Texas at Austin
Jason L. Ermer
University of Texas at Austin
110/112 (Convention Center)

402 Stories and Technology: Providing Mathematics Opportunities for All
(6–12) Gallery Workshop
Language underpins the development of mathematical concepts. Through the union of storytelling and technological tools such as interactive whiteboards, PowerPoint, and Web-based assistive technologies, we will explore an interactive means to provide access to mathematics for all learners, including English language learners and students with learning disabilities.

Dennis DeBay
Boston College, Chestnut Hill, Massachusetts
Karen L. Terrell
Boston Public Schools, Massachusetts
Neal McDonald
Boston Public Schools, Massachusetts
708/710/712 (Convention Center)

403 The Right Path: Logic Puzzles That Build Spatial Reasoning
(6–12) Gallery Workshop
Path puzzles encourage solvers to use both logic and spatial reasoning. Learn about several kinds of path puzzles and hone your reasoning skills. We will also discuss how these puzzles support your curriculum and how to integrate them into your classroom. Bring a sharpened pencil and an open mind.

Jeffrey J. Wanko
Miami University, Oxford, Ohio
607 (Convention Center)

404 Conjectures and Quadrilaterals: Proof versus Convince Me
(9–12) Gallery Workshop
In most geometry classes, students are asked to prove statements about quadrilaterals. Shouldn’t a first step be for them to discover the properties of these figures? Before we ask the “p question” (prove to me), shouldn’t we first ask the “c question” (convince me)? Come see how this can be accomplished with dynamic geometry on a calculator.

Ray Klein
Northern Illinois University, Dekalb
403/404 (Convention Center)

405 Connecting Geometric Constructions to Mathematical Proof
(9–12) Gallery Workshop
Geometric constructions offer an excellent source to construct mathematical proofs to justify the constructions. Explore this relationship. Learn how to use a variety of construction tools, determine how they are the same and how they are different, and determine which are best for certain geometric constructions.

Anne Papakonstantinou
Rice University, Houston, Texas
Richard L. Parr
Rice University, Houston, Texas
Mineral Hall A–C (Hyatt Regency)
9:45 A.M.–11:00 A.M.

406
Explore Real-World Relationships through Mathematical Modeling
(9–12) Gallery Workshop
Use data collection activities and real data sets (including data collected by scientists to monitor fish populations) to engage students and help them develop a better understanding of how mathematical models are used in the real world. We will graph data with the TI-Nspire CX and explore a variety of functions.

Elizabeth Gasque
Retired, Charleston, South Dakota

Judith Hicks
Retired, Arvada, Colorado

Centennial Ballroom E (Hyatt Regency)

407
Incorporate Statistics into Algebra 2 by Using the Foundation’s Lessons
(9–12) Gallery Workshop
Learn an innovative method to introduce statistics concepts into an algebra 2 curriculum. Join us for a hands-on lesson that links function behavior and statistics through the use of histograms and other graphical displays. By using this strategy, you will be able to incorporate the high school Common Core State Standards for statistics across multiple courses.

Lori Edwards
Laying the Foundation, a division of the National Math and Science Initiative, Dallas, Texas

Curtis Brown
Laying the Foundation, a division of the National Math and Science Initiative, Dallas, Texas

103/105 (Convention Center)

10:00 A.M.–11:00 A.M.

409.1
Just-Right Problems
(General Interest) Exhibitor Workshop
Explore relationships between leveled problems and the Standards for Mathematical Practice. All students can experience success and engage in mathematical reasoning with leveled, right-sized problems. Learn how to adapt problems for various levels and help all students learn to justify their thinking. All problems address the Common Core State Standards for Mathematics.

Teacher Created Materials
Lexington, Massachusetts

302 (Convention Center)
10:00 A.M.–11:00 A.M.

409.2  
Analyze Data in the Cloud with StatCrunch  
(General Interest) Exhibitor Workshop

StatCrunch offers a powerful Web-based solution for data analysis and exploration. This session will highlight basic functionality in the software along with strategies for sourcing new and exciting data. Also, users will have a look at the new applet builder within StatCrunch.

Pearson  
Upper Saddle River, New Jersey

301 (Convention Center)

409.3  
New K–5 Math Curriculum for Building Mathematical Thinkers  
(Pre-K–5) Exhibitor Workshop

Bridges in Mathematics, second edition, is a comprehensive K–5 curriculum that equips teachers to fully implement the Common Core State Standards in a manner that is rigorous, coherent, engaging, and accessible to all learners. Preview new materials, view video clips of actual lessons, and meet the program authors.

Math Learning Center  
Salem, Oregon

304 (Convention Center)

409.4  
Do Word Problems Scare the Daylights out of Your Students?  
(3–8) Exhibitor Workshop

Find out how Hands-On Equations enables younger students to represent and solve word problems, visually and concretely by using game pieces, including advanced age and consecutive-integer problems.

Borenson and Associates  
Allentown, Pennsylvania

303 (Convention Center)

11:00 A.M.–12:00 P.M.

410  
iPad 1.1: What We Learned Our First Year  
(General Interest) Session

Are you implementing iPads? Find out what we learned after our first year. Reproduce our successes and avoid our mistakes. Learn how to use the devices to create content that requires critical thinking and to promote mathematical literacy according to the Common Core State Standards. Learn management tips and tricks. iPads are so much more than apps.

Shelly Moses  
San Diego Jewish Academy, San Diego, California

Kelli Cox  
San Diego Jewish Academy, San Diego, California

601 (Convention Center)
11:00 A.M.–12:00 P.M.

411 Keeping Our Eyes on the Prize
Iris M. Carl Equity Address
(General Interest) Session
NCTM has committed itself to equity, with many of us working toward a new generation of mathematics-savvy citizens and STEM professionals representing our diverse population. We need to take stock of the record and take action from the state house to the classroom, so that our vision becomes reality and our hopes for our students are realized.

Philip “Uri” Treisman is professor of mathematics and of public affairs at the University of Texas at Austin, where he directs the Charles A. Dana Center. He is a senior adviser to the Aspen Institute’s Urban Superintendents’ Network and recently served on the 21st-Century Commission on the Future of Community Colleges. He was named a MacArthur Fellow in 1992 for his work on nurturing minority student achievement in college mathematics and 2006 Scientist of the Year by the Harvard Foundation of Harvard University for his outstanding contributions to mathematics. In all his work, Treisman advocates for equity and excellence in education for all children.

Philip Uri Treisman
Charles A. Dana Center, University of Texas at Austin
Four Seasons 2/3 (Convention Center)

412 Math with a Conscience?
(General Interest) Session
Does applicable math always side with the rich and the powerful? Or can it help us create a better, more just world? Explore how an intentional focus on the social and ethical dimensions of math starting from such questions can enrich the classroom experience at all levels of the curriculum. I will share examples and tools for the classroom.

Gizem Karaali
Pomona College, Claremont, California
Mile High 1 C/D (Convention Center)

413 Student-Centered Curriculum and Instructional Strategies That Support Struggling Learners
(General Interest) Session
I will present results from research on supports needed for at-risk students in a constructivist mathematics environment. Classroom observation data identified areas where the curriculum and pedagogy posed specific challenges for struggling learners and suggested the potential supports that could help students access critical content and processes.

Hannah Slovin
University of Hawaii, Honolulu
Capitol Ballroom 4 (Hyatt Regency)

414 The Greatest Mathematics Teacher I Ever Knew: Inspiring Student Performance
(General Interest) Session
In this motivational message, we will examine the art of teaching. What are the characteristics of highly effective mathematics teachers? How do you efficiently balance effective lesson design and assessment demands of such a challenging and deeply rewarding profession?

Mona Toncheff
Phoenix Union High School District, Arizona
Timothy D. Kanold
Loyola University, Chicago, Illinois
107/109 (Convention Center)

415 Turning Student Errors into Deeper Mathematical Learning
(General Interest) Session
Ranging from elementary school number and operation through algebra, statistics, and calculus, this presentation will highlight examples of student work and offer constructive approaches for using it and the errors that frequently arise to help students learn mathematics in a deeper, more connected way.

H. Michael Lueke
St. Louis Community College, Missouri
Capitol Ballroom 1–3 (Hyatt Regency)
11:00 A.M.–12:00 P.M.

416  
**Build Number Sense with Visual Models and Games**  
*(Pre-K–2) Session*

Be more efficient and selective about time devoted to number. Explore number relationships by using visual models, including dot cards, ten frames, number lines, grids, and hundred charts. Leave with classroom-ready games and strategies, based on the Common Core State Standards, to help you enhance number sense and build confidence in your students.

Laura Choate  
Fallbrook Union Elementary School District, California  
**Mile High 2 A (Convention Center)**

417  
**Pump Up the Volume: Hands-On, Minds-On Measurement Tasks**  
*(Pre-K–2) Session*

To learn measurement concepts deeply, children must be actively doing, experimenting, and performing—not passively observing or filling out a worksheet. You’ll leave this session with a fistful of real-world tasks for time, money, length, capacity, area, temperature, and weight.

Carrie S. Cutler  
University of Houston—Downtown, Texas  
**705/707 (Convention Center)**

418  
**Teaching and Learning Equality in the Grades K–2 Classroom**  
*(Pre-K–2) Session*

Explore ways to support young children’s development of equality. Engage in activities designed to develop an in-depth understanding of equality beyond the balance scale approach. I will show student work and videos and will supply a handout with ideas and activities for immediate implementation.

Deborah Gordon  
Arizona Department of Education, Phoenix  
**Centennial Ballroom B/C (Hyatt Regency)**

419  
**Teaching the Common Core State Standards through Differentiated Instruction**  
*(Pre-K–5) Session*

Meeting the needs of all learners is a formidable challenge. Understanding what and how to differentiate enables us to meet this challenge. Explore the progression of skills within standards and how we can differentiate lessons. We will share instructional resources.

John J. SanGiovanni  
Howard County Public School System, Ellicott City, Maryland  
Kay B. Sammons  
Howard County Public School System, Ellicott City, Maryland  
**501/502 (Convention Center)**

420  
**Learning through Representations: Integers and Fractions on the Number Line**  
*(3–5) Research Session*

Explore a curriculum unit that uses the number line as the context for a coherent treatment of integers and fractions. Lessons engage students in reasoning and communication about the big ideas of representing rational numbers on the line. Findings from an efficacy study offer evidence of the curriculum’s effectiveness.

Maryl Gearhart  
University of California, Berkeley  
Geoffrey B. Saxe  
University of California, Berkeley  
**401/402 (Convention Center)**

421  
**The New 3 Rs: Reading, Writing, and Reasoning**  
*(3–5, Preservice and In-Service) Session*

See how to use literature, writing, and reading to promote reasoning skills. Leave with Common Core State Standards–aligned engaging activities to extend math learning in a variety of subjects, while inspiring a love of math, writing, and problem solving—and be ready for the new 3 Rs.

Charyl Kerns Hills  
Council Rock School District, Newtown, Pennsylvania  
Donna Pianoforte  
Consultant, Newtown, Pennsylvania  
**703 (Convention Center)**
11:00 A.M.–12:00 P.M.

422
Becoming a Pattern Sniffer: Helping Students Learn through Inductive Reasoning
(3–8) Session
Looking for, extending, and generalizing patterns (inductive reasoning) is an important habit of mind for all students, particularly early algebraic thinkers. Explore ways to help students become pattern sniffers, highlighting how repeated reasoning emphasizes mathematical structure. We will also consider limitations.

Todd A. Abel
Appalachian State University, Boone, North Carolina
702 (Convention Center)

423
Fractals: The Intersection of Math, Science, and Art
(3–8) Session
Fractals capture students’ imagination, inviting them to explore patterns found in the world around them. Learn how you can use fractals as a springboard to explore number sense, area, perimeter, patterns, and algebra. Use the Illuminations Fractal Tool to explore the properties of self-similarity and have your students make their own fractal.

Shephali K. Chokshi-Fox
Middleboro Public Schools, Massachusetts
Victoria L. Miles
Middleboro Public Schools, Massachusetts
709/711 (Convention Center)

424
Fraction Conversations: Effective Questioning and Technology Tools to Improve Instruction
(3–8) Session
It’s all about asking the right questions and listening to students. We will describe a successful professional development project supporting teachers in improving effective mathematical classroom discussions grounded in key Common Core State Standards fractional concepts with technology tools. We will also share implementation process materials.

Mary Elizabeth Mendenhall
Griffin RESA (Regional Educational Service Agency), Griffin, Georgia
Lauri Susi
Conceptua Math, Petaluma, California
Centennial Ballroom D (Hyatt Regency)

425
Linking Bar Diagrams and the Standards for Mathematical Practice
(3–8) Session
This highly interactive presentation teaches bar diagramming, a powerful, visual–logical problem-solving strategy focused on reasoning. You’ll draw bar diagrams to represent and solve several word problems. Through the lens of the Standards for Mathematical Practice, you’ll see how bar diagramming develops mathematical proficiencies.

Robyn Silbey
Robyn Silbey Professional Development, Gaithersburg, Maryland
Mile High 2 C (Convention Center)

426
Easy Absolute Values? Absolutely.
(6–8) Session
Most students can tell you that the absolute value of a number is positive. However, many do not understand the concept itself. Explore absolute value as the distance from zero. This basic starting point will offer an easy-to-understand method to solve absolute value equations and inequalities.

Sharon Taylor
Georgia Southern University, Statesboro
108 (Convention Center)
A special thank-you to all volunteers who have assisted with the Annual Meeting

Friday

11:00 A.M.–12:00 P.M.

427

How Do I Build/Sell Thee? Let Me Count The Ways

(6–8) Session

Discover a multidimensional approach to learning about perimeter, area, and volume by building a home from start to finish within a budget. Through paper and computer models, students explore these concepts while creatively constructing a home they then try to sell. View projects and leave with ideas about how to use this project with your class.

Ilene Kanoff
The Newton School, South Strafford, Vermont

Mineral Hall F/G (Hyatt Regency)

428

Proof in Middle School?

(6–8) Session

Although proof is typically not considered an essential part of middle school mathematics, in this session we will question that assumption, and examine ways of providing students with opportunities to engage in proving and fostering the development of their learning to prove.

Eric Knuth
University of Wisconsin–Madison

205 (Convention Center)

429

Developing Fraction Sense and Proportional Reasoning with Action–Consequence Applets

(6–8, Preservice and In-Service) Session

Investigate a suite of applets designed to develop understanding of fractions and proportions. We will consider how applets and well-posed questions can engage students in reasoning about mathematics. Also, we will examine student work for evidence of understanding.

Wade Ellis
West Valley College, Saratoga, California

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

Thomas Dick
Oregon State University, Corvallis

203 (Convention Center)

430

Engaging with Existence Proofs in Middle and High School Classrooms

(6–12) Session

Spice up your middle or high school class with this collection of existence proofs. We will share tasks to challenge your students to think about propositions that can be proved with one example. To address the appropriateness of each proof strategy, we will compare these tasks with propositions that cannot be proven by example.

Christine P. Trinter
Virginia Commonwealth University, Richmond

Joe Garofalo
University of Virginia, Charlottesville

Barbara Kitchell
University of Virginia, Charlottesville

Mile High 4 A/B (Convention Center)

431

No More Excuses: Reaching Students of Various Abilities through “Flipping”

(6–12) Session

Are your students engaged during class? We will share our experience flipping math classes at various ability levels. Students watch our notes online for homework and spend class time deep in exploration and practice. We combined the forces of Livescribe, Jing, Google, and Khan Academy to teach our students. Learn how to do this in your classroom.

Karen Strader
Framingham High School, Massachusetts

Ilana B. Marcus
Framingham High School, Massachusetts

Stephanie Adams
Framingham High School, Massachusetts

505 (Convention Center)
MfA’s fellowship programs enable STEM teachers and school leaders to exchange innovations in mathematics and science instruction, while also engaging in a larger, shared mission.

You love that ‘aha’ moment; you want your students to love it, too.

Math for America is looking for people who want to become part of a supportive community of mathematics and science teachers and school leaders.

- The MfA Fellowship: a five-year program with stipends of up to $100,000 for recent college graduates and mid-career professionals.
- The MfA Early Career Fellowship: a four-year program with stipends of up to $60,000 for secondary mathematics teachers.
- The MfA Master Teacher Fellowship: a four-year program with stipends of up to $60,000 for experienced mathematics and science teachers.
- The MfA School Leader Fellowship: a two-year program with stipends of up to $10,000 for school leaders with math backgrounds and $20,000 in funding to the school.

Could you be a part of the MfA community?

Learn more at www.mathforamerica.org
10:00 A.M.–12:00 P.M.

433 Anchors Away: Problems to Engage Your Students
(9–12) Session
Students need engaging activities that set the stage for a new unit. Rich problems can serve as anchors that can also be revisited in different contexts throughout the school year. We will explore several examples of anchor problems that promote reasoning and sense making and cut across the conceptual categories, from functions to geometry.

Daniel J. Brahier
Bowling Green State University, Ohio

Four Seasons 1 (Convention Center)

434 Engaging Students and Addressing Standards in a Multiplayer Online Game
(9–12) Session
Immerse yourself in MIT’s virtual game world that engages high school math students. Learn how the game addresses the Common Core State Standards and gives real-time teacher feedback about student learning. Sign your class up to play.

Louisa Rosenheck
The Education Arcade, Massachusetts Institute of Technology, Cambridge
Susannah Gordon-Messer
The Education Arcade, Massachusetts Institute of Technology, Cambridge

102 (Convention Center)

435 Knowing What Students Know and Using It
(9–12) Session
I will describe the crucial features of formative assessment in mathematics classrooms to know what students know. I will show how to use what they know to make sound instructional decisions based on learning progressions and research on student misconceptions. We will discuss example learning progressions and associated formative assessment tasks.

Karen D. King
National Science Foundation, Arlington, Virginia

Mile High 3 B (Convention Center)

436 Flipping Calculus
(9–12, Higher Education) Session
We will describe our experiences flipping calculus. We will discuss the technology and logistics involved as well as the benefits and challenges of this pedagogy. See and discuss a sample of short videos and collaborative in-class activities. We will also share preliminary student and instructor survey data.

Jean M. McGivney-Burelle
University of Hartford, West Hartford, Connecticut
Larissa Schroeder
University of Hartford, West Hartford, Connecticut
Mako Haruta
University of Hartford, West Hartford, Connecticut

405 (Convention Center)

437 Supporting Beginning Teachers through Online Social Communities
(Higher Education, Preservice and In-Service) Session
Explore how to cultivate a supportive community for beginning mathematics teachers through online collaborative environments. Discuss how to engage beginning teachers in professional development opportunities, reflection, and research-based practices.

Emily Thrasher
North Carolina State University, Raleigh
Ayanna Franklin
North Carolina State University, Raleigh

605 (Convention Center)

438 Is It True—Always? Supporting Reasoning and Proof–Focused Collaboration among Teachers
(Preservice and In-Service) Session
Teachers often collaborate through examining data. How often do those data allow you to examine students’ ability to reason and prove? Explore several tools that collaborative teams can use to support analyzing classroom instruction and assessment with a lens on supporting students to develop convincing arguments.

Nicole Rigelman
Portland State University, Oregon

Centennial Ballroom F (Hyatt Regency)
11:00 A.M.–12:00 P.M.

439  
Math in Cahoots with Science  
(Preservice and In-Service) Session

Explore hands-on activities, projects, and student-designed experiments that illustrate the connections between middle grades science and math. We will emphasize mathematical concepts that support scientific investigation, such as rates, ratios and proportions, probability and statistics, surface area, volume, and measurement.

Laurie Jordan  
Loyola University at Chicago, Illinois

Steven Jordan  
University of Illinois at Chicago

Mile High 4 E/F (Convention Center)

11:30 A.M.–12:00 P.M.

440  
Learn How Great Math Lessons Become Presidential Awards  
(General Interest) Burst

Recipients of the Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) will share how they each took a quality math lesson and turned it into a meeting with the president of the United States, a $10,000 award to use at their discretion, and many state and national leadership opportunities.

Marilyn Suiter  
National Science Foundation, Arlington, Virginia

Sandra Trevino  
National Science Foundation, Arlington, Virginia

Cindy Hasselbring  
National Science Foundation, Arlington, Virginia

201 (Convention Center)

441  
Teach Students How to Think Mathematically  
(General Interest) Burst

Learn how to incorporate the I-Think problem-solving framework in any classroom. It encourages students to analyze a problem, consider solution strategies, monitor their efforts, and justify solutions. I-Think promotes oral and written discourse guided by a graphic organizer, with guiding questions and prompts, for students working in groups.

Sararose DeVore Lynch  
Westminster College, New Wilmington, Pennsylvania

Jeremy M. Lynch  
Slippery Rock University, Pennsylvania

Mile High 1 E/F (Convention Center)

442  
What Does Your Mental Number Line Look Like?  
(Pre-K–2) Burst

Ann Gervasoni (Australian Catholic University) names “Development of a Mental Number Line” as one of seven keys that open doors for students who struggle with mathematics. Learn how students develop a mental number line, activities that support the use of a mental number line, and implications for future success with numeracy tasks.

Marci A. Hellman  
Jeffco Schools, Golden, Colorado

708/710/712 (Convention Center)

443  
Using Problem Solving to Assess Young Children’s Mathematical Knowledge  
(Pre-K–2, Preservice and In-Service) Burst

Learn to select and use problem-based tasks to assess children’s thinking as they develop problem solutions. See examples of preschool, kindergarten, and primary grade children’s approaches.

Shirley A. Leali  
Weber State University, Ogden, Utah

Rosalind N. Charlesworth  
Weber State University, Ogden, Utah

Mile High 2 B (Convention Center)
11:30 A.M.–12:00 P.M.

444
Crash Course in Math Fact Fluency
(Pre-K–5) Burst
Wherever you look—the Common Core State Standards, Texas Essential Knowledge and Skills, NCTM Curriculum Focal Points, National Math Advisory Panel—a spotlight is turned on math fact fluency. This presentation summarizes your key need-to-know information: what fact fluency is, how it is assessed, and research-supported methods for its development.

Betty Korte
ExploreLearning, Charlottesville, Virginia
111/113 (Convention Center)

445
“Math, Math, It’s Better Than a Bath”: Encouraging Mathematical Playfulness
(Pre-K–5) Burst
Help your students see math as playful and fun by introducing silly schoolwide math contests that appeal to children’s senses of drama and whimsy. Have children create math jokes, math poems, and math comic strips; help them put on math-related skits and perform math cheers. Prizes may even be awarded. Be there or be a right-angled rhombus.

Stephen Currie
Poughkeepsie Day School, New York
603 (Convention Center)

445.1
Lions, Zebras, Cheetahs, and Graphing
(3–5) Burst
Come on a math safari as you learn about an exciting project that combines math and writing. We’ll have furry, feathery fun as we enjoy actual students’ writing and samples of the innovative graphs they created to illustrate facts about their animals. You’ll develop ways to create your own zoological mathematics experience for your students.

Ann Nagda
Macmillan Children’s Books, New York, New York
Mile High 3 A (Convention Center)

446
Delivering a Fully Differentiated Math Lesson
(3–8) Burst
Despite the universal acceptance that no classroom contains a group of learners with identical needs, the actual task of providing a lesson that addresses the myriad of needs appears, at times, insurmountable. This presentation will show how to plan and deliver a fully differentiated and inclusive math lesson.

Yvonne Catherine Reilly
Sunshine College, Australia
Jodie Maree Parsons
Staughton College, Melton, Australia
103/105 (Convention Center)

447
Movie Making in Math
(3–8) Burst
Students take an active part in learning new skills when they create their own short videos explaining concepts and giving examples. See how one fourth-grade class created an easily accessible resource of videos to reinforce their learning.

Catherine W. Greenslade
St. George’s Independent School, Germantown, Tennessee
Mile High 3 C (Convention Center)

447.1
MoMath and the Rosenthal Prize Results
(6–8) Burst
We will briefly update you on the newly opened National Museum of Mathematics. We will also describe the educational activities submitted by the winner and finalists in the 2012 Rosenthal Prize for Innovation in Mathematics Teaching, and we will let you know how to learn more about the activities and apply for the 2013 Prize.

Glen Whitney
Museum of Mathematics, New York, New York
Cindy Lawrence
Museum of Mathematics, New York, New York
Mile High 4 C/D (Convention Center)
11:30 A.M.–12:00 P.M.

**448**

*The Hunger Games: What Are the Chances?*

(6–8) Burst

Learn an activity that engages students by using the mathematics behind the wildly popular adolescent literature book *The Hunger Games*. Aligned with the Common Core State Standards for Mathematical Practice, *The Hunger Games* offers an exciting, meaningful, and standards-based context for getting students to think about probability.

Sarah B. Bush

Bellarmine University, Louisville, Kentucky

Karen S. Karp

University of Louisville, Kentucky

*Mile High 1 A/B (Convention Center)*

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**449**

*Learning Partners*

(6–8, Preservice and In-Service) Burst

Relationships and math understanding are gained when middle school students and preservice teachers exchange work and ideas. Preservice teachers gain practice with genuine student work and questioning, and middle schoolers gain another perspective. I will share ideas of high-level problems and how to arrange this partnership.

Cathleen M. Malotka

Saginaw Public Schools, Michigan

*406/407 (Convention Center)*

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**450**

*Dynamic Euclid: Using GeoGebra to Construct and Present Geometric Proofs*

(9–12) Burst

Using GeoGebra, a free and open-source software program, you can easily construct and dynamically present geometric proofs. Learn how to construct Euclidean geometric proofs, present the constructions dynamically, and share creations with secondary students or the global community of GeoGebra users.

Jeffrey Hall

Mercer University, Atlanta, Georgia

*503/504 (Convention Center)*

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**Response to Intervention**

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**451**

*Using Origami Boxes to Explore Concepts of Geometry and Calculus*

(9–12) Burst

Learn how you can use a simple origami box to explore important concepts in geometry and calculus.

Arsalan Wares

Valdosta State University, Georgia

*607 (Convention Center)*

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**452**

*Teacher–Student Interactions in College Calculus Classrooms and Office Hours*

(9–12, Higher Education) Research Burst

Learn findings of research on how two college calculus teachers interacted with students in classrooms and office hours. Conversation analysis on classroom data revealed teachers’ ways to implicitly convey when students had opportunities to talk. The students were more engaged and took an active role during office hours.

Jun-Ichi Yamaguchi

University of Georgia, Athens

*403/404 (Convention Center)*

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**453**

*Incorporating Different Learning Styles into Online College Statistics Courses*

(Higher Education) Burst

Activities that have been successfully used in the traditional classroom can be creatively translated to the online environment while addressing the three learning styles. This presentation will guide professors who are new to the virtual classroom and want statistics classes that energize students with an excitement for learning.

Judi A. Ink

Regent University, Virginia Beach, Virginia

Elisabeth Suarez

Regent University, Virginia Beach, Virginia

*506/507 (Convention Center)*
11:30 A.M.–12:00 P.M.

454
Attracting and Retaining High-Quality Mathematics Teaching Majors
(Higher Education, Preservice and In-Service) Burst
How do you attract more preservice mathematics majors? What kind of mentor support will help mathematics majors while they are student teaching and during those first two years of teaching? How does an award of a National Science Foundation Robert Noyce Scholarship grant (DUE 1136426) help?

Janet Nichols
Colorado State University–Pueblo
110/112 (Convention Center)

455
International Perspectives on Preparing Mathematics Teachers
(Higher Education, Preservice and In-Service) Burst
Learn about teacher preparation practices across the Pacific Rim with a focus on Asian nations. Examine content knowledge preparation as well as pedagogical knowledge preparation, and discuss what knowledge is needed to enter the K–12 classroom well prepared to help all students meet high standards, including the Common Core State Standards.

Mark Ellis
Board of Directors, National Council of Teachers of Mathematics; California State University, Fullerton

Chris Stapel
The Blake School, Minneapolis, Minnesota

Cynthia A. Miller
Arkansas State University, State University
704/706 (Convention Center)

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Standards-Based Math
for students with mild, moderate, and severe disabilities

www.ablenetinc.com/equals
11:30 A.M. – 12:00 P.M.

456
Denver Public Schools’ Journey Supporting Students with Math Learning Disabilities
(Preservice and In-Service) Burst

Denver Public Schools Department of Special Education dedicated resources to develop a stronger understanding of math learning disabilities and to support special educators in math education. I will present math learning disabilities, building a body of evidence and implementation of a few effective instructional strategies.

Robert Frantum-Allen
Denver Public Schools, Colorado
Four Seasons 4 (Convention Center)

11:30 A.M. – 12:30 P.M.

457
Self-Assessment as a Problem-Solving Tool with Preservice Teachers
(Preservice and In-Service) Burst

Many teacher trainees enter teacher education programs with tremendous fear of mathematics. This fear becomes more intense when they engage in mathematical reasoning and problem solving. I will share insights and examples of how preservice teachers have used self-assessment to develop their reasoning and problem-solving skills.

Deoanand Harbukhan
University of Trinidad and Tobago, San Fernando
104/106 (Convention Center)

457.2
CCSS Math Practices? Trust CPM’s 20 years of Writing Experience
(6–12) Exhibitor Workshop

Try some lessons and take home samples of CPM’s Core Connections series. The third generation of CPM blends Common Core State Standards content and practice standards in a coherent sequence from sixth grade through algebra 2. Course elements include problem solving, mathematical thinking, problem-based lessons, and mathematical discourse in a student-centered format.

CPM Educational Program
Sacramento, California
302 (Convention Center)

457.3
Activities, Discovery, Task, Oh My! Seamless Integration into Your Content
(6–12) Exhibitor Workshop

See how easily the Standards for Mathematical Practice can be seamlessly integrated into your curriculum by using Activities, Discovery, and Tasks—all found on the HMD On Core Activity Generator.

Houghton Mifflin Harcourt
Boston, Massachusetts
304 (Convention Center)

457.4
Financial Algebra: An Advanced Algebra with Financial Applications Course
(9–12, Higher Education) Exhibitor Workshop

Looking for a math course accredited by the NCAA that is aligned with the Common Core State Standards? Advanced Algebra with Financial Apps and Cengage Learning’s Financial Algebra text are the perfect fits for you. Learn about the financial algebra experience as you discover how to make advanced algebra accessible to all students.

Cengage Learning
Belmont, California
303 (Convention Center)
12:30 P.M.–1:30 P.M.

458 Enhancing Teaching and Learning with the Standards for Mathematical Practice
(General Interest) Session

Explore ways to help all students learn to reason mathematically across the grades. Experience firsthand what it looks and feels like when discourse and mathematical reasoning are the mainstay of mathematics classrooms.

Ruth Parker is a former grades 1–9 mathematics teacher. As CEO of the Mathematics Education Collaborative, Parker has worked with thousands of parents, teachers, administrators, mathematicians, engineers, and teacher educators throughout the nation. Her passion is to have all children, educators, and parents experience the compelling beauty and utility of mathematics, and to help all students succeed in challenging and engaging mathematics courses relevant to their needs in the twenty-first century.

Ruth Parker
Mathematics Education Collaborative, Ferndale, Washington

Four Seasons 2/3 (Convention Center)

459 Fractions and Ratios across the Common Core State Standards
(General Interest) Session

What is a unit fraction, 1/a, and why is it important? How do multiplicative thinking and equivalence influence fraction operations? We’ll discuss the Common Core State Standards for teaching fractions and ratios across the grades, with lesson examples consistent with the mathematical practices to develop deep understanding. We’ll also discuss the effects on higher math.

Pamela Weber Harris
Pam Harris Consulting LLC, Kyle, Texas

Mile High 2 A (Convention Center)

460 NCTM Business Meeting
(General Interest) Session

A summary of the past year’s significant accomplishments and an overview of NCTM’s current and future strategic directions.

Kichoon Yang
Executive Director, National Council of Teachers of Mathematics, Reston, Virginia

Mile High 1 C/D (Convention Center)

461 Proof Enough for You?
(General Interest) Session

Students say, “We need more proof!” when they encounter activities that invite curiosity, speculation, and surprise. Examine ways to present tasks so that students feel the need to justify their observations and use proof to become more convinced about what they have found. See how a little proof can leave students asking for more.

Ralph Pantozzi
Kent Place School, Summit, New Jersey

605 (Convention Center)

462 The Five “Secrets” to Effective Instruction
(General Interest) Session

With heart, humor, amusing anecdotes, and references to research, I will describe five simple yet powerful tips to improve teaching effectiveness. Though the talk is lighthearted, the substance is serious: helping students achieve far beyond their parents’, teachers’, or even their own expectations.

Frank Y. Wang
Oklahoma School of Science and Mathematics, Oklahoma City

Centennial Ballroom D (Hyatt Regency)
12:30 P.M.–1:30 P.M.

463
Discovering Geometric Concepts through Children’s Literature
(Pre-K–2) Session
Children’s literature offers a new way to explore geometric concepts and vocabulary through stories and illustrations. Leave with a list of suggested book titles along with ready-to-use lessons.

Andrew D. Goodman
Clark County School District, Las Vegas, Nevada
Jennifer Crosthwaite
Clark County School District, Las Vegas, Nevada
Capitol Ballroom 4 (Hyatt Regency)

464
Number Sense and the Common Core State Standards
(Pre-K–2) Session
What will the Common Core State Standards look like in your classroom? Engage in hands-on activities designed to develop an in-depth understanding of number sense in your students. Leave with instructional ideas that you can take back into your classroom.

Myrna I. Mitchell
Fresno Pacific University, California
Mile High 4 A/B (Convention Center)

465
Early Algebra: Handle with CARE
(3–5) Session
CARE is Conceptual Algebra Readiness for Everyone, a partnership between the Michigan City Area Schools and Purdue University North Central to help children develop conceptual understandings of early algebra. We will share both problem-solving activities designed to help children generalize and videos of children learning to generalize.

Marty Briggs
LaPorte Community Schools, Indiana
David Feikes
Purdue University North Central, Westville, Indiana
Janis Mitchell
Michigan City Area Schools, Indiana
405 (Convention Center)

466
Response to Intervention: Identifying and Building on Students’ Mathematical Understanding
(3–5) Session
Explore how assessments of student understanding can inform the design of instruction in a response to intervention model. We share videotaped examples and student work for topics including counting principles, arithmetic operations, and fractions. We will discuss implementation in a classroom or special education context.

Katherine E. Lewis
University of Washington, Seattle
Marie B. Fisher
University of Washington, Seattle
Helen Thouless
University of Washington, Seattle
Centennial Ballroom B/C (Hyatt Regency)

467
Fostering Reasoning and Proof through Problem Solving in Japan
(3–8) Session
Both the NCTM Process Standards and the Common Core State Standards for Mathematical Practice underscore the importance of reasoning and proof in the twenty-first century. Learn how Japanese teachers and their textbooks (grades 1–6) support developing these skills through their problem-solving approach to instruction.

Makoto Yoshida
William Paterson University, Wayne, New Jersey
Mile High 4 E/F (Convention Center)

468
Scan It, Solve It, Show It
(3–8) Session
Are you “scanning” the world, looking for ways to engage your students? Power up student engagement by using QR codes to launch rich problems presented through animated videos. Learn how to create your own animated videos and QR codes to replicate this idea with your students. BYOT: iPad 2 or 3, iPhone, iTouch 4+, tablets.

Joan Smith
Teaching and Learning Collaborative, Columbus, Ohio
Kelli Shrewsberry
Teaching and Learning Collaborative, Columbus, Ohio
203 (Convention Center)
Check out these key sessions

Featuring Teacher Created Materials’ and Shell Education’s popular authors and presenters

**Math and Geography: Using Google Earth to Investigate Mathematics**

Thursday, April 18th
3:30pm – 04:30pm
Hyatt Regency, Centennial Ballroom D

**Act, Tell, Create, Draw, Move: Learn Math**

Friday, April 19th
2:00pm – 3:00pm
Hyatt Regency, Centennial Ballroom F

**Motivating Students with Concept Development Games**

Thursday, April 18th
12:30pm – 1:30pm
Hyatt Regency, Capitol Ballroom 1-3

**Just Right Problems**

Friday, April 19th
10:00am – 11:00am
Convention Center, Room #302

**Math Conferences: Making Learning Visible**

Saturday, April 20th
8:00am – 9:00am
Convention Center, Room 405

Visit us online for session descriptions at www.tcmpub.com/newsEvents

800-858-7339  www.tcmpub.com  |  www.shelleducation.com
12:30 P.M.–1:30 P.M.

469  
The Walking Purchase and the Story of Measurement Terminology  
(3–8) Session  
We will integrate social studies and mathematics. Learn about the Walking Purchase in the PA Colony as the social studies basis for teaching about land measurement and units of measurement. We will share activities to implement in the classroom.

Judy A. Werner  
Slippery Rock University, Pennsylvania

Kim Creasy  
Slippery Rock University, Pennsylvania

Capitol Ballroom 1–3 (Hyatt Regency)

470  
Your View, My View: Show and Win Me Over  
(3–8) Session  
A spreadsheet allows teachers to design tasks for students to manipulate pictorial and quantitative information and to make and test conjectures as they discover relationships between variables. This approach promotes mathematical argumentation. These different viewpoints are rich resources to develop students’ mathematical competencies, such as justification.

Cynthia Seto  
Academy of Singapore Teachers/Ministry of Education, Singapore, Singapore

Lisa Choy  
Education Services Division/Ministry of Education, Singapore, Singapore

505 (Convention Center)

471  
No Child Left Unchallenged: Problem Solving with Core Content  
(6–8) Session  
Learn six methods to create problem-solving opportunities with core math content. Emphasis is on accessible problem-solving experiences intimately connected with daily math content and designed to foster creativity, critical thinking, and perseverance. We’ll work through and discuss plenty of examples in a middle grades context.

Darin Beigie  
Harvard-Westlake School, Los Angeles, California

401/402 (Convention Center)

471.1  
A Smart Way to Thrive in Algebra  
(6–8) Session  
Equity Strand Presentation  
This session details strategies, including a professional development model, used in a district’s summer and Saturday programs that promote access and equity for all students in algebra 1. Engage in hands-on activities, including technology and games, that drive student motivation to learn.

Vanessa E. Cleaver  
Little Rock School District, Arkansas

Marcelline Carr  
Little Rock School District, Arkansas

207 (Convention Center)

472  
Do You See What I See? English Language Learners’ Justifications  
(6–8, Preservice and In-Service) Session  
Equity Strand Presentation  
Explore middle grades classroom episodes where English language learners present mathematical justifications based mostly on knowledge they perceive more from teachers’ actions than from teachers’ explanations.

M. Alejandra Sorto  
Texas State University, San Marcos

501/502 (Convention Center)

473  
Generalizing and Symbolizing: Essentials for Middle-Grades Algebra  
(6–8, Preservice and In-Service) Session  
Making the transition from working with numbers to symbols is a challenge for beginning algebra students and teachers. This session engages teachers in activities that use numbers, pictures, diagrams, and the Border problem to develop thinking in algebra. Explore generalizing and symbolizing as essential thinking for middle-grades algebra.

Barbara M. Kinach  
Arizona State University, Tempe

Centennial Ballroom F (Hyatt Regency)
12:30 P.M.–1:30 P.M.

**474**  
**Becoming a Powerful User of Formative Assessment: Motivating Student Success**  
(6–12) Session  
This motivational session will help you to design and implement in-class formative assessment processes that engage and differentiate instruction for all students in class. We will also discuss how to create and use assessment instruments (quizzes and tests) as part of a formative learning process for improving student effort and achievement.  
Timothy D. Kanold  
Loyola University, Chicago, Illinois  
Four Seasons 1 (Convention Center)

**475**  
**Formulating Statistical Questions**  
(6–12) Session  
The first step in statistical problem solving is to formulate a question that can be answered with data. We will investigate how to assist students in generating statistical questions, identifying the population, and describing the type of data that would need to be collected to answer the question.  
Patrick W. Hopfensperger  
University of Wisconsin–Milwaukee  
601 (Convention Center)

**476**  
**Help Students Understand Slope and Graphs with Free Smartgraphs Software**  
(6–12) Session  
After traditional instruction, more than 40 percent of students still have trouble understanding average velocity and other slope-related concepts. Learn to use free SmartGraphs software that helps students understand slope. There is nothing to download; activities run directly in a Web browser. You can even create and share your own activities.  
Andrew A. Zucker  
The Concord Consortium, Concord, Massachusetts  
Carolyn Staudt  
The Concord Consortium, Concord, Massachusetts  
Mile High 2 C (Convention Center)

**477**  
**How Chinese Improved Test Scores in Only Four Years’ Time**  
(6–12) Session  
This study provides empirical evidence of the approaches and strategies that Chinese teachers used to successfully reform their mathematics teaching in only four years. Our study has implications for successful implementation of the Common Core State Standards in U.S. mathematics classrooms through targeted U.S. teacher professional development.  
Lianfang Lu  
University of Arkansas, Little Rock  
Thomas E. Ricks  
Louisiana State University, Baton Rouge  
102 (Convention Center)

**478**  
**Strategies for Fostering Academic Literacy in Mathematics**  
(6–12) Session  
Learn key strategies to improve vocabulary and reading comprehension of text/questions. Discuss dynamic ways to improve middle/high school students’ academic literacy in mathematics. I will highlight resources for teaching academic/adolescent literacy from the International Reading Association.  
Carol Hryniuk-Adamov  
University of Manitoba, Winnipeg, Canada  
107/109 (Convention Center)

**480**  
**Transformational Geometry and the Core Math Tools**  
(6–12) Session  
The Common Core State Standards call for an emphasis on transformational geometry, which is unfamiliar to many students and teachers alike. See how you can use the Core Math Tools, a suite of software tools available free from the NCTM website, to introduce transformations and extend their use to more advanced geometric concepts.  
W. Gary Martin  
Auburn University, Alabama  
705/707 (Convention Center)
12:30 P.M.–1:30 P.M.

481

Using Technology Simulations to Reason about Probability and Statistics
(6–12) Session

We will explore two tasks, using a variety of technology tools to conduct simulations modeling actual data and to compare likelihoods of different events. We will discuss building models, conducting repeated samples, and dynamic graphs as ways to promote reasoning among students. You will share data via text message and website polls.

Hollylynne Lee
North Carolina State University, Raleigh

Blake Whitley
North Carolina State University, Raleigh

108 (Convention Center)

482

When Reasoning Matters: Using Mathematical Thinking to Make Financial Decisions
(6–12) Session

We will use financial choices to explore the various ways that individuals use problem-solving skills to make real-world decisions. We will then examine the value of mathematical thinking and reasoning in convincing others that our decision was “good.” I will share free resources to incorporate real-world contexts in math lessons.

Valerie Klein
The Math Forum @ Drexel University, Philadelphia, Pennsylvania

Mineral Hall F/G (Hyatt Regency)

483

Take Time to Question the Questions
(9–12) Session

With the help of technology, math teachers have a rich array of engaging exploration environments to lay before students. It takes thoughtful reflection, though, to construct meaningful and appropriate questions. We will see activities from algebra, geometry, and calculus and explore what makes a question good.

Mark Howell
Gonzaga College High School, Washington, D.C.

709/711 (Convention Center)

484

\[ \lim_{\text{calculus \to RME}} f(\text{calculus}) = -D \]
(Higher Education) Session

Using Realistic Mathematics Education (RME), we explore student understanding of limits by using progressive formalization and context. After an overview of a proposed instructional sequence for limits, you will have an opportunity to design and discuss activities and tasks to develop student understanding of limits. Zeno, eat your heart out.

Ryan T. Grover
University of Colorado at Boulder

702 (Convention Center)

485

Shhh—We Sneaked in a Second Methods Experience via Authentic Teaching
(Higher Education, Preservice and In-Service) Session

We recently integrated an authentic teaching experience into our methods course. As a result of the great impact, we added a second course where teacher candidates work with university faculty in teaching a class. We will share the structure of the experience, lessons learned, and feedback, as well as the impact on preservice teachers’ teaching.

Paula R. Stickles
Millikin University, Decatur, Illinois

205 (Convention Center)

486

Coaching the Mathematical Practices
(Preservice and In-Service) Session

Math coaches have provided professional development designed to promote student learning and achievement by focusing on content knowledge and pedagogy. With the adoption of the Common Core State Standards, the coaching needs have shifted. By attending to the Mathematical Practices and five recommended domains, coaches can once again lead the way.

Pia M. Hansen
Math Learning Center, Salem, Oregon

Mile High 3 B (Convention Center)
1:00 P.M.–2:00 P.M.

**486.1**

**Alice Foster Presents Catchup Math: Differentiated, Customizable Online Instruction (Secondary)**

(General Interest) Exhibitor Workshop

Flexible, easy-to-use online resources provide diagnostic/prescriptive math review and practice for at-risk and struggling students. Customize for individual students, for entire classes, as assignments for current classwork, for resource labs, or to challenge above-level students. View the variety of teacher management and reporting options.

*Catchup Math by Hotmath*
Kensington, California

302 (Convention Center)

**486.2**

**Investigations: Attaining the Required Common Core State Standards Fluencies**

(General Interest) Exhibitor Workshop

There are eight “required” fluencies noted in the Common Core State Standards for grades K–5. One of the foundational goals of the Investigations curriculum has always been to “focus on computational fluency with whole numbers as a major goal of the elementary grades.”

*Pearson*
Upper Saddle River, New Jersey

301 (Convention Center)

**486.3**

**Effective Teaching Strategies for Your Common Core Curriculum in Action**

(Pre-K–5) Exhibitor Workshop

Juli Dixon’s professional interests relate to developing and deepening teachers’ mathematics content knowledge for teaching and communicating and justifying mathematical ideas. Using her new professional development videos, Juli will show how easily the Standards for Mathematical Practice can be integrated into your Common Core curriculum.

*Houghton Mifflin Harcourt*
Boston, Massachusetts

304 (Convention Center)

**486.4**

**What’s New at HP: Unveiling Graphing Excellence**

(9–12, Higher Education) Exhibitor Workshop

Attend the unveiling of HP’s breakthrough calculator and discover new, exciting ways to approach mathematics learning. Receive free handouts, including a virtual calculator for PCs; one lucky winner will receive an exclusive class kit of HP’s new calculator with 8 hours of virtual professional development training.

*Hewlett-Packard Calculators*
Fort Collins, Colorado

303 (Convention Center)

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**NCTM Quiz**

*(see bottom for answer)*

**What is**

- the *year* Batu Khan sacked the Ruthenian city of Kiev?
- 35.21 squared? Or the square root of 1,537,600? (*rounded to a whole number)*
- the *booth* where you’ll find great math teaching and professional development multimedia resources?

Visit us to find out what’s new and register to win a full video series.

[ANNENBERG LEARNER]
800-LEARNER www.learner.org

2013 JANUARY
1:00 P.M.–2:15 P.M.

**487**

**Common Core State Standards Mathematical Practices in the Early Grades**

*(Pre-K–2) Gallery Workshop*

Engage in activities that support use of the Common Core State Standards mathematical practices. Hands-on activities will give you experiences in reasoning and proof embedded within the mathematical practices and applied across a variety of concepts and topics.

**Joseph Zilliox**  
University of Hawaii, Honolulu

**Eomailani Kukahiko**  
University of Hawaii, Honolulu

**708/710/712 (Convention Center)**

**488**

**Ge-O-Me-Try: Developing a Foundation in Geometry**

*(Pre-K–2) Gallery Workshop*

Get lessons to enhance student understanding of geometry and spatial awareness for pre-K–grade 2 students. The lessons rely heavily on manipulative materials, which will be available for you to explore. With these experiences, children will build a strong foundation for the future study of formal geometry.

**Kim Bowen**  
Mathematical Perspectives Teacher Development Center, Bellingham, Washington

**Centennial Ballroom A (Hyatt Regency)**

**489**

**Harnessing the Power of Place Value in the Common Core State Standards**

*(Pre-K–2) Gallery Workshop*

In constructing ones to hundreds, this gallery workshop will investigate the role of place value in whole-number operations, relative size, and mental math. I will share activities and tools for composing, decomposing, comparing, and mentally adding and subtracting powers of tens to foster understanding and nurture reasoning with place-value structure.

**Marti Kuntz**  
Educational Resources Group, Charleston, South Carolina

**Mile High 1 A/B (Convention Center)**

**490**

**Let’s Get Physical with Math on the Floor**

*(Pre-K–2) Gallery Workshop*

This active presentation will introduce K–2 teachers to many creative ways of teaching through physical exploration, on a large, 100-square floor grid. We will address number sense, patterns, basic geometry, nonstandard measurement, and data management, with many ideas for immediate classroom implementation. Bring a camera to capture math through play.

**Wendy Ellen Hill**  
The Learning Carpet–TLC, Huntsville, Canada

**607 (Convention Center)**

**491**

**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 gallery 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

**Mile High 4 C/D (Convention Center)**

**492**

**Reading and Writing: In Math Class?**

*(Pre-K–2) Gallery Workshop*

Use children’s literature books and math journals to engage children in problem-solving activities that encourage development of the Standards for Mathematical Practice. Leave with activities you can use in the classroom on Monday. Student work samples and video clips will give a glimpse into how this looks in the classroom.

**Lori Price**  
St. Johns County School District, St. Augustine, Florida

**704/706 (Convention Center)**
1:00 P.M.–2:15 P.M.

**493**
Let’s Get Learning: Engaging Adults with the Big Ideas  
(Pre-K–2, Preservice and In-Service) Gallery Workshop
Engage in hands-on, minds-on learning activities in foundational math. Consider how to use adult learning activities to build knowledge of mathematical development and pedagogy, as well as content. Share with each other and consider how to apply the ideas and approaches presented to your own work setting.

Lisa M. Ginet  
Erikson Institute Early Mathematics Education Project, Chicago, Illinois

Donna Johnson  
Erikson Institute Early Mathematics Education Project, Chicago, Illinois

506/507 (Convention Center)

**494**
Cracking the Shell of the Core with Box Turtles  
(3–5) Gallery Workshop
Bring excitement into your classroom with this engaging turtle project that addresses the depth of understanding that the Common Core State Standards demands. Enjoy hands-on activities, art, and standards-based tasks that teach Core Standards and address the Mathematical Practices. Area, perimeter, polygons, angles, liters, and problem solving will be the focus.

Marrie S. Lasater  
Middle Tennessee State University and MC² Math Consultants, Murfreesboro

201 (Convention Center)

**495**
Creating Mathematical Tasks to Support Children’s Early Algebraic Thinking  
(3–5) Gallery Workshop
Not all curricula are created equal. Thus, knowing how to create tasks that build the algebraic habits of mind students need is a crucial step toward developing children’s algebraic thinking. Learn how to transform curriculum-style problems into powerful early algebraic tasks that harness the Common Core State Standards’s Mathematical Practices.

Timothy Marum  
TERC, Cambridge, Massachusetts

Maria Blanton  
TERC, Cambridge, Massachusetts

111/113 (Convention Center)

**496**
Motivating Community-Building Activities: Avenues to Strengthen Mathematical Practices  
(3–5) Gallery Workshop
Do you question the depth of mathematical practices your students gain through inquiry-based lessons? Strengthen your mathematics lessons with community-building strategies that enhance the level of student engagement. See how embedded assessment captures the mathematical practices and informs how to adapt instruction to meet a range of learners.

Kimberly Englert  
Jefferson County Public Schools, Louisville, Kentucky

Elizabeth Todd Brown  
University of Louisville, Kentucky

Mile High 1 E/F (Convention Center)

**497**
Using Coffee Stirrers to Develop and Test Geometric Concepts  
(3–5) Gallery Workshop
Experience hands-on activities using coffee stirrers and chenille sticks to develop, make, and test conjectures about geometric concepts such as attributes of 2-D and 3-D shapes. You will receive a list of literature selections, apps, and resources that enhance the development of the concepts presented.

Carolyn L. White  
Rice University School Mathematics Project, Houston, Texas

Susan Troutman  
Rice University School Mathematics Project, Houston, Texas

406/407 (Convention Center)
1:00 P.M.–2:15 P.M.

**498**
**Integers and Equivalent Fractions with Representation Foldables**
(3–5, Preservice and In-Service) Gallery Workshop
Organize information. Create two foldables, one for integers and one for equivalent fractions. Capture various ways to represent integers and fractions for teaching purposes. Both start with concrete examples and move to procedure, including operations. From here, you can create appropriate foldables for your students.

Heidi Hunt-Ruiz  
Northwest Vista College, San Antonio, Texas

Mary Q. Zocchi  
Northwest Vista College, San Antonio, Texas

498/499 (Convention Center)

**499**
**The Good, the Bad, and the Ugly: Fractions**
(3–5, Preservice and In-Service) Gallery Workshop
Fractions don’t have to be ugly. Discover how good use of the SMART Board, TI-34 Multiview, and manipulatives combine to build conceptual understanding and make fractions meaningful and fun. Hands-on activities will integrate unique features of the technologies, appropriate for all learners. Leave with ready-to-use lessons, guided by the Common Core State Standards.

Christine Ruda  
Teachers Teaching with Technology (T^3), Miami, Florida

500 (Convention Center)

**500**
**Packing a Powerful Punch with Patterns: Foundations of Algebraic Thinking**
(3–8) Gallery Workshop
We will focus on patterns, relations, and algebraic thinking, important elements of the NCTM Algebra Content Standard. This hands-on approach will help build the concept of equality and develop the thinking/reasoning processes students need to succeed in algebra.

Carolee Norris  
BC School District #60 Peace River North, Fort St. John, Canada

500 (Convention Center)

**501**
**Explore “Doing Mathematics” and the Standards for Mathematical Practice**
(6–8) Gallery Workshop
Engage in group-worthy, high-cognitive-demand tasks that will help you to teach using the Common Core State Standards for Mathematical Practice. You will take away model activities from each of the four Common Core State Standards to use in your classroom. By experiencing the activities as students, you may better lead your own students through similar challenges.

Linda M. Giauque  
Weld Re-4 SD, Windsor, Colorado

501/502 (Convention Center)

**502**
**Help Students Dig into Data, Statistics, and Probability with TinkerPlots**
(6–8) Gallery Workshop
We’ll explore the Common Core State Standards Statistics and Probability Standards for grades 6–8 by using TinkerPlots. We’ll generate data through hands-on activities and then use TinkerPlots to morph and manipulate graphs to create colorful representations of real-world data. Bring your own laptop to play along.

Elizabeth DeCarli  
Key Curriculum, Emeryville, California

Karen M. Greenhaus  
Key Curriculum, Emeryville, California

502 (Convention Center)

**503**
**Uncovering Proportional Relationships in an Ancient Puzzle**
(6–8) Gallery Workshop
A key component of the algebra readiness of a middle school student is the ability to think and reason proportionally. Construct a tangram to explore the puzzle’s proportional relationships. Assemble three-dimensional nets to create a new version of the puzzle and new questions.

Diane Therese Devine  
Cambridge Public Schools, Massachusetts

503 (Convention Center)
1:00 P.M.–2:15 P.M.

504 Perplexing Platonics: What Relationships Can We Find and Prove?
(6–12) Gallery Workshop

Come construct regular polyhedra, also known as the platonic solids. Use the models to discover two special relationships found in the regular polyhedra. Employ mathematical reasoning to develop a proof of the relationships. Classroom-ready materials will be available.

Teri L. Willard
Central Washington University, Ellensburg

Mandy L. McDaniel
Boise State University, Idaho

Mile High 3 A (Convention Center)

505 Algebra 1 and 2 Activities from Automotive, Manufacturing, and Construction
(9–12) Gallery Workshop

You will participate and receive engaging hands-on, classroom-ready activities that highlight higher-level thinking. The activities will span many career paths. The math topics include linear equations, systems of equations, quadratics, and exponentials. See how project-based activities can increase learning and provide relevance.

Tom W. Moore
Thompson R2J Schools, Loveland, Colorado

110/112 (Convention Center)

506 Building on Strengths and Interests: Motivating Latino Students
(9–12) Gallery Workshop

Participate in a wide variety of successful activities used in an urban high school to motivate and engage Latino students. From Pi Day to ethnomathematics to individualized projects, these activities, within the context of the geometry curriculum, both motivate and foster students’ mathematical proficiency and cognitive development.

Donna Mark
Vineland High School, New Jersey

Mile High 3 C (Convention Center)

507 Parabolas, Ellipses, and Hyperbolas: From Paper Folding to the iPad
(9–12) Gallery Workshop

Develop a deeper understanding of the definition of parabolas, ellipses, and hyperbolas by paper folding; discover that what looks like each conic section is really the “envelope” of tangent lines; find the loci of points actually is; mimic the same actions by using the iPad; and compare the ellipse with the hyperbola.

Arthur T. Mabbott
Bear Creek Learning Center, Woodinville, Washington

Mineral Hall D/E (Hyatt Regency)

508 Statistical Inference through Simulation
(9–12) Gallery Workshop

Through hands-on techniques and technology to conduct simulations, we will explore concepts of statistical inference. These simulations (randomization tests) offer more flexibility in the hypotheses our students can test and allow them to focus on conceptual understanding and statistical thinking.

Paul L. Myers
Georgia Institute of Technology, Atlanta

603 (Convention Center)

509 The Mathematics of Forensic Science
(9–12) Gallery Workshop

Sample activities in forensic science that use mathematics. Activities will include snippets from crime scene mapping, blood pattern analysis, anthropology, odontology, taphonomy, and crash scene investigations. The mathematics used will range from prealgebra to calculus 2 concepts. Please bring a calculator.

Martha Peters
Tulsa Public Schools, Oklahoma

Centennial Ballroom G/H (Hyatt Regency)
1:00 P.M.–2:15 P.M.

510 Use Manipulatives to Differentiate Instruction
(9–12) Gallery Workshop
Help students gain mathematical proficiency through the use of manipulatives to differentiate instruction. Cognitively demanding tasks from algebra 1 and 2 will use manipulatives to help students visualize concepts such as factoring polynomials, completing the square, growth patterns, and linear functions using recursive and explicit formulas.

Marian E. Avery
Great Valley High School, Malvern, Pennsylvania
Mineral Hall A–C (Hyatt Regency)

511 Reasoning and Sense Making with CAS: Generalizing Patterns in Algebra
(9–12, Preservice and In-Service) Gallery Workshop
According to the Common Core State Standards, students are to learn how to use appropriate tools, such as a computer algebra system (CAS), strategically. Investigate how you can use a CAS to help students make sense of and generalize patterns in algebra, as per the Common Core State Standards high school content standard for algebra.

Donald T. Porzio
Illinois Mathematics and Science Academy, Aurora
104/106 (Convention Center)

512 Research in Proof: Continuing the Conversation
(Preservice and In-Service) Gallery Workshop
Despina Stylianou, recipient of the Linking Research and Practice Outstanding Publication Award, along with the speakers from the Research in Proof strand, will meet with attendees in smaller, interactive groups to facilitate conversation about the sessions and future work.

Despina Stylianou
City College of New York, New York
103/105 (Convention Center)

2:00 P.M.–3:00 P.M.

513 Best of “Problem to Ponder” and Other President’s Messages
(General Interest) Session
During my presidency, my monthly column “Problem to Ponder” generated quite a bit of response from the NCTM membership. Revisit readers’ favorite problems from the column, as well as share reflections on several of my more controversial President’s Messages that generated considerable reader reaction during my term.

J. Michael Shaughnessy
Past President, National Council of Teachers of Mathematics; Portland State University, Oregon
Four Seasons 2/3 (Convention Center)

514 Dancing the Dance: Special Educators as Dance Partners in Mathematics
(General Interest) Session
Reflect on the various pitfalls, struggles, and successes for effectively teaching with special educators’ inclusive classrooms. I will share a plethora of practical resources. See examples from teachers whose classrooms made yearly progress for students with disabilities.

Lisa Ann Dieker
University of Central Florida, Orlando
Centennial Ballroom D (Hyatt Regency)

515 Formative Assessment and the Common Core State Standards: Classroom and Systems Strategies
(General Interest) Session
President Series Presentation
Data gleaned from the use of formative assessment strategies has potential to lift student achievement in classrooms and across grades in school systems. Explore a constellation of formative assessment strategies that can strengthen daily instruction and district programs in advance of the 2014–2015 assessments.

Valerie Lynn Mills
National Council of Supervisors of Mathematics; Oakland Schools, Waterford, Michigan
Mile High 3 B (Convention Center)
2:00 P.M.–3:00 P.M.

516  Implementing the Common Core State Standards: Five Paradigm Shifts
(General Interest) Session

History indicates that content standards alone will neither have the desired impact on student achievement nor close existing achievement gaps. Examine five necessary paradigm shifts for the implementation of the Common Core State Standards for Mathematics to succeed, improve student achievement, and close achievement gaps.

Matthew R. Larson
Board of Directors, National Council of Teachers of Mathematics; Lincoln Public Schools, Nebraska

Mile High 1 C/D (Convention Center)

517  Mathematical Solutions to Rising Global Health Issues: Authentic Problem-Based Learning
(General Interest) Session

Embrace the Common Core State Standards and empower learners to use 21st-century skills to solve 21st-century problems via authentic, interdisciplinary, problem-based learning. Engage and excite learners in using mathematics to address a rising global health issue. We will share tools to foster student discourse and critical thinking.

Karen L. Lindebrekke
iBIO Institute EDUCATE Center, Chicago, Illinois

Ann Reed
iBIO Institute EDUCATE Center, Chicago, Illinois

703 (Convention Center)

518  Model for a Self-Paced, Flipped Mathematics Classroom
(General Interest) Session

Explore the theory, rationale, and fleshing out of a flipped mathematics classroom. I will explain an actual working model, from the theoretical foundation to the end product. This presentation will detail classroom procedures, outside of class procedures and grading procedures.

Steven Alan Harris
Cardigan Mountain School, Canaan, New Hampshire

102 (Convention Center)

519  Sustaining Equity in Mathematics Performance through Culturally Relational Practices
(General Interest) Session

How might school and university research partnerships in Native American communities address inequities in mathematics performance? We will share how conversations around mathematics assessment gave opportunities for community members to build generative relationships with mathematics through culturally relational practices.

Florence Glanfield
University of Alberta, Edmonton, Canada

Gladys Sterenberg
University of Alberta, Edmonton, Canada

Dwayne Donald
University of Alberta, Edmonton, Canada

505 (Convention Center)

520  Using Video Mosaic Collaborative Repository to Promote Student Reasoning
(General Interest) Research Session

Explore the open-source, online resources of Video Mosaic Collaborative (VMC) to support teaching practices that promote development of student reasoning in mathematics. The VMC videos and related resources come from long-term research and span elementary to secondary levels in several mathematics content areas.

Carolyn A. Maher
Rutgers University, New Brunswick, New Jersey

Marjory F. Palius
Rutgers University, New Brunswick, New Jersey

601 (Convention Center)
FOR THE MATH CLASSROOM

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2:00 P.M.–3:00 P.M.

521 Counting and Cardinality: More than Just 1, 2, 3
(Pre-K–2) Session
Decades of research findings offer a clear and concise structure of what children must understand to be proficient in counting. Learn about research on counting and cardinality, examine where the Common Core State Standards address those ideas directly, and discuss video clips of grades K–1 students learning to count.

Zachary Champagne
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

Linda L. Walker
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

522 Culturally Responsive Parent–Teacher Collaboration to Support Early Mathematics Learning
(Pre-K–2) Session
Learn about a research-based framework to develop reciprocal relationships between teachers and families to connect home and school mathematics. We offer examples of practices that contribute to a rich understanding of what, how, and where children learn mathematics and how to incorporate that knowledge into practice.

Anita Wager
University of Wisconsin–Madison

523 Write Mathematics into the Story
(Pre-K–5) Session
Come discover how to integrate mathematics into your students’ favorite stories. See examples of how literature affords contexts that foster mathematical thinking and reasoning. We will share examples of lessons and students’ responses. Bring your favorite book to start writing your own mathematics lesson situated in a lively context.

Nicole M. Wessman-Enzinger
Illinois State University, Normal

Megan H. Wickstrom
Illinois State University, Normal

524 Act, Tell, Create, Draw, Move: Learn Math
(3–5) Session
Art integration is more likely to happen in subjects other than math. Let’s change that. Investigate how to help your students meet the Common Core State Standards for Mathematics while telling stories, acting, writing poems, moving, singing, and creating visual art. Leave with ideas you can implement immediately in your math classroom.

Linda Dacey
Lesley University, Cambridge, Massachusetts

525 Turn Toward Success: How High-Quality Interactions Raise Student Achievement
(3–5) Session
The students at my elementary school were in crisis. Faced with a high rate of underperforming students, the school worked with the Blueprint School Network to turn students into confident mathematicians. I will discuss the instructional strategies and structured interactions that had a major impact on student achievement in my district.

Kimberly Broker
McGlone Elementary Denver Public Schools, Denver, Colorado

526 Supporting Student Self-Assessment and Responsibility through Formative Assessment
(3–5, Preservice and In-Service) Session
Learn strategies to help students take greater responsibility for their own learning by activating prior knowledge, providing actional feedback, and promoting rubrics for students to self-assess and monitor their work.

Mari Muri
Project to Increase Mastery of Mathematics and Science, Wesleyan University, Middletown, Connecticut

Jeane Joyner
Meredith College, Raleigh, North Carolina
2:00 P.M.–3:00 P.M.

527  iPad Apps That Work in Our Mathematics Classrooms
(3–8) Session
Many educational apps exist for the iPad, but finding apps that go beyond drill and practice is difficult. We will share apps that offer opportunities for students to explore, reason, discuss, and understand mathematical concepts and that support consolidation and practice. We will also share strategies for classroom use of iPads.

Timothy W. Pelton
University of Victoria, Canada

Leslee Francis Pelton
University of Victoria, Canada

Mile High 2 C (Convention Center)

528  iSolve with iPad
(3–8) Session
This session offers ideas for teachers and students at the middle school level to use the iPad, with a focus on algebraic reasoning. We will discuss and share apps used to help students learn math and for teachers to use in teaching.

Donna Gee
Angelo State University, San Angelo, Texas

Trey Smith
Angelo State University, San Angelo, Texas

Mile High 2 A (Convention Center)

529  English Language Learners’ Use of Gestures in Arguments
(6–8) Session
Equity Strand Presentation
See how English language learners (ELLs) make a convincing argument by incorporating gestures along with speech. We will also analyze gestures through video clips that involve ELLs’ communicating their thinking.

Marta Civil
University of North Carolina at Chapel Hill

405 (Convention Center)

530  Music and Math: Singing for Success
(6–8) Session
Find out how to use music in your classroom to help students understand mathematics. “Mathematics does to the mind what music does to the soul and poetry to the heart.”

Cynthia R. Parker
Alice Drive Middle School, Sumter School District, South Carolina

205 (Convention Center)

531  Our iPad Story: Helping Our Students Develop Their Practice
(6–8) Session
Sustainable student learning happens when students’ abilities are validated, explored, and challenged in an environment that fosters student discourse. We’ll share how we’ve been using iPad video features in middle school math classrooms to develop students’ accountable talk and deepen students’ mathematical practices.

Erin Igo
Colonial School District, New Castle, Delaware

Beth Nickle
Colonial School District, New Castle, Delaware

Capitol Ballroom 4 (Hyatt Regency)

532  Pairing Mathematics and Figure Skating
(6–8) Session
Figure skating is the winter Olympic sport that the most viewers watch. We will explore proportional relationships describing aspects of pairs figure skating. Topics include the international judging system, conservation of momentum, and skating paths on the ice. We aim to raise mathematical literacy by giving students motivating contexts.

Diana S. Cheng
Towson University, Maryland

Tetyana Berezovski
St. Joseph’s University, Philadelphia, Pennsylvania

108 (Convention Center)
2:00 P.M.–3:00 P.M.

533  
**Tools and Activities to Support Statistical Reasoning and Sense Making**  
*(6–8) Session*

Learn how to use NCTM’s free online statistics tools to simulate probability experiments, collect and display data, and analyze the results. Engage in activities that address the Common Core State Standards for Mathematics, encouraging students to make sense of statistical concepts, describe and compare data sets, discuss probabilities, and draw reasonable conclusions from data.

Mary Majerus  
Westminster College, Fulton, Missouri

Debbie Perkowski  
Consultant, Fulton, Missouri

Michael Perkowski  
University of Missouri, Columbia

702 (Convention Center)

534  
**Creating Opportunities for Students to Engage in Reasoning and Proof**  
*(6–12) Session*

Although there is a growing consensus that the grades 7–12 curriculum needs greater emphasis on reasoning and proof, research shows that most textbooks offer limited opportunities to engage in these practices. We will focus on how to modify tasks to give students more opportunities to engage in reasoning and proving.

Margaret Smith is a professor in the Department of Instruction and Learning in the School of Education and a senior scientist at the Learning Research and Development Center, both at the University of Pittsburgh. She is currently a co–principal investigator of the NSF-funded CORP (Cases of Reasoning and Proving in Secondary Mathematics) Project, which is creating materials to develop teachers’ knowledge related to reasoning and proof and their ability to support students’ engagement in these mathematical practices.

Margaret (Peg) Smith  
University of Pittsburgh, Pennsylvania

702 (Convention Center)

535  
**Students’ Conceptions of Mathematics as Sensible and Related Instructional Practices**  
*(6–12) Research Session*

The Common Core State Standards require that students see mathematics as sensible and connected, but research indicates that most students view mathematics as a disconnected set of procedures and facts. Learn about (1) indicators that students see mathematics as sensible and (2) the instructional practices associated with such a view of mathematics.

Maureen M. Grady  
Pennsylvania State University, University Park

705/707 (Convention Center)

536  
**Mathematics Teaching in the Caribbean: Lessons to Be Learned**  
*(9–12) Session*

Equity Strand Presentation

Daryl Rock, a longtime mathematics educator of urban students, compared how mathematics is taught in the Caribbean with how it is taught to African Americans in the United States. We will present the findings, with a focus on what mathematics teachers of African American students can learn from the Caribbean approach.

Daryl Rock  
Rock Academic Services, Brooklyn, New York

Imani Fischer  
Benjamin Banneker High School, Brooklyn, New York

Capitol Ballroom 1–3 (Hyatt Regency)
2:00 P.M.—3:00 P.M.

537
Student Response Systems and Getting Students Talking
(9–12) Session
Clicker question use in classrooms has grown rapidly, but how does a teacher effectively integrate them into instruction? Although clicker questions provide feedback, they are significantly more useful in engaging students in discussion. We will examine what makes a good clicker question and present strategies for using them in the classroom.

Brandon Milonovich
Syracuse University, New York

Helen M. Doerr
Syracuse University, New York

Collin Bruce
Syracuse University, New York

Mile High 4 E/F (Convention Center)

538
Modeling Data with Core Math Tools: Enhancing Mathematical Practice Implementation
(9–12, Preservice and In-Service) Session
Explore using Core Math Tools, a suite of free Java-based mathematical software tools, to model algebraic data. We will use the Computer Algebra System and Spreadsheet features to enhance implementation of Common Core State Standards content and mathematical practice standards.

Erin Elizabeth Krupa
Montclair State University, New Jersey

401/402 (Convention Center)

539
Transformational Geometry: Linking Geometry and Algebra with the Common Core State Standards
(9–12, Preservice and In-Service) Session
Explore how to get students to think geometrically and algebraically about transformational geometry, its properties, and its algebraic representation. The Common Core State Standards and international curricula offer rich tasks that include technology; cultural perspectives; and connections to mathematics, art, and science.

Vivian La Ferla
Rhode Island College, Providence

207 (Convention Center)

540
Two of the Calculator’s Lesser-Known Modes: Sequence and Parametric
(9–12, Preservice and In-Service) Session
Ever wonder how a daily dose or megadose of medicine affects you? We will explore medical and environmental applications of convergence. We will also explore parametric representations including motion in applications, baseball, the classic train problem, Lissajou figures, complex powers and roots, inverse of functions, rose curves, and conics.

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

Centennial Ballroom B/C (Hyatt Regency)

541
Energizing Geometry, Reasoning, Proof, and Mathematical Practices through Technology
(Preservice and In-Service) Session
Dynamic geometry environments (DGEs) help students explore mathematics while generalizing, reasoning, and proving. Get examples that address Common Core State Standards for Mathematics for geometry and mathematical practices through constructing viable arguments. Specific examples will use both a computer DGE and an iPad applet.

Gina M. Foletta
Northern Kentucky University, Highland Heights

Mile High 4 A/B (Convention Center)
Friday

2:00 P.M.–3:00 P.M.

542
Mathematical Modeling: The Core of the Common Core State Standards
(Preservice and In-Service) Session
As a Common Core Content Standard and a Standard for Mathematical Practice, mathematical modeling affords a rich opportunity around which to develop and unify the mathematical content of the high school conceptual categories and the mathematical practices. We will examine several illustrative modeling tasks by using NCTM’s free software, Core Math Tools.

Christian R. Hirsch
Western Michigan University, Kalamazoo

203 (Convention Center)

2:30 P.M.–3:30 P.M.

542.1 
Introduction to JUMP Math
(General Interest) Exhibitor Workshop
Learn how JUMP’s approach is empowering students by helping grades 1–8 teachers continually assess, carefully scaffold, and guide discovery through differentiated instruction that allows whole classes to progress at roughly the same pace. Also, learn about JUMP’s U.S. editions, fully aligned with the Common Core State Standards.

JUMP Math
Toronto, Alberta

303 (Convention Center)

542.2
How Math Navigator Common Core Addresses Students Struggling with Math
(General Interest) Exhibitor Workshop
Why do some grades 1–8 students struggle with basic math concepts? Math Navigator Common Core targets misconceptions that prevent students from mastering the foundational concepts, which in turn result in poor performance. Learn how Math Navigator pinpoints these pitfalls, corrects them, and helps build a solid math foundation.

Pearson
Upper Saddle River, New Jersey

301 (Convention Center)

542.3
Lessons from Singapore: Developing Number Sense/Problem Solving with Visual Models
(Pre-K–5) Exhibitor Workshop
See the American version of Singapore’s highly successful curriculum and its use in the U.S. It will focus on how Singapore’s visual models and effective pedagogy enable all students to develop number sense and solve complex problems so they are ready for the Common Core State Standards–based assessments.

Houghton Mifflin Harcourt
Boston, Massachusetts

304 (Convention Center)

542.4
Let Geometry “Envelope” Your Students via Foldable Projects
(3–8) Exhibitor Workshop
In this fast-paced, make-and-take session, you will cut, fold, and more as you transform manila envelopes into geometry projects sure to engage even the most reluctant learner. Concepts addressed include perimeter/area, parallel/perpendicular lines, angles, and quadrilaterals. Leave with your own finished model ready to use on Monday.

Dinah–Might Adventures, LP
San Antonio, Texas

302 (Convention Center)

2:45 P.M.–4:00 P.M.

543
Place-Value Fluency: Examples of Child-Centered Practice and Assessment
(Pre-K–2) Gallery Workshop
The Common Core State Standards require children to develop flexible base-ten understanding of numbers at a much earlier age. How can you foster these understandings in pre-K–grade 2 classrooms without mindless drill? How can you assess how firm, broad, and deep your students’ understanding is without worksheets? Come and find out.

Greg Nelson
Bridgewater State University, Massachusetts

403/404 (Convention Center)
2:45 P.M.–4:00 P.M.

544 Building the Foundation: Developing Math Concepts in Preschool
(Pre-K–2, Preservice and In-Service) Gallery Workshop
The ECE Department in Aurora Public Schools is using state and early learning standards to plan for children's in-depth involvement with mathematical ideas to build a foundation for early math concepts. Resources used: Developing Number Concepts in Pre-K by K. Richardson and Teaching Strategies GOLD Objectives for Development and Learning.

Maureen Gurrini
Aurora Public Schools, Colorado
Stephanie S. Gianneschi
Aurora Public Schools, Colorado
Karen Lozano
Aurora Public Schools, Colorado

Centennial Ballroom G/H (Hyatt Regency)

545 Learn to Count with Games and Puzzles
(Pre-K–2, Preservice and In-Service) Gallery Workshop
Change the way you think about counting. Learn how to develop number sense in young children through specially designed games and puzzles. Your students will be able to discover the base-ten number system in a relaxed and natural format. This presentation is based on research about how children recognize numbers. Come play with us.

Aldo Bacallao
Henry County Schools, McDonough, Georgia

Mile High 2 B (Convention Center)

546 Elapsed Time: Why So Much Confusion?
(3–5, Preservice and In-Service) Gallery Workshop
Look closely at elapsed time to determine why students have so much difficulty with this concept. Through using traditional methods and analyzing student errors, we will conclude that this grades 3–5 concept is anything but elementary. Comparing traditional and reform models, you will discover how reform models easily translate from concrete to pictorial.

Barbara Ann Spotts
Johnny's Key, Trevorton, Pennsylvania

103/105 (Convention Center)

547 Mathematical Knowledge for Teaching Measures as Opportunities for Professional Learning
(3–5, Preservice and In-Service) Gallery Workshop
Research has identified teachers' mathematical knowledge for teaching (MKT) as a vital component of effective teaching. We will share examples of MKT questions designed to assess teacher knowledge. Discuss ways these questions can be used in professional development or study groups to help teachers build MKT.

Heather Howell
Educational Testing Service, Princeton, New Jersey
Barbara Weren
Educational Testing Service, Princeton, New Jersey
Shona Ruiz Diaz
Educational Testing Service, Princeton, New Jersey

110/112 (Convention Center)

548 Decimal Fractions: Diagnosing and Supporting Student Reasoning
(3–8) Gallery Workshop
We will investigate a diagnostic assessment used to uncover students' understandings and misunderstandings of decimal fractions. We will explore activities designed specifically to address gaps in student understanding. You will receive a copy of the protocol and a related set of activities.

Sherri Martinie
Kansas State University, Manhattan

607 (Convention Center)
2:45 P.M.–4:00 P.M.

549
Exploring Polygon Properties with a Piece of Rope
(3–8) Gallery Workshop
Explore the properties of triangles and quadrilaterals primarily by using a piece of rope or string. Van Hiele levels of geometric understanding show how these activities can move students to the necessary level needed for deductive reasoning in the formal high school geometry course.

Dana T. Johnson
College of William and Mary, Williamsburg, Virginia

Marguerite M. Mason
College of William and Mary, Williamsburg, Virginia

550
Graph, Analyze, Play: Address the GAP and “Excel” in Math
(3–8) Gallery Workshop
Increase your knowledge of spreadsheet creation and functions while exploring games, graphs, and problem solving. Simultaneously develop your students’ working knowledge of technology while addressing both Process and Content Standards in your classroom. Explore simple yet powerful ways to incorporate spreadsheets into your current curriculum.

Anna LaForgia
Council Rock School District, Newtown, Pennsylvania

Ginalouise Palermo
Cattaraugus-Allegany BOCES, Olean, New York

Alyse Jennifer Sciolla
Council Rock School District, Newtown, Pennsylvania

551
Interactive Reasoning Leading to Proof with Online Tools and Games
(3–8) Gallery Workshop
Make your classroom come alive while developing reasoning, sense making and proof. NCTM’s free online games and interactive applets are perfect for you to demonstrate key content topics in your classroom and for your students to investigate mathematical conjectures on their own. We will use both physical manipulatives and online/mobile tools.

David Barnes
National Council of Teachers of Mathematics, Reston, Virginia

552
May Math-alon: For a Fun and Fabulous Finish
(3–8) Gallery Workshop
Are you looking for some fresh material for the closing weeks of school? Join us as we revisit some classics and introduce you to new ideas worth exploring. You’ll leave with exciting activities to use on Monday, a wealth of resources to energize your students, and challenges to keep them mathematically fit through the summer.

Martha Hildebrandt
Chatham University, Pittsburgh, Pennsylvania

553
Math Snacks: Animations and Video Games Teaching Middle School Math
(6–8) Gallery Workshop
Math Snacks animations and video games are free tools accessible to teachers and parents, teaching essential middle school math concepts such as ratio, proportional reasoning, number line, and number sense. See these tools in action and use them tomorrow in your class. We will view an animation, play a game, and discuss student learning.

Karen M. Trujillo
New Mexico State University, Las Cruces

554
NASA: Distance–Rate–Time Math in Air Traffic Control
(6–8) Gallery Workshop
Learn to predict and solve real-world problems in air traffic control by using a hands-on experiment, a Web-based interactive graphing tool, and print-based instructional materials. You will apply distance–rate–time relationships at the prealgebra and algebra levels. All materials are free and readily available on the Internet.

Rebecca Green
NASA, Moffett Field, California

Gregory Condon
NASA, Moffett Field, California
2:45 P.M.—4:00 P.M.

**555**
**Using Technology to Motivate the Struggling Learner**
*(6–8) Gallery Workshop*

Students are motivated through video and television. Come participate with lessons designed to help catch students’ interest with a short video. Topics are aligned with the Common Core State Standards and include suggestions to help keep your learners interested and involved. We will highlight the mathematical practices and share other resources.

Carolyn Briles  
Stonebridge High School, Ashburn, Virginia

Connie S. Schrock  
Emporia State University, Kansas

**Mile High 4 C/D (Convention Center)**

**556**
**Using the Mathematical Practices as Scaffolding for Academic Language Development**
*(6–8) Gallery Workshop*

Teachers who know the mathematics they are teaching and who understand the language challenges of developing mathematics-based academic English are better at giving their English language learners opportunities to communicate and think through language. Explore the interplay of language, culture, and mathematics understanding.

Harold Asturias  
University of California, Berkeley, Lawrence Hall of Science

**Mile High 1 E/F (Convention Center)**

**557**
**AP Calculus: Strategies to Support All Learners**
*(6–12) Gallery Workshop*

Math teachers need to use strategies in Pre-AP and AP Calculus that will make calculus concepts and skills more accessible to students. We will try out strategies/graphic organizers: rule of 4 link sheets, sorts/matches, webs, concept splashes, labs, and learning stations. You will gain access to our website with hundreds of examples.

Carol A. Hynes  
Retired, Leominster Public Schools, Massachusetts

**111/113 (Convention Center)**

**558**
**Going in Circles: Math Teachers’ Circles**
*(6–12) Gallery Workshop*

Join a math teachers’ circle focused on geometry and measurement. We will challenge you to construct certain polyhedra by using manipulatives called ZomeTools, and then you can explain the reasoning behind your construction or argue why the construction is not possible.

Mary Garner  
Kennesaw State University, Georgia

Virginia Watson  
Kennesaw State University, Georgia

Beth Rogers  
Kennesaw State University, Georgia

**Mineral Hall D/E (Hyatt Regency)**

**559**
**Linearity: A Moving Experience in Reasoning**
*(6–12) Gallery Workshop*

Experience tasks adapted from curriculum materials developed in a professional development project that focused on linearity and graphing, two tough-to-teach, tough-to-learn topics in algebra. We describe teachers’ experiences with the lessons and share video and samples of student work.

Fay Zenigami  
University of Hawaii, Honolulu

Judith Olson  
University of Hawaii, Honolulu

Melfried Olson  
University of Hawaii, Honolulu

**506/507 (Convention Center)**

**560**
**Powerful Online Tools Promote Powerful Mathematics**
*(6–12) Gallery Workshop*

The free calculator available from Desmos (www.desmos.com) allows for exceptional graphing. Combine this tool with the resources at Illuminations (http://illuminations.nctm.org) to create powerful lessons. Learn how to combine these two resources to craft exceptional mathematical experiences for your students. BYOD, and get ready to get funky.

Eli Luberoff  
Desmos, San Francisco, California

Patrick Vennebush  
National Council of Teachers of Mathematics, Reston, Virginia

**406/407 (Convention Center)**
2:45 P.M.–4:00 P.M.

561
Visual and Hands-On Proofs: Supporting English Language Learners and Others
(9–12) Gallery Workshop
Equity Strand Presentation
Support English language learners (ELLs) and struggling learners through a visual and kinesthetic approach to proof. Set the stage for success by helping ELLs attend to essential attributes of figures, and follow up by turning definitions, theorems, and postulates into manipulatives. See visual tools, collaboration, and discourse improve access to proof.

Melissa Hosten
Chandler Unified School District, Arizona

Mile High 3 A (Convention Center)

562
Developing Problem Solving in Algebra 1 through Modeling Experiences
(9–12, Preservice and In-Service) Gallery Workshop
The Common Core State Standards (CCSS) describe modeling both as a practice that spans K–12 and as a high school conceptual category. This presentation emphasizes mathematical modeling as creative and productive problem solving. We will share tasks and student work aligned with the CCSS and adapted for students needing additional support to succeed in algebra 1 and beyond.

Linda Venenciano
University of Hawaii, Manoa, Honolulu

Hannah Slovin
University of Hawaii, Honolulu

Melanie Ishihara
University Laboratory School, Honolulu, Hawaii

201 (Convention Center)

563
Engaging Activities to Introduce Key Ideas in AP Statistics
(9–12, Preservice and In-Service) Gallery Workshop
This activity-based gallery workshop will present tried-and-true activities to help students have that aha moment at the beginning of the unit. Expect to learn activities intended to introduce deep understanding of fundamental concepts such as standard deviation, confidence intervals, and hypothesis testing.

McKendry Marano
Chicago Public Schools, Illinois

Scott Galson
Chicago Public Schools, Illinois

704/706 (Convention Center)

564
The Many Faces of Differentiation in Algebra
(9–12, Preservice and In-Service) Gallery Workshop
Investigate various types of differentiated material, discussing when, why, and how they can be used. Working from scenarios, we’ll create material. We will discuss tiered worksheets, graduated-difficulty problem sets, differentiated questioning, different contexts, and instructional mode. Support and challenge all.

Allan E. Bellman
University of California, Davis

Katie S. Martinez
Canyon Crest Academy, San Diego, California

Centennial Ballroom E (Hyatt Regency)

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To learn more about our Singapore Math® programs and to see if they are right for you and your students, we welcome you to come by Booth 2031 or attend our Exhibitor Session that will explore one district’s successful implementation.

Implementing Singapore Math: A Collaborative Effort

Presenter: Johnette Roberts
Saturday, April 20 from 10:00-11:00 am
Room 301

www.SingaporeMath.com
2:45 P.M.—4:00 P.M.

566 Building Mathematics Learning Communities with NCTM Reflection Guides  
(Preservice and In-Service) Gallery Workshop  
Explore journal articles that NCTM’s Professional Development Services Committee has enhanced with reflection guides, available for free online. We will model how to use the reflection guides to build school-based professional learning communities.

NCTM Professional Development Services Committee  
National Council of Teachers of Mathematics, Reston, Virginia  
603 (Convention Center)

3:30 P.M.—4:30 P.M.

567 Presentation of the 2013 NCTM Lifetime Achievement Awards  
(General Interest) Session  
This session will honor the 2013 recipients of the NCTM Lifetime Achievement Awards. The awards are bestowed to NCTM members who have exhibited a lifetime of achievement in mathematics education at the national level. The recipients will be introduced and will speak. Other grant recipients in attendance will also be recognized.

Mathematics Education Trust  
National Council of Teachers of Mathematics, Reston, Virginia  
Centennial Ballroom F (Hyatt Regency)

568 Designing Mathematical Outreach Programs and Activities for Underrepresented Populations  
(General Interest) Session  
Equity Strand Presentation  
We have coorganized special programs for young women, Hispanic youth, and disadvantaged urban youth for almost twenty years. We will discuss the challenges and successes of different types of programs and formats. Participate in some of the problem-solving activities used in the outreach programs.

Elizabeth G. Yanik  
Emporia State University, Kansas  
Marvin E. Harrell  
Emporia State University, Kansas  
501/502 (Convention Center)

569 Finding a Triangle’s Area: A Case Study in Vertical Articulation  
(General Interest) Session  
The task of finding the area of a triangle occupies students from elementary grades through calculus. Join me on a “vertically articulated” tour: from counting squares to square matrices, from geometry to trigonometry, to the cross product of two vectors. Historical highlights of the tour are the contributions of Heron and Georg Pick.

Margaret Coffey  
Fairfax County Public Schools, Falls Church, Virginia  
Mile High 4 E/F (Convention Center)

570 Making Mathematical Connections: An Important Aspect of Reasoning  
(General Interest) Session  
Developing reasoning and sense making in the mathematics classroom can be considered a matter of finding, using, and creating the right connections. Learn about different kinds of mathematical connections and explore your own connection-making power.

Thomas Evitts  
Shippensburg University, Pennsylvania  
Centennial Ballroom D (Hyatt Regency)

571 Pedagogy and Student Engagement Enhanced with Livescribe SmartPens  
(General Interest) Session  
Discover how we engaged and motivated students to do their work at home, with the same detail and attentiveness as done in the classroom. Learn how to (1) cover more in your class; (2) personalize tutoring, without any extra work; (3) build your teaching portfolio for later use; and (4) engage low-, average-, and high-level students at once.

Peter M. Eley  
Fayetteville State University, North Carolina  
Elizabeth K. Rogers  
Fayetteville State University, North Carolina  
Mile High 2 C (Convention Center)
3:30 P.M.–4:30 P.M.

572
Reasoning and Sense Making: Assessing Students on the Common Core State Standards
(General Interest) Session

Student behaviors in doing mathematics are crucial. The Common Core State Standards for Mathematical Practice highlight the goals, purpose, and importance of learning mathematics. Making sense of mathematics is key to organize, remember, and use patterns, formulas, and algorithms. From students' perspectives, these are too often practiced in isolation—without meaning.

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

405 (Convention Center)

573
Science and Mathematics in Cinema: Can the Event Happen?
(General Interest) Session
President Series Presentation

The magic of the cinema allows the storyteller to engage our minds in the possible and the impossible. With proper editing, the silver screen can allow our minds to accept just about anything. Measurements can be made or inferences can be generated that enable us to analyze the scene. Explore how this can be done.

John C. Park
School Science and Mathematics Association; Baylor University, Waco, Texas

107/109 (Convention Center)

574
Understanding Errors in Developmental Algebra: A Test-Paper-to-Chalkboard Framework
(General Interest) Session

What can analyzing students' developmental algebra responses teach you? Explore the connections between student error type and outcomes in developmental algebra courses. Using error analysis models, receive suggestions and feedback on various methods that can inform your teaching and student outcomes.

Ronny Kwan Eu Leong
Teachers College, Columbia University, New York, New York
Nathan Alexander
Teachers College, Columbia University, New York, New York

703 (Convention Center)

575
Using Culturally Ambitious Teaching Practices in Urban Mathematics Classrooms
(General Interest) Session
Equity Strand Presentation

Explore the conceptualization of culturally ambitious teaching practices in mathematics that exemplify the tenets of culturally relevant pedagogy—academic achievement, cultural competence, and critical consciousness—and those of ambitious mathematics teaching practices for urban math classrooms.

Lanette R. Waddell
Vanderbilt University, Nashville, Tennessee

Mile High 2 A (Convention Center)

576
What U.S. and Korean Math Educators Shared and Learned Together
(General Interest) Session

Korean and U.S. educators who participated in the post-ICME math education workshop on math curriculum and teaching in both countries report on key elements of the discussion and what they learned.

Myong-Hi Kim
State University of New York at Old Westbury
Oh–Nam Kwon
Seoul National University, South Korea
Johnny W. Lott
Past President, National Council of Teachers of Mathematics; Retired, University of Montana, Missoula

Mineral Hall F/G (Hyatt Regency)
3:30 P.M.–4:30 P.M.

577
Why Equity and Diversity Deserve Center Stage for Everyone
(General Interest) Session
Equity and diversity in mathematics education have traditionally been directed at minority students, female students, or English language learners. Explore how a closer look at the work of those who have been at the forefront of this movement will lead to a deep appreciation of how we could all do much better among all our students.

Charles Roberts
Mercer University, Macon, Georgia
Kedrick R. Hartfield
Mercer University, Macon, Georgia

207 (Convention Center)

578
Promoting Children’s Invented Strategies for Number Computation in Primary Grades
(Pre-K–2) Session
Discuss effective instruction to promote children’s invented strategies for whole-number computations in primary grades, highlighting development of mathematical models, teachers’ roles, and the importance of positive social classroom culture that encourages children to communicate their mathematical ideas.

Myoungwhon Jung
Northern Illinois University, Dekalb

Mile High 3 B (Convention Center)

579
The Equals Sign: A Relation, Not a Command
(Pre-K–2) Session
Children often have misconceptions about the meaning of the equals sign. For example, children commonly claim that $9 = 9$ is false because no plus or minus sign is present. We will review existing research and examine relevant Common Core State Standards through videos of grades K–1 students responding to formative assessment tasks.

Charity Bauduin
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee
Zachary Champagne
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

Capitol Ballroom 1–3 (Hyatt Regency)

580
Discover Mathlanding: Resources and Tools for Elementary Specialists and Teachers
(Pre-K–5) Session
Elementary math leaders and teachers will learn about Mathlanding, a project focused on improving the knowledge and instruction of elementary math. Developed to support professional development, Mathlanding harnesses the best free resources on the Web for use as an effective, technology-driven tool.

Betsy Peisach
Maryland Public Television, Baltimore
Pat Hemler
Maryland Public Television, Baltimore

Mile High 1 C/D (Convention Center)
581  
**Problem Solving in Chinese Elementary Mathematics**  
(3–5) Session  
A classic Chinese problem places chickens and rabbits in a pen with 34 heads and 92 legs and asks how many of each. Chinese grade 4 textbooks have a simplified version that challenges students. We will discuss strategies for helping students develop mathematical reasoning, along with insights into the particular obstacles this problem poses.  
Shuzhu Gao  
Capital Normal University, Beijing, China  
David C. Wilson  
State University of New York, Buffalo  
605 (Convention Center)

582  
**The Common Core State Standards Focus on Fractions**  
(3–5) Session  
We will examine the development of fraction understanding (grades 3–5) as described in the Common Core State Standards. Using problem-solving tasks and activities, we will focus on the transition from thinking of fractions as “parts of a shape” to numbers and on the new emphasis placed on the use of unit fractions and number lines.  
Judy Curran Buck  
Consultant, Derry, New Hampshire  
Capitol Ballroom 4 (Hyatt Regency)

583  
**Two-Dimensional to Three-Dimensional Transitions in Grades 3–5**  
(3–5) Research Session  
Hear results from a study that explored the spatial thinking skills of students in grades 3–5, in particular the transition between two-dimensional and three-dimensional figures. We will also discuss implications related to curriculum and the implementation of the Common Core State Standards.  
Duane C. Peck  
Boise State University, Idaho  
Jonathan Brendefur  
Boise State University, Idaho  
505 (Convention Center)

584  
**Math Specialists Get Ready Now: Common Core State Standards Assessments Are Coming**  
(3–5, Preservice and In-Service) Session  
Explore the full range of assessments your teachers must consider. Consider professional development opportunities that will move your teachers toward implementation of the Common Core State Standards for grades K–6 and focus on a variety of assessments, including classroom check-ups, response to intervention–related interviews, and constructed response items.  
Francis (Skip) Fennell  
Past President, National Council of Teachers of Mathematics; McDaniel College, Westminster, Maryland  
Jon Wray  
Board of Directors, National Council of Teachers of Mathematics; Howard County Public Schools, Ellicott City, Maryland  
Beth Kobett  
Stevenson University, Baltimore, Maryland  
Four Seasons 2/3 (Convention Center)

585  
**Facilitate English-Language Learner Participation through Questioning and Online Visual Models**  
(3–8) Session  
Learn how to scaffold the teaching and learning of number concepts by focusing on the big ideas, using multiple representations, questioning, and technology. We will present strategies to plan and integrate the use of language and discourse to make mathematics accessible for all learners, including English language learners.  
Lauri Susi  
Conceptua Math, Petaluma, California  
Nora Ramirez  
Nora Ramirez Consulting, Tempe, Arizona  
401/402 (Convention Center)
3:30 P.M.—4:30 P.M.

586
Moving Beyond the Right Answer: Developing Students’ Math Communication Skills  
(3–8) Session

The Math Forum’s rubric emphasizes a combination of good problem solving and strong mathematical communication. We score in six areas, including interpretation, strategy, accuracy, completeness, clarity, and reflection. We'll share stories from online and classroom exchanges of our efforts to help students develop mathematical communication skills.

Suzanne Alejandre  
The Math Forum @ Drexel, Philadelphia, Pennsylvania

Erin Igo  
Colonial School District, New Castle, Delaware

601 (Convention Center)

587
Creating a Classroom with More Learning and Less Exhaustion  
(6–8) Session

Is your level of exhaustion <, >, or = to that of your students? We will use our thirty-four years of combined teaching experience to help your classroom become student centered while still meeting the needs of a diverse student body and addressing the Common Core State Standards. We will also share many strategies and resources.

Dawn Bates  
Cary Academy, North Carolina

Shannon J. Murphy  
Cary Academy, North Carolina

Mile High 4 A/B (Convention Center)

588
Problems That Connect Algebraic Thinking to Arithmetic, Geometry, and Measurement  
(6–8) Session

This session offers a short immersion in teaching mathematics through problem solving. Learn how to help your students extend their understandings of arithmetic to algebra, geometry, measurement, data, and probability. In solving problems, we will employ the Mathematical Practices from the Common Core State Standards.

Carol R. Findell  
Boston University, Massachusetts

102 (Convention Center)

589
Getting the Most out of Homework: Strategies for Success  
(6–12) Session

Learn how to create homework that will engage your students in meaningful mathematics. Turn frustration into opportunities for learning. The authors of an NCTM book for secondary teachers will share strategies you can use to assign homework that will support deep understanding and result in more consistent homework completion.

Robert Wieman  
Rowan University, Glassboro, New Jersey

Fran Arbaugh  
Pennsylvania State University, University Park

205 (Convention Center)

590
Helping Students Make Better Sense of Quadratic Functions in Algebra  
(6–12) Session

The transition from linear to quadratic functions poses challenges for most algebra students. Drawing from our own research study, we will explore students’ conceptions of different aspects of quadratic functions and offer classroom activities that can deepen students’ understanding of quadratics through reasoning and communication.

Volkan Sevim  
Virginia Commonwealth University, Richmond

Victor V. Cifarelli  
University of North Carolina, Charlotte

709/711 (Convention Center)

591
Making a Computer Speak Math Like a Teacher Would  
(6–12) Session

Synthetic speech for math is just getting started: it doesn’t always speak math the way you’d like and isn’t interactive. We’re developing synthetic speech for high school algebra that speaks it better—and you can customize it too. Funded by a grant from the U.S. Department of Education Institute for Education Sciences.

Beth Brownstein  
Educational Testing Service, Princeton, New Jersey

Susan A. Osterhaus  
Texas School for the Blind and Visually Impaired, Austin

108 (Convention Center)
3:30 P.M.–4:30 P.M.

592 Exploring the Common Core State Standards Practices in Secondary Classrooms (9–12) Session
Previewing a new book from NCTM, we will draw connections between the Common Core State Standards for Mathematical Practice, the NCTM Process Standards (NCTM 2000), and the strands of proficiency from Adding It Up: Helping Children Learn Mathematics (National Research Council 2001). We will discuss how to implement the mathematical practices in secondary classrooms.

Kristen Bieda
Michigan State University, East Lansing

Samuel Otten
University of Missouri, Columbia

702 (Convention Center)

593 Transforming Your Teaching to Enhance Students’ Mathematical Reasoning Capabilities (9–12) Session
Engage in two types of tasks: (1) transforming rote exercises into questions requiring higher-order thinking and (2) solving problems and discussing solutions. You will learn straightforward ways to increase your own students’ reasoning capabilities and mathematical independence.

Erin Moss
Millersville University, Pennsylvania

705/707 (Convention Center)

594 What Were They Thinking? Going Beyond “Show Your Work” (Preservice and In-Service) Session
How do you know what your students are thinking? With smartpens, you can not only see their work but also hear their thinking and reasoning as they solve problems. See how we used smartpens with preservice elementary and middle-level math teachers and what we learned about our students’ mathematical thinking.

Mary Lou Metz
Indiana University of Pennsylvania

Edel Reilly
Indiana University of Pennsylvania

203 (Convention Center)

4:00 P.M.–5:00 P.M.

594.1 Experience the Power: Teaching Secondary Mathematics Online with MyMathLab (General Interest) Exhibitor Workshop
Making the transition to digital? Learn best practices to achieve increased results and student success from award-winning author Elayn Martin-Gay. Attendees will experience MyMathLab—an online curriculum that engages student learning and gives teachers all the tools they need to deliver all or a portion of their course online.

Pearson
Upper Saddle River, New Jersey

301 (Convention Center)

594.2 Using Math Work Stations to Teach the Mathematical Practices (Pre-K–2) Exhibitor Workshop
Debbie Diller, author of Math Work Stations, shows a range of tools and strategies that help K–2 students build skills outlined in the Common Core State Standards Mathematical Practices—such as strategic use of tools, patterns, and structures. Debbie will show video clips of students working individually and in small groups at math workstations.

Stenhouse Publishers
Portland, Maine

303 (Convention Center)

594.3 Math-U-See’s Tier 3 Intervention (3–8) Exhibitor Workshop
Learn about an effective Tier 3 Core Replacement intervention program designed to improve mathematical performance by explicitly teaching you the concepts, skills, and content needed to successfully teach math. Concepts of addition, subtraction, multiplication, and division will be shown and free sample manipulatives will be provided.

Mastery Education Services/Math-U-See
Fallbrook, California

302 (Convention Center)
4:00 P.M.–5:00 P.M.

594.4  
**Let's Be Clear about Explicit Instruction**  
(6–12) Exhibitor Workshop

Discuss the benefits of an explicit instructional approach with regard to mathematical skills and concepts. Many mathematical examples will be shared, and implications of brain research will be applied to the practice of explicit instruction.

Houghton Mifflin Harcourt  
Boston, Massachusetts

304 (Convention Center)

4:45 P.M.–5:30 P.M.

595  
**New-Teacher Celebration**  
(Preservice and In-Service) Gallery Workshop

Celebrate the progress and possibilities as we look for new and early-career teachers and for students working to enter this exciting profession. Learn a little, laugh more, and win wonderful prizes. Come celebrate with us. You are the future.

Mile High 1 E/F (Convention Center)

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**Elapsed Time Slider**
The *Elapsed Time Slider* features start and end time arrows, which slide seamlessly along the 24-hour timeline thanks to a unique raised backing.

**Magnetic Ten Frame and Part-Part-Whole Dry-Erase Paddles**
Students can use dry-erase markers or magnetic counters (*ten frame side only*) while they hold up their paddles to show their work!

**Fraction Match Games**
8 color-coded games stored in their own matching storage sleeve. Games can be played by an individual student, in pairs, or in small groups. Sets available for grades 3, 4, & 5.

**Exploragons™**
*Exploragons™* are a hands-on manipulative tool where students can easily snap the flexible sticks together and explore various polygons and plane geometry.

**3D Cube Models**
Through hands-on activities, students will explore dimension and spatial reasoning with 3D model building.

**Color Tile Fraction Puzzles**
Practice fraction reinforcement, critical thinking, and logic while building fraction area models with these activity cards and provided color tiles.

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**Check us out at Booth 2017 to see NEW products and experience exciting product demonstrations!**
HIGHLIGHTS
Closing Session: Viral Math Videos: A Hart-to-Hart Conversation (Presentation 724)

ICON LEGEND

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REGISTRATION HOURS
7:00 a.m.–10:00 a.m.

EXHIBIT AND BUZZHUB HOURS
9:00 a.m.–Noon

BOOKSTORE HOURS
8:30 a.m.–Noon

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.
8:00 A.M.–9:00 A.M.

596
Guided Math: Applying the Guided Reading Model to Math Instruction
(General Interest) Session
Reconstruct a traditional mathematics classroom of direct instruction into an environment of shared learning, guided and independent practice. By meeting with small groups, teachers can reach the diverse mathematical needs of students while maintaining the rigor of grade-level curriculum.

James Vreeland
Schaumburg School District 54, Illinois

Amy Varchmin
Schaumburg School District 54, Illinois

Tricia Leong
Schaumburg School District 54, Illinois

Mile High 2 A (Convention Center)

597
How Do I Know What They Know? Assessing Students’ Understanding
(General Interest) Session
Equity Strand Presentation
Explore a variety of assessment tools, including graphic organizers and writing strategies, to get easy-to-use diagnostic, formative, and summative data on students’ knowledge and understanding. These tools will support the implementation and assessment of Common Core State Standards in your classroom.

Beatrice Moore Luchin
NUMBERS Mathematics Professional Development, Houston, Texas

601 (Convention Center)

598
Interaction and Engagement through the Lens of English Language Learners
(General Interest) Session
Equity Strand Presentation
Student interactions and engagement with mathematical concepts are documented using spy glasses. Video excerpts will reflect evidence of English language learners’ interacting and engaging in mathematical reasoning based on Common Core State Standards mathematical practices. We will model and present strategies to foster content and language development.

Cathy J. Kinzer
New Mexico State University, Las Cruces

Mari Rincon
Las Cruces Public Schools, New Mexico

Ricardo Rincon
Las Cruces Public Schools, New Mexico

605 (Convention Center)

599
Mathematical Understanding in the Common Core State Standards
(General Interest) Session
The words understand, understanding, and their plurals appear more than 250 times in the Common Core State Standards for Mathematics. With so many appearances, it is not surprising that these words are used in a variety of ways. Explore a framework to help you deal with this variety.

Zalman Usiskin
University of Chicago, Illinois

Four Seasons 2/3 (Convention Center)

600
Balancing at a Mile High: Build Productive Mathematical Thinkers
(Pre-K–2) Session
Many students infer that the equals sign means “the total” or the “operations = answer.” Restricting problems to only those that fit that interpretation of the equals sign hinders students’ ability to learn from and solve novel equations. We will explore approaches to build habits of mind of a productive mathematical thinker.

Mary C. Cavanagh
Arizona State University, Tempe

Carole E. Greene
Arizona State University, Tempe

Mile High 1 C/D (Convention Center)

Don’t miss the Closing Session on Saturday afternoon with featured speakers George Hart and Vi Hart
8:00 A.M.–9:00 A.M.

601  
Hoops, Home Runs, and Holes in One: All-Sports Math Night  
(Pre-K–2) Session
Turn parents into math fans and students into “mathletes.” Involve your community, school, and parents in an action-packed math night. Sport-related activities based on the Common Core State Standards will excite and motivate families to extend learning at home. Leave with all the necessary steps to implement a successful math night.

Connie C. Jones  
Muscle Shoals City Schools, Alabama
Wendi Thornton  
Muscle Shoals City Schools, Alabama
Madonna Choat  
Muscle Shoals City Schools, Alabama

501/502 (Convention Center)

602  
Math Conferences: Making Learning Visible  
(Pre-K–5) Session
Confer one on one with your students to assess their level of mathematical understanding and lead them to their next steps in learning. Your students’ level of mathematical comprehension becomes clearly visible as they communicate their thinking. With your support, students focus on setting learning goals and self-assessing their progress.

Laney Sammons  
Consultant, Tunbridge, Vermont

405 (Convention Center)

603  
Measure What Matters: Building an Assessment System for Everyone’s Learning  
(Pre-K–5) Session
Explore teacher-created rubrics, student anchors, and assessment tasks aligned with the Common Core State Standards, organized and accessible online, with integrated data collection and reporting. Boulder Valley Schools and the CDE have worked with www.forefrontmath.com to make this session—combining professional development, professional learning communities, and response to intervention—a reality.

David Woodward  
Boulder Valley School District, Boulder, Colorado

705/707 (Convention Center)

604  
Techniques and Activities to Teach Basic Computation to Exceptional Learners  
(Pre-K–5) Session
Because a solid understanding of operation sense is essential to develop reasoning and computational skills, students with exceptional learning needs often struggle with conceptual learning. We will emphasize selected alternative procedures and activities to affirm conceptual understanding through explicit math instruction.

Joseph Sencibaugh  
Webster University, Saint Louis, Missouri
Angela M. Sencibaugh  
Valley Park School District, Missouri

107/109 (Convention Center)

605  
Developing Reasoning through the 5E Learning Cycle  
(3–5, Preservice and In-Service) Session
The use of the 5E Learning Cycle lesson plan model is growing in mathematics education, but still far too few math teachers know about it. We will specifically look at using technology in the Exploration phase to increase your students’ comprehension and reasoning skills and to develop specific Mathematical Practices specified in the Common Core State Standards.

Jennifer J. Wall  
Northwest Missouri State University, Maryville
Heidi N. Beatty  
Horace Mann Laboratory School, Northwest Missouri State University, Maryville

505 (Convention Center)

606  
School and University Partnership: Teaching English Learners Mathematics and Science  
(3–5, Preservice and In-Service) Session
Elementary teachers, preservice teachers, and faculty members come together to create rigorous mathematics and science learning for English language learners. Listen to three school districts and faculty discuss professional development, content-specific strategies for English learners, and ways to strengthen teacher content knowledge.

Jenni L. Harding-DeKam  
University of Northern Colorado, Greeley

205 (Convention Center)
8:00 A.M.–9:00 A.M.

607
Teaching Students Principles for Comparing Fractions
(3–8) Session
Examine important principles that students must understand to compare fractions. We will explore each in a variety of contexts and models, including manipulative materials and free online tools, to help students understand and extend their previous understandings of whole numbers to fractions.

John Laskarzewski
Conceptua Math, LLC, Petaluma, California

Mile High 4 E/F (Convention Center)

608
Leveraging Middle School Students’ Algebraic Understanding: Predict, Check, and Explain
(6–8) Session
 Middle school teachers often search for ways to assess their students’ understanding. Explore middle school students’ conceptions of rate and proportionality, as well as ways to develop this understanding by using dynamic technology and the heuristic Predict, Check, and Explain.

George J. Roy
University of South Florida St. Petersburg

Phillip Vahey
SRI International, Menlo Park, California

Vivian Fueyo
University of South Florida St. Petersburg

703 (Convention Center)

610
Quantitative Reasoning and the Teaching and Learning of Trigonometry
(6–12) Research Session
Explore the role of quantitative reasoning in the teaching and learning of trigonometry. I offer examples of instructional activities that aim to support students’ construction of a coherent trigonometry. I also connect the instructional activities to the most recent research on students’ learning of trigonometry.

Kevin C. Moore
University of Georgia, Athens

203 (Convention Center)
8:00 A.M.–9:00 A.M.

611
**Using Magic to Motivate the Learning of Algebra**

*(6–12) Session*

I will present many magic tricks that algebra explains. First, I will use cards, number cubes, a calendar, or mental patterns. Then I will show in general how the trick works. Finally, I will explain the trick, showing the algebra that you can share with your students to motivate them more.

*John W. Gregory*
University of Florida, Gainesville

709/711 (Convention Center)

613
**Equitable Assessments in the Common Core State Standards Era**

*(9–12) Session*

Experience and see how multiple entry-level tasks can help all students develop the Common Core State Standards for Mathematical Practice. Learn how to facilitate discourse around the tasks and other related pedagogical strategies.

*Marilyn E. Strutchens*
Auburn University, Alabama

*Judith R. Quander*
University of Houston–Downtown, Texas

Four Seasons 1 (Convention Center)

614
**Mathematical Games and Algebraic Proofs**

*(9–12) Session*

Use number tricks, mental math, and unbelievable statements to help students understand algebraic proofs.

*Mark Jaffee*
Ohio Council of Teachers of Mathematics, Oxford

Mile High 4 A/B (Convention Center)

615
**Ciphers: Excel Applications to Engage Students**

*(9–12, Higher Education) Session*

We will focus on cryptography, cipher applications, and using Excel, with an emphasis on hands-on experiential learning opportunities for students. I will stress cross-disciplinary problem-solving methods that combine mathematics and technology. I will also present an overview followed by demonstrations.

*Susan G. Helser*
Davenport University, Grand Rapids, Michigan

702 (Convention Center)

616
**Introductory Statistics without Lecture: Reactions, Reflections, and Revelations**

*(9–12, Higher Education) Session*

Two sections of undergraduate introductory statistics were taught using different instructional methods, one with a teacher-centered lecture approach and one with a student-centered nonlecture, problem-solving approach. We will discuss observations from student and instructor reflections.

*Melanie Autin*
Western Kentucky University, Bowling Green

*Hope Marchionda*
Western Kentucky University, Bowling Green

*Summer Bateiha*
Western Kentucky University, Bowling Green

108 (Convention Center)

617
**Visualizing Patterns: Fibonacci Numbers and 1,000-Pointed Stars**

*(9–12, Higher Education) Session*

Patterns in mathematics invite exploration and often arise in peculiar places. This talk will engage you in two such experiences appropriate for students in grades 9–12: discovering new relations among the Fibonacci numbers via strategic visual arrangements of them and determining how many stars have any number of points.

*Scott Annin*
California State University, Fullerton

*Jairo Aguayo*
California State University, Fullerton

102 (Convention Center)
618
Addressing the Crisis in Developmental Mathematics: The Dana Center’s Approach
(Higher Education) Session
High failure in entry-level math is an obstacle for hundreds of thousands of college students. The Dana Center is working with community colleges to reform entry-level math to ensure access, improve success, and respond to workforce needs. We will discuss national initiatives, the center’s work, and resources for institutions and faculty.

Amy Getz
Charles A. Dana Center, University of Texas at Austin

Susan Hudson Hull
Charles A. Dana Center, University of Texas at Austin

Mile High 2 C (Convention Center)

619
Using Problem-Based Learning Activities to Teach Mathematics
(Pre-service and In-Service) Research Session
Problem-based learning (PBL) activities, historically used in medical schools, have not been investigated for their potential in teaching mathematics to candidates preparing to become elementary teachers. Explore a study that implemented PBL activities and problem-solving tasks as the sole means for teaching concepts of arithmetic to preservice teachers.

Loretta Diane Miller
Middle Tennessee State University, Murfreesboro

Brandon C. Banes
David Lipscomb University, Nashville, Tennessee

401/402 (Convention Center)

620
Let’s Develop Number Sense by Using Games in Grades K–2
(Pre–K–2) Gallery Workshop
Play number-sense math games designed to support Common Core State Standards for Mathematical Practices. You will receive a packet of twenty games to help children develop number and operation sense, place value, basic facts, and whole-number comparison and computation.

Nancy Smith
Emporia State University, Kansas

Sheri Bevis
Emporia State University, Kansas

Four Seasons 4 (Convention Center)

621
Creative Math: Patterns and Algebraic Thinking with Multicultural Sensory Materials
(Pre-K–2, Preservice and In-Service) Gallery Workshop
Experience effective instructional methods and hands-on activities using sensory materials, tested in inclusive classrooms with all ability levels. Creativity is used as a catalyst to help diverse children develop patterning and algebraic thinking skills. Share concrete experiences with multicultural 3-D sensory stickers as well as work samples.

Insook Chung
Saint Mary’s College, Notre Dame, Indiana

111/113 (Convention Center)

622
Fact Fluency Sooner Yields More Time for Common Core State Standards Mathematical Practices
(Pre–K–2, Preservice and In-Service) Gallery Workshop
4-group Math, a consistent, coherent, and additive visual model, enables all students to compose and decompose numbers in their working memory, arriving sooner at fact fluency. Experience and take away a checklist of 4-group classroom activities to ensure that all your students know with confidence their addition and subtraction facts up to ten.

Lynn T. Kuske
Kuske Math, Bellevue, Washington

406/407 (Convention Center)
BFW invites you to the

AP* Calculus Panel • AP* Statistics Panel

both events at the HYATT REGENCY DENVER

650 15TH STREET • ROOM: CAPITOL 1 (4TH FLOOR)

Meet the Chief Reader and learn more about the AP* Exam

AP* CALCULUS PANEL
Thursday
April 18
6–8 pm

AP* STATISTICS PANEL
Friday
April 19
6–8 pm

CCSS requires Modeling and Statistics, which is why teachers require...

Modeling With Mathematics: A Bridge to Algebra II
Second Edition
NANCY CRISLER • GARY SIMUNDZA • REGION IV EDUCATIONAL SERVICE CENTER • COMAP, INC.

Statistics Through Applications
Second Edition
DAREN S. STARNES • DAVID S. MOORE • DAN YATES

Statistical Reasoning In Sports
JOSH TABOR • CHRIS FRANKLIN

Outstanding options for Fourth Year Math...

For All Practical Purposes
Mathematical Literacy in Today’s World, Ninth Edition
COMAP, INC.

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Thinking Between the Lines
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Math & YOU
The Power and Use of Mathematics
RON LARSON

For more about these and many other groundbreaking titles, please visit the BFW booth #1218 in the Exhibit Hall.

*AP is a trademark registered and/or owned by the College Board, which was not involved in the production of, and does not endorse, this product.
623 **Tools for Kindergarten Number Sense Screening and Intervention**
(Pre-K–2, Preservice and In-Service) Gallery Workshop
Discover a screening tool to identify weaknesses in number sense consistent with the Common Core State Standards. Experience hands-on activities for small-group response to intervention to build number sense in students.

Nancy I. Dyson
University of Delaware, Newark

Nancy C. Jordan
University of Delaware, Newark

Mile High 4 C/D (Convention Center)

624 **License Plate Math: Palindromes, Graphing, and Transformations**
(3–5) Gallery Workshop
Using license plates as a context, we will analyze patterns. I will share a technique for graphing, and you will design your own license plates with given parameters. Our graphs will offer entry into transformational geometry, and a mapping from letters to numbers allows us to experience early algebra in context.

Ryan Andrew Nivens
East Tennessee State University, Johnson City

Mile High 4 C/D (Convention Center)

625 **Proving the Properties**
(3–5) Gallery Workshop
Equality is the foundation for proving the commutative, associative, and distributive properties. Using the Process Standards, we will justify why these properties work through the use of conceptual, hands-on activities.

Rebecca J. Ward
Jamestown Elementary, Arlington County Public Schools, Virginia

Branch Wyatt Pronk
Kate Waller Barrett Elementary, Stafford County Public Schools, Virginia

Mile High 2 B (Convention Center)

626 **The Open Array and Ratio Table: Use Effective Tools Strategically**
(3–5) Gallery Workshop
Engage in and examine mathematical tools to teach strategies, solve problems, estimate, and make conjectures. This interactive gallery workshop will focus on the open array and ratio table as effective tools to give all learners access to conceptual understanding and promote achievement through the content and practices of the Common Core State Standards.

Dina A. Williams
Los Angeles Unified School District, California

603 (Convention Center)

627 **Breaking the Rules: Discrete Math Problems You Can Count On**
(3–8) Gallery Workshop
Bring discrete mathematics to life with fun problem-solving activities for your students. Get hands-on experience in breaking down systematic listing, combinations, and permutations through using puzzles, paper manipulation, and games. You’ll get a folder of all presentation items.

Jenifer G. Martin
St. Ambrose School, Tucson, Arizona

Eric Welch
Drachman Montessori Magnet School, Tucson, Arizona

503/504 (Convention Center)

628 **Do Critical Thinking Tasks and Models Improve Algebraic Reasoning? Absolutely!**
(3–8) Gallery Workshop
Algebraic reasoning skills improve when students explore algebraic reasoning through solving critical thinking tasks and building models. Explore using weight puzzles, Venn diagram puzzles, and tiles to enable students to discover and prove the rules of equations and systems of equations for themselves.

Leanne Luttrell
Lovin Elementary, Lawrenceville, Georgia

Mile High 3 C (Convention Center)
8:00 A.M.–9:15 A.M.

629 Fractions: What’s There to Talk About?
(3–8) Gallery Workshop
The Common Core State Standards Practice Standards present a view of math class focused on reasoning and discourse. What does this look like for fractions? We will discuss your reasoning about fractions, share strategies for encouraging students to do the same, and show video of student interviews and classroom discussions about fractions.

Julie McNamara
Math Solutions, Sausalito, California
Patty Clark
Math Solutions, Sausalito, California

Mile High 3 A (Convention Center)

630 Reasoning and Proof with Free NCTM Interactive Applets and Games
(3–8) Gallery Workshop
Enliven your classroom while developing reasoning, sense making, and proof. NCTM’s free online games and interactive applets are perfect for you to demonstrate key content topics in your classroom and for your students to investigate mathematical conjectures on their own. We will use both physical manipulatives and online/mobile tools.

Sarah DeLeeuw
National Council of Teachers of Mathematics, Reston, Virginia

708/710/712 (Convention Center)

631 Seeing Is Believing: Using Concrete Manipulatives to Model Fraction Division
(3–8) Gallery Workshop
Why do we multiply by the reciprocal when dividing fractions? Explore hands-on activities that support meaningful use and understanding of common algorithms. Leave with instructional strategies that promote student understanding of fraction division as well as a set of rigorous, engaging tasks that support student success.

Marsha McCrary
University of Georgia, Athens

607 (Convention Center)

632 Middle School Intervention: What Does It Look Like?
(6–8) Gallery Workshop
Struggling middle school students need opportunities to make sense of fraction operations through hands-on explorations and classroom discourse. Explore specific intervention strategies designed to strengthen students’ understandings while engaging in math classroom discourse protocols that encourage students to articulate their math reasoning.

Kristi Cohen
Math Solutions, Sausalito, California
Sheila Yates
Math Solutions, Sausalito, California

104/106 (Convention Center)

633 Struggling Learners Can Discover, Defend, and Demonstrate Common Core State Standards Practices
(6–8) Gallery Workshop
Participate in strategies that engage struggling students with high-cognitive-demand problems. Each problem offers the opportunity to demonstrate the mathematical practices, ways to motivate the learner, use of technology tools, scaffolding to make the problem accessible, conceptual development, and examples of formative performance assessments.

Connie S. Schrock
Emporia State University, Kansas

110/112 (Convention Center)

634 They’ll Need It for Calculus
(6–8) Gallery Workshop
What ideas do middle school students need for calculus? Maybe not what you think. They need an awareness of change, approximation, and accumulation. We will work middle school tasks that use these ideas, and we will consider how these ideas build into the major ideas of calculus.

Christopher Danielson
Normandale Community College, Bloomington, Minnesota

704/706 (Convention Center)
8:00 A.M.–9:15 A.M.

635
Teach Mathematical Modeling with GeoGebra
(6–8, Preservice and In-Service) Gallery Workshop
GeoGebra is an open-source learning technology that supports mathematical modeling and problem solving in school mathematics. Discover the main features of GeoGebra in the context of mathematical modeling and reasoning involving field-tested problem situations. Bring your laptop and join the dynamics of onsite explorations.

Lingguo Bu
Southern Illinois University, Carbondale

Frackson Mumba
Southern Illinois University, Carbondale

Mary Wright
Southern Illinois University, Carbondale

Mile High 1 A/B (Convention Center)

635.1
Calculator Scene Investigation
(9–12) Gallery Workshop
What type of polygon does this look like? This is a lesson on providing numerical evidence to prove the type of polygon. “It looks like a . . .” is not sufficient evidence. After we gather and calculate numerical evidence, and present a case, a decision will be rendered before the jury convicting the polygon of classification.

Mary R. Walz
Sauk Prairie High School, Prairie du Sac, Wisconsin

506/507 (Convention Center)

636
Hands On and Hands Off That Calculator
(9–12) Gallery Workshop
Using the TI-Nspire Navigator increases student involvement in any algebra lesson, but I also like to blend good old hands-on experiences. I will bring several classroom-ready activities that engage even reluctant learners. You will enjoy eating your own data, working with the TI-Nspire calculators, and using uncooked spaghetti for a lesson.

Heidi J. Rudolph
Orange City Schools, Pepper Pike, Ohio

201 (Convention Center)

637
Using Formative Assessment to Engage in Reasoning and Proof
(9–12) Gallery Workshop
Using hands-on activities, we will share our experiences working with Shell Center formative assessment lessons. What does proof look like and how does reasoning happen daily? We’ll highlight how to transform your classroom practices with formative assessment and the Common Core State Standards for Mathematical Practice.

Michael Gould
Math Solutions, Sausalito, California

Lisa Bush
Math Solutions, Sausalito, California

Mile High 1 E/F (Convention Center)

638
Mathematics of Decision Making: An Alternative Fourth-Year Math Course
(9–12, Preservice and In-Service) Gallery Workshop
MINDSET is a collaboration among educators, engineers, and mathematicians to create and implement a curriculum to teach standard mathematics concepts by using math-based decision-making tools for a noncalculus, fourth-year mathematics curriculum. Experience the curriculum through solving multistep problems in real-world settings.

Karen S. Norwood
North Carolina State University, Raleigh

Tyler Pulis
North Carolina State University, Raleigh

403/404 (Convention Center)

8:30 A.M.–9:30 A.M.

638.1
Conquering the Common Core State Standards, One Fold at a Time
(General Interest) Exhibitor Workshop
In this hands-on session, create 3-D graphic organizers known as Notebook Foldables, designed to help you and your students conquer the Common Core State Standards (CCSS) one fold at a time. Participatory power is high as attendees see how to “chunk out” the CCSS and construct appropriate and naturally differentiated examples that can address the standards.

Dinah–Might Adventures, LP
San Antonio, Texas

302 (Convention Center)
8:30 A.M.–9:30 A.M.

638.2 Engage Today’s “Screen-Agers” through Interactive Digital Learning
(General Interest) Exhibitor Workshop
Our Comprehensive Common Core State Standards–based digital math texts use the high-yield strategies of direct quality instruction, student-driven advancement, and specific feedback. Our unique quickchecks reward effort, not multiple guessing, and use digital math buttons similar to those students will encounter on the upcoming PARCC and Smarter Balance assessments.

Perfection Learning
Clive, Iowa

303 (Convention Center)

638.3 Best Practices in the Elementary Mathematics Classroom
(Pre-K–5) Exhibitor Workshop
A main topic of conversation in schools is preparing for the Common Core State Standards (CCSS). According to the CCSS, students must be engaged in the Mathematical Practices. However, what that looks like in classrooms is elusive. Explore videos that capture students engaged in these standards and discuss teacher moves and meaningful tasks that support this engagement.

Houghton Mifflin Harcourt
Boston, Massachusetts

304 (Convention Center)

9:30 A.M.–10:30 A.M.

639 Beyond Answers: Using Formative Assessment to Support Learning and Teaching
(General Interest) Session
Explore ways to intertwine learning and teaching by asking questions and adapting tasks that focus on deeper learning. We will use common textbook examples to create and adapt questions or problems to guide the instructional moves or identify areas to target in Tier 2 response to intervention.

Barbara J. Dougherty
University of Missouri, Columbia

Four Seasons 1 (Convention Center)

640 Instructional Strategies for Autistic Learners
(General Interest) Session
Explore guidelines for teaching autistic learners. The discussion targets application related to instructional setting, social context, and lesson formats.

Kathleen M. McCoy
Mary Lou Fulton Teacher College Arizona State University, Tempe

505 (Convention Center)
Immerse yourself in two and a half days of professional development dedicated to algebra readiness, and walk away with practical methods to prepare your students for success.

NCTM’s Interactive Institute offers a variety of activities and instructional techniques to give your students opportunities to develop strong algebraic reasoning skills. You’ll also learn strategies that will help you align your instruction with the Common Core State Standards while giving your students the tools they need to succeed.

- Gain strategies to teach your students the knowledge and skills that lead to future success in algebra.
- Understand how concepts within multiple domains of the Common Core State Standards for Mathematics support algebraic reasoning.
- Improve your assessment techniques for the math classroom.
- Reinforce, expand, and apply what you learn by participating in optional extended online professional development during the school year.

Don’t miss this exciting math education professional development opportunity. Save $40 when you register by May 10. Visit www.nctm.org/algebra to learn more and register.
9:30 A.M.–10:30 A.M.

641
Logic Puzzles: A Friendly Path to Deductive Reasoning and Proof
(General Interest) Session
The Common Core State Standards call for students to “make conjectures and build a logical progression of statements to explore the truth of their conjectures . . . analyze situations by breaking them into cases . . . recognize and use counterexamples . . . justify their conclusions.” What better way to develop these skills than with the puzzles of Raymond Smullyan?

William K. Tomhave
Concordia College, Moorhead, Minnesota
Mile High 2 C (Convention Center)

642
Promoting Gender Awareness (and Reasoning) in the Mathematics Classroom
(General Interest) Session
Equity Strand Presentation
After high school, many young women turn away from science and math careers. But gender attitudes affect classroom interactions throughout schooling, so we can’t wait until high school or college to pay attention to gender. Examine research and classroom activities that foster gender equity in math instruction at all grade levels.

Jessica M. Deshler
West Virginia University, Morgantown
Elizabeth Burroughs
Montana State University, Bozeman
601 (Convention Center)

643
Using Real-World Settings to Foster Mathematical Learning
(General Interest) Research Session
Want to create or implement lessons that include real-world contexts that engage students? Need a way to think about what questions to ask so that students make connections between real-world problem solving and the math? Explore a framework from a teacher–researcher team to develop context-based lessons.

Luke Reinke
University of Pennsylvania, Philadelphia
Marsha Evans
William Penn High School, New Castle, Delaware
207 (Convention Center)

644
Whatever Happened to Problem Solving in the Math Curriculum?
(General Interest) Session
If problem solving is supposed to be the focus of school mathematics, why has it all but disappeared from our texts? I have written extensively about mathematical problem solving over the past forty years. Discuss my current thinking about the role of problem solving and what we should do to make it more central in our curricula.

Frank K. Lester
Indiana University, Bloomington
Mile High 1 C/D (Convention Center)

645
Florida’s K–3 Common Core State Standards Mathematics Formative Assessment System
(Pre-K–5) Session
Florida’s K–3 Mathematics Formative Assessment System contains 376 formative assessment tasks available online for free. See how you can use these resources designed to increase your understanding of student thinking. Examine tasks and task-specific rubrics, and discuss videos of students responding to tasks.

Laura B. Lang
Learning Systems Institute, Tallahassee, Florida
Robert C. Schoen
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee
Maureen F. Oberlin
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee
107/109 (Convention Center)

646
One Small Teaching Change, One Giant Leap for Student Understanding
(Pre-K–5) Session
Two elementary school teachers changed their teaching of place-value and whole-number operations to third graders, resulting in remarkable gains for students on a high-stakes test. See the activities the teachers used with students and how moving away from the standard algorithms moved students to better understanding.

Teresa G. Banker
Kennesaw State University, Georgia
Amanda Cobb
Marietta City Schools, Georgia
Lori Haakenson
Marietta City Schools, Georgia
709/711 (Convention Center)
9:30 A.M.—10:30 A.M.

**647**
The Pioneers Speak: Lessons Learned from Successful Elementary Mathematics Specialists

(Pre-K–5) Session

School administrators expect elementary mathematics specialists to support teachers and their school’s mathematics program while advancing student achievement. Get practical guidance for “operating as an elementary mathematics specialist,” as suggested by successful specialists who have collaborated on a new NCTM publication.

Patricia F. Campbell  
University of Maryland, College Park

Vickie L. Inge  
University of Virginia, Charlottesville

**648**
F2 or Fraction Fun

(3–5) Session

Students continue to find fractions challenging. Learn games designed to help students develop a conceptual understanding of fractions.

Sue Brown  
University of Houston–Clear Lake, Texas

**649**
Iterative Model Building: Questioning to Create Geometric Student Thinking Models

(3–5) Research Session

Effective questioning in geometry offers teachers insight regarding student thinking. Learn about a research study that focused on questioning to help teachers conceptualize predictive models of student thinking. Explore how questioning and model building may improve your instructional practices.

Crystal Vesperman  
Indiana University, Bloomington

Julie Amador  
University of Idaho, Moscow

**650**
Unlocking Word Problems: It’s More than Key Words

(3–5) Session

Teaching students to rely on key words to solve word problems is misleading and sends the wrong message. The real key is to make sense of problems and the quantities involved. See videos of children making sense of problems. Gain experience analyzing students’ thinking, and explore strategies to deepen those understandings.

Kathleen Eichhorst  
Tucson Unified School District, Arizona

Melinda Radon  
Tucson Unified School District, Arizona

**651**
Explain Your Thinking: Creating Comics, Videos, and Animations on iPads

(3–8) Session

See how students can quickly and efficiently create comics, videos, and animations on their iPads to show what they know and how they know it. We will share examples from number sense, ratio and proportion, geometry, and measurement.

Leslee Francis Pelton  
University of Victoria, Canada

Timothy W. Pelton  
University of Victoria, Canada

**652**
Proportional Reasoning and Graphing: A Powerful Connection

(3–8) Session

Explore the links between proportional reasoning and graphing by analyzing proportional reasoning tasks and student solution strategies. The goal will be to understand the growth in reasoning that occurs when students use graphs to represent proportional reasoning.

Kathleen Lynch-Davis  
Appalachian State University, Boone, North Carolina

Signe Kastberg  
Purdue University, West Lafayette, Indiana
9:30 A.M.–10:30 A.M.

653  
Writing: A Powerful Tool for Learning Math  
(6–8) Session  
Through the powerful tool of writing, students can express their understanding of math concepts in their own words by synthesizing information, organizing and clarifying their thinking, and combining separate ideas into a new whole. Writing helps students with problem solutions, identifying patterns, and precise vocabulary.  

Lynn Columba  
Lehigh University, Bethlehem, Pennsylvania  
Bob Drake  
University of Cincinnati, Ohio  

501/502 (Convention Center)

654  
Beyond \( y = mx + b \): Deepening Students’ Understanding of Linear Relationships  
(6–8, Preservice and In-Service) Session  
Knowing the formula \( y = mx + b \) is different from understanding when to apply it and why it works. We will consider problems that highlight multiple representations and forms of linear relationships. We will then consider how looking across these different problems, representations, and forms can help students explain why \( y = mx + b \) works.  

Amy F. Hillen  
Kennesaw State University, Georgia  
Kelly W. Edenfield  
Carnegie Learning, Pittsburgh, Pennsylvania  

405 (Convention Center)

655  
Framing Questions to Engage All Students in Geometric Reasoning  
(6–12) Session  
Guided by the goals of the Common Core State Standards for Mathematics and the use of student work, this session offers an approach to geometry teaching that allows students to use reasoning to critique arguments about geometric ideas and relationships. Capturing the excitement of mathematics, attendees engage in tasks that promote understanding.  

Carol Malloy spent twenty years teaching mathematics in public schools across the United States. At the university level, she taught secondary mathematics methods in a Master of Arts in Teaching program, mathematics for middle and elementary preservice students, and PhD coursework in curriculum and foundations.  

Carol E. Malloy  
University of North Carolina, Chapel Hill; Glencoe/McGraw-Hill, Wilmington, North Carolina  

Four Seasons 2/3 (Convention Center)

656  
Make Math Count: Financial Literacy for a Technological World  
(6–12) Session  
Address NCTM strands of problem solving, communication, and connections while fully engaging students with Excel, Web 2.0 technologies, and games created by Robert Kiyosaki. Resources are available online that address income, careers, retirement, and linear and exponential growth, along with assessments differentiated by learning styles.  

Leslie Williams  
Cary Academy, North Carolina  
Michael Raskevitz  
Cary Academy, North Carolina  

Mile High 4 A/B (Convention Center)
657  
**Cognitively Guided Instruction Works for Students with Cognitive Disabilities, Too**  
*(9–12, Higher Education) Session*

Problem-solving approaches have been used in a limited capacity in special education. At the conclusion of our three-year study, it is apparent that methods consistent with cognitively guided instruction also support the conceptual understanding of students with significant intellectual disabilities. Learn how and why the approach is so effective.

**Stacey N. Skoning**  
University of Wisconsin–Oshkosh

108 (Convention Center)

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658  
**What, No Book? I Want to Take His Class**  
*(9–12, Higher Education) Session*

What gives students the best opportunity to succeed? We explored this question by offering sections of college algebra where one section used an e-book and online homework, whereas the others used a traditional textbook and had no instructor-graded homework. What worked best? We share our results, including what was most important to students.

**Daniel R. Miller**  
Millikin University, Decatur, Illinois

**Paula R. Stickles**  
Millikin University, Decatur, Illinois

205 (Convention Center)

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659  
**Data + Reflection/Reasoning + Modeling = Stronger Statistics Self-Efficacy**  
*(Higher Education) Session*

A college algebra with statistics course was crafted for students needing a mathematics general education credit, then taking a statistics class in a nonmath department. The curriculum uses experiential learning and concrete–representational–abstract instructional models, allowing students to mathematically describe statistical data.

**Theresa R. Westbrook**  
Texas State University, San Marcos

702 (Convention Center)

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660  
**Promoting Mathematical Practices through the Common Core State Standards Assessment Frameworks**  
*(Preservice and In-Service) Session*

The Common Core State Standards for Mathematics assessment consortia frameworks have the potential to encourage teachers to use and have their students use the Mathematical Practices. We will explore analysis and application of the frameworks, along with tasks that require the Mathematical Practices.

**Judith E. Jacobs**  
University of Michigan, Ann Arbor

703 (Convention Center)

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661  
**Teacher’s Preparation for Geometric Black-Box Tasks with iPad**  
*(Preservice and In-Service) Session*

Technology-based geometric black-box tasks formerly constructed by a teacher motivate students to explore unknown behavior of geometric objects and formulate/justify a conjecture. See how to prepare a black-box task for iPad and how the questioning strategies differ from those in a paper-and-pencil setting.

**Taehoon Choi**  
University of Iowa, Iowa City

**Melissa McAninch**  
University of Iowa, Iowa City

**Laurentius A. Susadya**  
University of Iowa, Iowa City

Mile High 4 E/F (Convention Center)
July 11–13, 2013 | New Orleans

Connecting Number and Operations in the Classroom

AN NCTM INTERACTIVE INSTITUTE FOR GRADES PK–5

A New Interactive Institute for Grades Pre-K–5 Educators

Join us in New Orleans for this new Interactive Institute and deepen your knowledge of the mathematics that supports number and operations. Learn more about the importance of the development of a sense of number, with a particular focus on conceptual understanding, procedural fluency, and applications. At this Institute, you will—

• Understand the importance of number as a critical foundation for college and career readiness;
• Discover instructional strategies that provide all students with an opportunity to develop a sense of number;
• Determine the role of the Common Core Standards for Mathematical Practice as they relate to number-related content domains and topics;
• Increase your knowledge about the mathematics content of the Common Core domains that emphasize number; and
• Reinforce, expand, and apply what you learn by participating in optional extended online professional development during the school year.

Don’t miss this exciting math education professional development opportunity. Save $40 when you register by May 10. Visit www.nctm.org/number to learn more and register.

Space is limited—REGISTER TODAY! www.nctm.org/number
662
Building a Solid Foundation with Number Sense
(Pre-K–2) Gallery Workshop
Do you have students counting on their fingers to add? Those students lack number sense. Number sense can’t be taught; it has to be experienced. So come experience activities involving a rekenrek, number path, and subitizing that will help develop your students’ number sense and their ability to add and subtract flexibly and fluently.

Lynn Rule
Naperville SD 203, Illinois

Christina Tondervold
Mathematically Minded, Orofino, Idaho

403/404 (Convention Center)

663
Digging Deeper into Early Numeracy: Getting Number Facts to Stick
(Pre-K–2) Gallery Workshop
Expand your knowledge and range of activities for early number sense. Work with ten frames and number bracelets, and be actively engaged with activities to anchor to ten. We’ll use a thirties chart to construct the concepts of more and less and improve mathematical vocabulary. Let’s “play” math and discuss the research that supports these activities.

Ricky M. Mikelman
Staff Development for Educators, Peterborough, New Hampshire

704/706 (Convention Center)

664
It’s a Rhombus, Not a Diamond: Meaningful Geometric Experiences
(Pre-K–2) Gallery Workshop
The Common Core State Standards Practices focus on students’ abilities to problem solve, reason, and understand that math makes sense. Exploring two-dimensional shapes and their properties will supply the context for discussing teaching strategies that support implementing the Common Core State Standards.

Amy C. Mayfield
Math Solutions, Sausalito, California

Lisa Rogers
Math Solutions, Sausalito, California

603 (Convention Center)

665
Number and Operations: Building Links between Addition and Subtraction
(Pre-K–2) Gallery Workshop
Addition and subtraction are closely linked. Learn strategies to reinforce the connection between these operations and to develop flexible thinking. I will show practical ways to develop number facts for both operations through the use of visual materials and games.

Rob Nickerson
ORIGO Education, St. Charles, Missouri

503/504 (Convention Center)

666
Names in the Neighborhood: Names, Identity as a Math Springboard
(Pre-K–5) Gallery Workshop
Equity Strand Presentation
Is your name length typical for the class? For your age and ethnicity? When Maximilliano plays a Scrabble-like name game with Ana, who has the advantage? Use your first name as a basis for math explorations. Receive well-tested materials based on a National Science Foundation–funded project to engage diverse learners in reasoning, data, algebraic thinking, and more.

Marlene Kliman
TERC, Cambridge, Massachusetts

Nuria Jaumot-Pascual
TERC, Cambridge, Massachusetts

506/507 (Convention Center)

668
Take a “Chance”: Connecting Probability to Rational Number Reasoning
(Pre-K–5) Gallery Workshop
Come and play several games that will challenge your students to reason about rational numbers as they investigate sample space, probability, and fairness. Learn about common student misconceptions, strategies, and reasoning that occurred when students played these games in the classroom.

Megan H. Wickstrom
Illinois State University, Normal

Nicole M. Enzinger
Illinois State University, Normal

201 (Convention Center)
9:45 A.M.–11:00 A.M.

669
**REFractions: The Representing Equivalent Fractions Game**
*(3–5) Gallery Workshop*

Explore REFractions: The Representing Equivalent Fractions Game. In this hands-on activity, students reason with linked concrete, pictorial, and symbolic models to make sense of fraction concepts from the Common Core State Standards, including representation, equivalency, addition, and comparison.

Stephen I. Tucker  
Utah State University, Logan

*Mile High 3 C (Convention Center)*

670
**Why Is 1/3 Greater than 0.3?**
*(3–5) Gallery Workshop*

Explore rational numbers, decimals, and percents through hands-on activities with various manipulatives. Exposing students to various models helps increase fractional fluency as they compare, convert, and calculate with numbers between 0 and 1. You will experience and leave with sample activity plans.

Nivan Saada  
Hoosier Academy, Indianapolis, Indiana  
George McDermott  
IMC Education Services, Indianapolis, Indiana

*Mile High 1 A/B (Convention Center)*

671
**In Control of Cognitive Demand**
*(3–5, Preservice and In-Service) Gallery Workshop*

The Common Core State Standards demands rich math tasks. Experience the difference in engaging students in cognitively demanding tasks; understand how to manage cognitive demand throughout lessons from concept to mastery; and create rich tasks to invite students to examine, attempt, question, and explore different possibilities for problem solving.

Maricela Rincon  
Las Cruces Public Schools, New Mexico  
Jennifer L. Trantham  
Las Cruces Public Schools, New Mexico

*Mile High 2 B (Convention Center)*

672
**Thinking Outside the Box: A Chocolatey Optimization Problem**
*(3–8) Gallery Workshop*

Imagine that you are a chocolatier who wants to sell cubed-shaped chocolates. To maximize your profit, you need to minimize the cost of packaging. Using your mathematical knowledge of measurement and data, geometry, and functions, you will design and construct the ideal candy box through this Common Core State Standards–aligned, hands-on performance task.

Rita Sanchez  
Teachers College, Columbia University, New York, New York  
Greta Keltz  
Teacher College, Columbia University, New York, New York

*Mile High 1 A/B (Convention Center)*

673
**We’re Writing in Secret Code: I Think It’s Algebra**
*(3–8) Gallery Workshop*

Manipulatives hold a key to understanding the beginnings of algebra. Strategies for creative uses of manipulatives foster understanding so students see what expressions such as $3br. lwh$, and $x + 2y$ really mean. A concrete foundation for math notation and symbols will demystify a complex code for students. Let’s help students learn the secret code.

Janie L. Zimmer  
Research-Based Education, Reading, Pennsylvania  
Robert O. Jesberg Jr.  
Consultant, Chalfont, Pennsylvania

*Four Seasons 4 (Convention Center)*
9:45 A.M.—11:00 A.M.

674
Gone Fishing: Proportions and Probability in a Real Scientific Context
(6–8) Gallery Workshop
By using techniques for estimating populations, we can explore mathematical topics such as proportions and probability. This activity uses the scientific method to determine which pond fish population matches each initial proportion and then estimates changes in the population while incorporating issues of likelihood and uncertainty.
Jill A. Cochran
Berry College, Mount Berry, Georgia
110/112 (Convention Center)

675
Reinventing and Connecting Rules for Dividing Fractions
(6–8) Gallery Workshop
Using fraction bars, we will reinvent at least three rules for dividing fractions by fractions.
Yvelyne Germain-McCarthy
University of New Orleans, Louisiana
Mile High 4 C/D (Convention Center)

676
Technology + Choice = Success
(6–8) Gallery Workshop
Equity Strand Presentation
Do you long to hear your students say these three little words, “I love math”? Discover how hands-on lessons infused with technology and choice have transformed our students into highly motivated, engaged, successful learners. Highlighted technology will include TI technology, math in movie clips, the SMART Board, Google Earth, and Voki avatars.
Melissa G. Jackson
Deptford Township Schools, New Jersey
Meredith A. Howell
Deptford Township Schools, New Jersey
708/710/712 (Convention Center)

677
Connecting Math Competitions to the Common Core State Standards
(6–12) Gallery Workshop
The chairs of the American Mathematics Competitions will share tips for connecting problems found on mathematics competitions with the Common Core State Standards. Learn how topics important for contests can also connect to the Common Core State Standards. Award-winning teachers with high-scoring teams will also share their insights.
Steven R. Dunbar
Mathematical Association of America, Washington, D.C.
Margie Raub-Hunt
Mathematical Association of America, Washington, D.C.
LeRoy Wenstrom
Mathematical Association of America, Washington, D.C.
406/407 (Convention Center)

678
“Log” in to the Common Core State Standards
(9–12) Gallery Workshop
Experience the Mathematical Practices of the Common Core State Standards in a unit on logarithms. Explore engaging strategies for teaching logs, including discovery activities, an earthquake project, and formative assessment ideas. Get resources you can use in class on Monday.
Andrea J. VanDunk
GreenDot Public Schools, Los Angeles, California
Judy Suyong Song
Lincoln High School, Los Angeles, California
Mile High 3 A (Convention Center)

679
Reasoning and Proof in Graph Theory and Combinatorics
(9–12, Preservice and In-Service) Gallery Workshop
We will focus on using graph theory and combinatorics as a natural way to enhance students’ skills in reasoning and proof. You’ll consider some basic counting and graph theory problems, and we will share and discuss student work on these same problems.
Patricia A. McKenna
Metropolitan State University of Denver, Colorado
103/105 (Convention Center)
9:45 A.M.–11:00 A.M.

680
An Invitation to Experience Online Lesson Study Firsthand
(Preservice and In-Service) Gallery Workshop
Are you interested in lesson study but lack the support system and resources necessary to participate? Connect with other teachers just like you and form lesson study groups that will interact online synchronously and asynchronously.

Cheryl Fricchione
Drexel University School of Education, Philadelphia, Pennsylvania

Diane Austin
Crooked Oak Public Schools, Oklahoma City, Oklahoma

607 (Convention Center)

681
Connected Knowledge: How Students Learn Math with Understanding
(Preservice and In-Service) Gallery Workshop
Understanding develops when students make connections. Explore how students develop connected knowledge by engaging in the NCTM Process Standards and Common Core State Standards for Mathematical Practice. We will do math and analyze classroom vignettes. Having written two new books for NCTM, we will share strategies to teach for connected knowledge.

Sarah Ryan
University of Delaware, Newark

Kathy Ernst
Consultant, West Brattleboro, Vermont

Robert Wieman
Rowan University, Glassboro, New Jersey

104/106 (Convention Center)

10:00 A.M.–11:00 A.M.

681.1
If a Computer Can Grade It, It’s Not Worth Asking
(General Interest) Exhibitor Workshop
This talk discusses constructionist learning ideas and the use of instructor-driven formative assessment and coaching to bring about a radically different approach to math education. Here, the art and science of mathematics takes precedence over static algorithms.

Making Math
Champaign, Illinois

302 (Convention Center)

681.2
Meeting the Practice Standards with Models from Math in Context
(General Interest) Exhibitor Workshop
The Standards for Mathematical Practice in the Common Core State Standards ask students to model with mathematics. Students are expected to identify quantities and map relationships by using math tools, including diagrams, two-way tables, and formulas. Explore models from MiC that can be used to analyze situations and draw conclusions, and receive a free Number Tools workbook.

Britannica Digital Learning
Chicago, Illinois

304 (Convention Center)

681.3
Implementing Singapore Math: A Collaborative Effort
(Pre-K–5) Exhibitor Workshop
Explore how the Primary Mathematics series was used as a tool to build a higher-performing mathematics program in a low-performing school. The presenter will share data, pictures, teacher reflections, successes, and challenges of implementing this focused and coherent curriculum.

Singapore Math
Oregon City, Oregon

301 (Convention Center)
Engage Your Students in Learning

You need the best strategies to prepare your students for success, and NCTM’s Interactive Institute on High School Mathematics offers a variety of activities and tactics to effectively address the Common Core mathematical practices and NCTM Process Standards—giving your students better opportunities to examine, interpret, and think critically about math concepts.

The experience will be suited to your interests—you’ll take part in sessions and be grouped with educators according to your strand of focus:

Strands
- Algebra 1/Integrated Year 1
- Algebra 2/Integrated Year 3
- Geometry/Integrated Year 2
- Probability and Statistics

Who Should Attend
- High school mathematics teachers
- High school supervisors
- College mathematics teachers
- Math coaches and teacher leaders
- Teacher educators
- Preservice teachers

Learn more and register at www.nctm.org/hsmath.

August 1–3, 2013 | Washington, D.C.

Engaging Students in Learning:
Mathematical Practices & Process Standards
AN NCTM INTERACTIVE INSTITUTE FOR GRADES 9–12

Register by MAY 31 and save $40!

Space is limited—REGISTER TODAY! www.nctm.org/hsmath
11:00 A.M.–12:00 P.M.

682 Classroom Discourse: Strategies to Engage and Support English Language Learners  
(General Interest) Session

Explore strategies to engage English language learners in the mathematics classroom, develop their mathematical understandings through strategic communication strategies, and assess their knowledge of mathematics. I will share approaches to support teacher–student and student–student communications.

Gladis Kersaint  
Board of Directors, National Council of Teachers of Mathematics; University of South Florida, Tampa

703 (Convention Center)

683 Selecting Problems with High Cognitive Demands to Meet Specific Goals  
(General Interest) Research Session

When selecting high-thinking tasks to meet specific instructional goals, we should consider several aspects of the tasks: numerical structure, context, difficulty level, and strategies likely to be elicited. Explore research studies related to proportional reasoning to show the importance of these considerations when selecting tasks.

Jessica Audet de la Cruz  
Assumption College, Worcester, Massachusetts

501/502 (Convention Center)

684 Tools and Technology for Modern Math Teaching  
(General Interest) Session

A lot of new tools and technology exist to help our students learn more meaningful mathematics. The question you may have now is, “Which tools deserve our limited time and resources?” I will offer a framework to guide you toward useful tools and more modern math teaching.

Dan Meyer  
Stanford University, California

Four Seasons 1 (Convention Center)

685 Computers in Early Childhood: Getting the Best of All Worlds  
(Pre-K–2) Session

Technology use in pre-K–grade 2 is increasing. Use it to offer the best of all possible worlds—the worlds of mathematics, physical models, and software models; the worlds of number, geometry, measurement, and patterning; and the appropriate, combined pedagogy of the worlds of activities, problem solving, and tools.

Julie Sarama  
University of Denver, Colorado

Douglas H. Clements  
University of Denver, Colorado

705/707 (Convention Center)

686 Math Rotations That Cover the Core  
(Pre-K–2) Session

Differentiate your math instruction while making sure you are covering the Common Core State Standards. Our math workshop rotation structure engages children at all instructional levels through hands-on manipulative activities. Participate to discover the structure of rotations while addressing NCTM strands.

Shannon F. McFadden  
Holland Hall School, Tulsa, Oklahoma

Susan B. Connor  
Holland Hall School, Tulsa, Oklahoma

Mile High 4 A/B (Convention Center)

687 Improve Fluency and Mental Strategies for Girls  
(Pre-K–2, Higher Education) Session  
Equity Strand Presentation

We need to improve fluency and mental strategy use in girls. Both have been linked to long-term (three-year) performance on state tests. Girls, in contrast to boys, are less fluent and are less likely to use mental strategies. Get recommendations to improve fluency and strategy use.

Martha Carr  
University of Georgia, Athens

Mile High 4 E/F (Convention Center)
Saturday

11:00 A.M.–12:00 P.M.

688 Helping Teachers Listen and Respond: An Assessment Framework
(Pre-K–5) Session
Developers from the Teaching Integrated Math and Science Project share their assessment framework and tools to help teachers define clearer expectations, provide useful feedback, and respond to various students’ needs in grades 1–5.

Jennifer Mundt Leimberer
University of Illinois at Chicago—Learning Sciences Research Institute

Diana Berndt
University of Illinois at Chicago—Learning Sciences Research Institute

702 (Convention Center)

689 Manipulatives, Models, and Symbols: Representations for Building Number Sense
(Pre-K–5) Session
Developing students’ number sense entails multiple and varied experiences over time. Using concrete, visual, and symbolic representations can facilitate this process. We will share specific classroom examples to highlight how to select, make, use, and link representations effectively to build and enhance students’ number sense.

Jessica Shumway
Utah State University, Logan

Joan Kyriopoulos
Edith Bowen Laboratory School, Logan, Utah

Mimi Granados
Bailey’s Elementary School for the Arts and Sciences, Falls Church, Virginia

205 (Convention Center)

690 Multicultural Mathematics Children’s Literature Books
(Pre-K–5) Session
Enter the world of using authentic multicultural children’s literature to teach mathematics in your elementary classroom. We will share actual books, mathematics teaching ideas, and implemented lessons in a way to build culturally responsive teaching into your classroom through rigorous mathematics learning.

Stacy Loyd
University of Northern Colorado, Greeley

Jenni L. Harding-DeKam
University of Northern Colorado, Greeley

Boni Hamilton
University of Colorado Denver, Centennial

709/711 (Convention Center)

691 Number and Operations: Eliciting Student Thinking through Questioning Techniques
(3–5) Session
Improve your questioning techniques to better understand student thinking and reasoning in number and operations. Watch classroom video scenarios and reflect on your questioning strategies while engaging in a discussion to improve conceptualization of student thinking.

Julie Amador
University of Idaho, Moscow

Crystal Vesperman
Indiana University, Bloomington

405 (Convention Center)

692 50 Problems + 50 Books = 100 Percent Engagement
(3–8) Session
Engage in mathematical problems posed from children’s literature. We will share a list of fifty books, with a problem posed from each book. Solve samples while emphasizing the Standards for Mathematical Practice. You will also consider elements of a good problem so you can develop problems from other books.

Jeremy J. Winters
Middle Tennessee State University, Murfreesboro

Cindy Cliche
McFadden School/Middle Tennessee State University, Murfreesboro

203 (Convention Center)
11:00 A.M.–12:00 P.M.

**693**
Activities to Help English Language Learners Increase Geometric Understanding  
(6–8) Session  
Equity Strand Presentation  
English language learners often struggle to learn the special language of geometry, and this challenge hampers concept understanding. Participate in classroom-tested activities with manipulatives that enhance geometry language acquisition. I will share activity handouts and free resources.

**Bill Jasper**  
Sam Houston State University, Huntsville, Texas  
693 (Convention Center)

**694**
Do Math Snacks Lessons Increase Students’ Content Knowledge? Yes.  
(6–8) Research Session  
During the fall of 2011, nine teachers from five schools in two districts used Math Snacks animations and lessons to teach ratio, proportional reasoning, and number line concepts to more than 300 sixth- and seventh-graders. The students were given a pretest and a posttest to measure student learning. Explore the findings of this pilot study.

**Karin Wiburg**  
New Mexico State University, Las Cruces  
**Karen M. Trujillo**  
New Mexico State University, Las Cruces  
694 (Convention Center)

**695**
Financial Literacy: How to Establish a Classroom Mini-Economy  
(6–8) Session  
The Classroom Mini-Economy is a form of economics instruction in which students participate in a classroom economy that simulates real-world economic activity. Students apply for classroom jobs, run businesses, pay taxes, buy rental properties, and make investments. Students also have the chance to create companies and generate income.

**Cecile M. Kuntz**  
Ottawa Catholic School Board, Orleans, Canada  
695 (Convention Center)

**696**
Building Motivation and Success with Low-Income, Diverse Learners  
(6–8, Preservice and In-Service) Session  
Working with low-income, diverse learners requires understanding, nurturing, high expectations, and creativity. I have worked with this special population for ten years. Hear about and discuss research-based information and strategies you can apply immediately to increase achievement and reduce the impact of their circumstances on their success.

**Donna M. Stumpp**  
Denver Public Schools, Colorado  
505 (Convention Center)

**697**
Predator–Prey Models Meet the Common Core State Standards  
(6–12) Session  
We will examine mathematical models of interactions between humans and two species of fish. Discussion will focus on developing a model through data collection and analysis by using a stochastic simulation, adjusting the simulation to produce more realistic results, and formulating a discrete deterministic model.

**Steven L. Blumsack**  
Learning Systems Institute, Tallahassee, Florida  
**Robert C. Schoen**  
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee  
401/402 (Convention Center)

**698**
Problems That Turn Algebra Procedures into Good Group Discussions  
(6–12) Session  
Tasks that generate group discussion of algebraic procedures are hard to find. I will give sample problems designed to probe understanding of algebraic procedures, and I will use video clips to show how students can be engaged in reasoning, discussion, and use of academic language to gain a deeper understanding than practice alone can give.

**Judith M. Kysh**  
San Francisco State University, California  
108 (Convention Center)
Help Your Students Succeed in a Competitive World

In a global society with rapidly changing technology your students need the right tools to succeed. So take the next step to help them grow—focus on the latest topics for math education at an NCTM Regional Conference. By attending, you and your colleagues will:

- Learn practices central to teaching the Common Core State Standards;
- Discover ways to include 21st-century learning in the math classroom;
- Explore new and effective differentiated instruction methods; and
- Refine your assessment techniques.

Whether you're a classroom teacher, coach, administrator, teacher-in-training, or math specialist, this conference has something for you.
11:00 A.M.–12:00 P.M.

**699**
**Using iPads to Enhance the Mathematics Classroom**  
(6–12) Session  
Technology can help foster reasoning and sense making and motivate students. Come learn how to use free iPad apps to supplement instruction and mathematical understanding. If you have an iPad, bring it.  
Ayanna Franklin  
North Carolina State University, Raleigh  
Emily Thrasher  
North Carolina State University, Raleigh  
Mile High 2 C (Convention Center)

**700**
**Essential Understandings in 9–12 Statistics: Preparing for the Common Core State Standards**  
(9–12) Session  
Explore the NCTM Essential Understandings book for grades 9–12 statistics. We will discuss big ideas that help teachers understand concepts fundamental to implementing the Common Core State Standards statistics and probability standards effectively. We will also discuss some challenges in learning, teaching, and assessing these concepts.  
Stephen J. Miller  
Winchester Thurston School, Pittsburgh, Pennsylvania  
Roxy Peck  
California Polytechnic State University, San Luis Obispo  
Robert Gould  
University of California, Los Angeles, Department of Statistics  
605 (Convention Center)

**701**
**Using Computers Effectively in a High School Mathematics Class**  
(9–12) Session  
Computers can be used to deepen students’ understanding, connections, interest, and engagement with high school mathematics. Learn about ways to use the computer as a vehicle to achieve these things. Topics include programming, computer graphics, Wolfram-Alpha, warm-ups and quizzes using Google Docs, flip-teaching, research, and useful websites.  
Michael B. Herzog  
St. Gregory College Preparatory School, Tucson, Arizona  
102 (Convention Center)

11:30 A.M.–12:00 P.M.

**702**
**Convincing Arguments and Proof with Core Math Tools**  
(Preservice and In-Service) Session  
Explore how Core Math Tools have helped prospective teachers to use mathematics technology well to inspire and produce arguments and proofs and to create related lessons for high school students. Mathematics topics include big ideas and essential understandings of geometry, function, statistics, and proving.  
Rose Mary Zbiek  
Pennsylvania State University, University Park  
107/109 (Convention Center)

**703**
**Preservice Elementary Teachers’ Beliefs about Diversity: Teaching Culturally Relevant Mathematics**  
(Preservice and In-Service) Session  
Equity Strand Presentation  
Learn the results of a study of preservice elementary teachers’ beliefs about diversity and how exploring culturally relevant mathematics (CRM) affected their classroom practice. Discuss why some teachers were more successful with CRM and barriers that kept others from teaching CRM.  
Shelly M. Jones  
Central Connecticut State University, New Britain  
605 (Convention Center)

**704**
**Lessons from the U.S. National Presentation at ICME-12 in Korea**  
(General Interest) Burst  
The U.S. was one of five countries invited to make a National Presentation (NP) at the 12th International Congress on Mathematical Education (ICME-12) in Korea, July 2012. Hear what we learned during the NP, which included a weeklong exhibition, five invited talks on U.S. math education, video clips of U.S. teachers, and short presentations.  
Patrick Scott  
LANL Foundation, Española, New Mexico  
Ann Lawrence  
U.S. National Commission on Mathematics Instruction, Washington, D.C.  
607 (Convention Center)
11:30 A.M.–12:00 P.M.

705
Using Video Study to Improve the Design of Mathematics Lessons
(General Interest) Burst
Learn the essentials of video study, a proven method to enhance your mathematics instruction through iterative lesson design at a pace that matches your busy schedule. Topics include satisfying legal hurdles for classroom videotaping, tips and technical know-how for better video, and maximizing the use of video for lesson enhancement.

Thomas E. Ricks
Louisiana State University, Baton Rouge
Mile High 1 E/F (Convention Center)

706
Calendar Time: Small (Yet Powerful) Changes Strengthen Place-Value Understanding
(Pre-K–2) Burst
Learn how readily implemented changes in counting and recording “days in school” can significantly increase children’s place-value understanding. I will describe a research study examining the impact of introducing Digi-Blocks and other supportive materials during calendar time. Early data show gains in K–2 children’s ten-structured thinking.

Judith L. Fraivillig
Rider University, Lawrenceville, New Jersey
104/106 (Convention Center)

707
Sharing Student Lessons with iBooks Author, iBooks, and an iPad
(Pre-K–5) Burst
See how math lessons were imported into iBooks Author to create iBooks that focus on specific math concepts. An iPad is used to access the lessons in the iBook. This is an innovative way for math supervisors, math coaches, and teachers to share lessons. You will have access to an iBook containing sample lessons.

Larry Osthus
Thinking With Numbers, Cedar Falls, Iowa
Four Seasons 4 (Convention Center)

708
Coaching Fifth Graders to “See” the Standards for Mathematical Practice
(3–5) Burst
See how one teacher used the Standards for Mathematical Practice (SMP) explicitly and embedded them into lessons. Look at before-and-after snapshots of students’ work. With teacher guidance, the students themselves “looked for” examples of SMP in their own work. Once we “saw” what the SMP looked like, we went back and worked problems with this new framework in mind.

Michael O’Connor
Wayland Public Schools, Massachusetts
110/112 (Convention Center)

709
The Hunger Games: Can You Survive the Constructed-Response Arena?
(3–5) Burst
Teachers will learn three strategies combining literature and math to understand and answer constructed-response math questions. This presentation will include student examples and instructional tools, along with activities that support whole-group and small-group instruction.

Lloyd Goldberg
Clark County School District, Las Vegas, Nevada
Ann Moody
Clark County School District, Las Vegas, Nevada
201 (Convention Center)

710
Skyping Problem-Solving Tasks to Improve Fraction Instruction
(3–5, Preservice and In-Service) Burst
Skype technology connected a fifth-grade classroom with preservice teachers to complete fraction problem-solving tasks. These tasks align with the grades 3–5 fraction progressions and mathematical practices for the Common Core State Standards. We will share the process and results involving students’ ability to decompose fractions.

Kim Hartweg
Western Illinois University, Macomb
Bob Mann
Western Illinois University, Macomb
403/404 (Convention Center)
11:30 A.M.–12:00 P.M.

**711**

**Hot Mathematical Questions: Encouraging Proof through Community, Curiosity, and Celebration**  
*(3–8) Burst*

Mathematics has always been advanced by creative and persistent thinkers who see uncertainty as a personal challenge. How can we create in our classrooms similar communities, where students clamor to prove and disprove each other’s conjectures? Learn how to inspire students to generalize, develop and “publish” their own mathematical proofs.

*Sylvia B. Glauster*
The Ancona School, Chicago, Illinois

111/113 (Convention Center)

**712**

**Inquiring Minds Want to Know: Supporting Proportional Reasoning with Warm-Ups**  
*(3–8) Burst*

Using daily class warm-ups can be an opportunity to explore, build, and support student reasoning and sense making; prepare students for new concepts; and build students’ mathematical proficiency. The goal will be to understand how inquiry can be used in short time segments. Examples will come from explorations of proportional reasoning.

*Signe Kastberg*
Purdue University, West Lafayette, Indiana

*Laura Sellars*
Westlane Middle School, Washington Township, Indianapolis, Indiana

*Michelle R. Reel*
Westlane Middle School, Washington Township, Indianapolis, Indiana

603 (Convention Center)

**713**

**Who is 7? The Characteristics of Numbers Project**  
*(3–8) Burst*

Integrate the 21st Century Competencies by investigating the characteristics of numbers. Students work together to become experts through exploration and research of the internal, external, and social/cultural characteristics of a number. Final presentations offer an opportunity to share this knowledge creatively.

*Robert W. Krech*
West Windsor-Plainsboro Schools, Princeton Junction, New Jersey

Mile High 3 A (Convention Center)

**714**

**A Horse of Another Color: Laying the Foundation’s Interdisciplinary Strategies**  
*(6–8) Burst*

The Common Core State Standards’s emphasis on informational texts calls for innovative ways to engage students. Using a short nonfiction passage about Seabiscuit as a springboard, this presentation models an interdisciplinary unit for math, science, social studies, English, and fine arts. Math concepts include rate of change and applying statistical information.

*Michelle Stie-Buckles*
Laying the Foundation, a division of the National Math and Science Initiative, Dallas, Texas

*Bobette Ray*
Laying the Foundation, a division of the National Math and Science Initiative, Dallas, Texas

503/504 (Convention Center)

**715**

**Bursts of Patterns: Our Path to Success in Algebraic Thinking**  
*(6–8) Burst*

Learn how we helped our students be able to consistently and accurately generalize patterns. They build, describe, extend, graph, and generalize patterns with ease. Join us as we share our strategies, and leave with sets of patterns you can use in your own classroom.

*Elizabeth Warren*
Estacada Junior High School, Oregon

*Sally Wood*
Estacada Junior High School, Oregon

Mile High 3 C (Convention Center)
11:30 A.M.–12:00 P.M.

**716**

*Alternative and Creative Assessments in the Math Classroom*

*(6–12) Burst*

We will present various ways to assess students creatively. Going beyond simply grading homework or giving quizzes and tests, we will explore links to art, history, writing, and technology. We will also present ways to administer standard quizzes and exams creatively. Spend thirty minutes with us to discover some new assessment ideas.

Michelle Neely  
Kent Denver School, Denver, Colorado

Melissa Archey  
Jeffco Public School, Evergreen, Colorado

506/507 (Convention Center)

**717**

*Effective Use of Virtual Manipulatives: Ready to Create Your Own?*

*(6–12) Burst*

Can you touch a line? Virtual manipulatives have different capabilities to offer than traditional counterparts cannot. Explore well-established websites of virtual manipulatives and what those websites have to offer you. We will also share a virtual manipulative that we created using GeoGebra.

S. Asli Ozgun-Koca  
Wayne State University, Detroit, Michigan

Michael Meagher  
Brooklyn College–City University of New York

Michael Todd Edwards  
Miami University, Oxford, Ohio

Mile High 1 A/B (Convention Center)

**718**

*Knowing What They Really Know: Alternative Assessments to Motivate*

*(6–12) Burst*

Research findings indicate that alternative assessment methods are not used enough in math departments (Dogan 2011), and high-level tests continue to dominate. Consider essentially assessing students before learning and “testing” while teaching. Explore examples of involving students in determining entry-level instruction points and reviews.

Natalia P. Darling  
University of Cincinnati Blue Ash College, Ohio

Mile High 2 B (Convention Center)

**719**

*Modeling with Linear Functions: Three Ideas in Thirty Minutes*

*(6–12) Burst*

Receive overviews for three problems accessible to grades 6–9 students with a range of ability levels. The problems require minimal preparation and materials. Get an overview of the modeling cycle and techniques to enhance reasoning and communication. Activities include the Lefty–Righty Experiment, Cutting the Rope, and the Border Problem.

Shelley Kriegler  
Center for Mathematics and Teaching, Los Angeles, California

Mile High 4 C/D (Convention Center)

**720**

*Algebra 2 Skills Lab: Building Understanding and Ensuring Success*

*(9–12) Burst*

With more rigorous standards and higher expectations for all students to be college and career ready, interventions must be focused and intentional. Algebra 2 Skills Lab offers “just in time” support to struggling students. We will discuss course design, implementation, necessary resources, student selection, and preliminary results of the course.

Jayne L. Wingate  
Cheyenne South High School/Laramie County School District #1, Wyoming

406/407 (Convention Center)

**721**

*A Math Teacher Visits a Computing and Engineering World*

*(9–12, Higher Education) Burst*

Learn about the Einstein Fellow Distinguished Educator program, followed by sharing in the experiences of a mathematics teacher serving in the Computer and Information Science and Engineering office of the National Science Foundation. We will discuss the new AP CS Principles course and how that relates to mathematics departments.

Deborah G. Britt  
Einstein Fellow Program, CISE Office of the National Science Foundation, Arlington, Virginia

704/706 (Convention Center)
11:30 A.M.–12:00 P.M.

722
Tilings and Tessellations: Using Geometer’s Sketchpad for Investigation and Proof
(9–12, Preservice and In-Service) Burst

Explore translation, reflection, and the merge feature in The Geometer’s Sketchpad to create tilings and tessellations. See how to use geometric concepts in conjunction with Sketchpad to create a lesson that stimulates investigation and ideas for proof about tessellation in the Euclidean plane.

Melissa McAninch
University of Iowa, Iowa City
Taehoon Choi
University of Iowa, Iowa City
Laurentius A. Susadya
University of Iowa, Iowa City

723
Working with K–12 Teachers to Develop Concept-Based Mathematics Curricula
(Preservice and In-Service) Burst

Curriculum development is professional development. We spent the last year working with K–12 educators developing concept-based curricula. Using the work of Lynn Erickson as a guide, teachers created curricula that embody the learning progressions, instructional shifts, and mathematical practices of the Common Core State Standards.

Mary E. Pittman
Colorado Department of Education, Denver
Brian Sevier
Colorado Department of Education, Denver

103/105 (Convention Center)

12:30 P.M.–1:30 P.M.

724
Viral Math Videos: A Hart-to-Hart Conversation
Closing Session by Vi Hart and George Hart
Remarks by NCTM President Linda M. Gojak

Father and daughter, George and Vi Hart make videos in their own styles with the common goal of showing real, awesome, beautiful math. Vi learned some math from George, and George learned about videos from Vi, and you can learn how they create content that educates, inspires, and makes people want to share.

Vi Hart is a full-time mathemusician at Khan Academy and is best known for her mathematical videos on YouTube. She has more than 30 million video views on her YouTube channel, with more than 300,000 subscribers. She has more than 15,000 Twitter followers and more than 29,000 fans on Facebook. Her most popular video, “Hexaflexagons,” is approaching 5 million views.

George Hart is a mathematician and sculptor whose work has been exhibited around the world. Hart’s research explores innovative ways to use computer technology in the design and fabrication of artwork. Previously a research professor in the computer science department at Stony Brook University, recently he has helped to found the Museum of Mathematics and design its initial set of exhibits. He also makes videos that show the fun and creative sides of mathematics.

Vi Hart
Khan Academy, Mountain View, California

George Hart
Mathematics Sculptor, Stony Brook, New York

Four Seasons 2/3 (Convention Center)
Join us in New Orleans for the nation’s largest math education event. More than 700 presentations will offer ideas, tools, and strategies you can immediately apply to help your students grow and succeed. Whether you’re a classroom teacher, coach, administrator, teacher-in-training, or math specialist, NCTM’s Annual Meeting has something for you.

- Learn practices central to teaching the Common Core State Standards.
- Gain practical solutions to transform your classroom into an environment rich in problem solving.
- Discover new and effective methods to incorporate technology in the classroom.
- Get answers to pivotal questions and concerns of new and soon-to-be teachers.

Helping students to develop essential math skills begins with you. This is the math education event you can’t afford to miss!

Visit www.nctm.org/neworleans for up-to-date information and follow us on Facebook, Twitter, LinkedIn, and YouTube.
Do your students see fractions as numbers?

“Presenting problems with plausible numbers set in real-world contexts can awaken students’ intuitive problem-solving abilities for computing with fractions.”
—U.S. Department of Education

Connect fractions to the real world for both students and teachers

• Curriculum with differentiated lessons, manipulatives, and digital resources engage students with the hands-on experience needed to make sense of fractions.

• Professional development provides the support and knowledge teachers need to understand fractions and teach them well.

Visit hand2mind.com/fractions to learn more.

NEW! EXCLUSIVE!
Hands-On Standards®, Common Core Fractions Teacher Resource Guides

Enter To WIN!
Be one of the first to stop by booth #1645 to enter to WIN a Hands-On Standards Book and Small-Group Kit of your choice.*

Need not be present to win; 1 winner per day, for a total of 3 winners.

Visit us at Booth #1645 to enter!

*Excludes Hands-On Standards, Deluxe Edition. Up to a $180.00 value.
You’re in Denver!
Breathe Easy with Math Solutions

Thursday, April 18
10:15–10:45 AM – Math Meets
Jayne Bamford Lynch (Differentiation)
1–2 PM – Author Meet & Greet

3:15–3:45 PM – Math Meets
Nancy Canavan Anderson (Classroom Discussions)

Friday, April 19
3:15–3:45 PM – Math Meets
Jayne Bamford Lynch (Differentiation)

Complimentary Coffee & Snacks Every Day!

5 NEW PUBLICATIONS
2 GREAT WAYS TO RELAX
80+ VITAL MATH RESOURCES

Visit the Breathe Easy Oxygen Bar!

WIN books from our award-winning library!
WIN an Amazon Kindle!

Thursday, April 18 | 11 AM - 12 PM | Marilyn Burns
Lessons Learned from Interviews about Numerical Reasoning
Convention Center, Four Seasons 2/3

Math Reasoning Inventory.
Tips for a Rewarding Annual Meeting and Exposition

• Access speaker handouts at www.nctm.org/planner.
• Become familiar with the layout of the Colorado Convention Center and the Hyatt Regency Denver by reviewing the floor plans on pages 182–185.
• Visit the NCTM Bookstore for the latest NCTM educational resources, and the Member Showcase, where you can pick up free resources and learn more about how NCTM can help you professionally.
• Stop by the Denver Information Booth for information on the Denver area.
• If attending the conference with colleagues, attend different presentations and share your learned knowledge after the conference.
• Silence cell phones during presentations.
• Visit the Exhibit Hall, where more than 200 exhibitors will share the latest educational products.
• The more you participate in the presentations, the more you will get from the conference.
• Tell us about your conference experience by responding to the postconference online survey.
• 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. NCTM will charge a $10 fee for replacement badges.

By registering for the NCTM 2013 Annual Meeting and Exposition, participants grant NCTM the right to use, in promotional materials, their likeness or voice as recorded on, or transferred to, videotape, film, slides, audiotape, or other media.

Research Presession
The Research Presession, jointly sponsored by the NCTM Research Committee and the Special Interest Group on Research in Mathematics Education of the American Educational Research Association, will take place Monday–Wednesday, April 15–17, at the Colorado Convention Center. The Research Presession Registration Area is in Lobby A.

The Research Presession will open with a poster session in Lobby A, beginning at 5:00 p.m. The Opening Session will take place at 7:00 p.m. on Monday, April 15, followed by a welcome reception. Concurrent sessions will begin at 8:30 a.m. on Tuesday, ending with a research poster session. The Wednesday program begins at 8:30 a.m. with a Linking Research and Practice Plenary, followed by concurrent sessions until 4:00 p.m. Registered NCTM Annual Meeting attendees may attend Wednesday’s Research Presession presentations at no extra charge with their badge.

Technology At Your Fingertips

Wi-Fi Access
The Colorado Convention Center offers complimentary wireless access in the lobby and common areas.

Conference App
The NCTM conference app for iPhones and iPads, also available as a mobile Web app for Android, Windows Mobile, and BlackBerry devices, keeps you connected with every aspect of the Annual Meeting. The free app allows you to search sessions, speakers, and exhibits; view the Exhibit Hall floor plan; highlight your favorite presentations; get a Twitter feed update (official Twitter hashtag #NCTMDenver); and rate presentations. Stay up to date with the latest program changes. Visit www.nctm.org/confapp for more information.

Presentation Handouts
Attendees can access available electronic presentation handouts through the conference app and online planner.

Online Planner
The online planner is a great way to search the conference program book, set up your schedule, and download presentation handouts. The online planner is up to date with the latest program changes and presentation information. Visit www.nctm.org/planner.

All Year Long
When you return home, don’t forget to download NCTM’s free Android or iPhone app. The NCTM app gives you 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. You can be up to the minute on NCTM activities, teaching tips, and classroom resources. The new app also includes Facebook and Twitter feed updates. Visit www.nctm.org/nctmmobile/ for more information and to download the app.
The NCTM BuzzHub

Check out the NCTM BuzzHub. This exciting new area has everything “NCTM” all in one convenient location:

- Check your e-mail, or look up speakers and exhibitors at the Internet Station.
- View and play online math strategy games while learning about NCTM’s Illuminations Project and other online resources at Calculation Nation®.
- Listen to NCTM journal editors present short sessions that discuss how to write an article for NCTM journals, become a reviewer, and more at the NCTM Presentation Spotlight Stage. A schedule is available on page 8 and 76 and in the on-site Daily News. A full schedule of BuzzHub presentations is available on page 22.
- Relax, mingle with other attendees, and stay connected with the latest social media updates at the Social Networking Lounge.
- Pick up free take-home activities and resources, sample journals, and more at the Member Showcase. You’ll have the chance to update your membership information, learn more about the benefits, and participate in a prize drawing. Plus, when you join or renew your NCTM membership you will receive a free t-shirt. Supplies are limited.
- Capture your experience at the Green Screen Photo Lounge, Sponsored by Pearson.

The NCTM BuzzHub a new space, with new ideas to help you all the way around. Check us out in the Exhibit Hall during exhibit hours.

Shuttle Bus Service

Attendees who reserved their hotel room through NCTM’s official housing company will receive complimentary shuttle bus service from hotels in the NCTM housing block to the Colorado Convention Center. (Some hotels are within walking distance of the convention center and will not require shuttle bus service.) Routes and schedules will be posted in your hotel lobby. The schedule will be followed as closely as possible. For a shuttle bus schedule, or if you have questions, please visit the shuttle desk located at the shuttle area at the entrance.

Information Booth

The NCTM Information Booth will be in the lobby of the Colorado Convention Center. Local staff will answer your questions. They can 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. At the end of the conference, all lost-and-found items will be turned over to Convention Center Security.

Restaurant Reservations

Explore the fabulous restaurants of Denver. Stop by the Information Desk located in the lobby at the Colorado Convention Center. The friendly staff will be available to offer recommendations and make reservations.

Bag and Coat Check Service

A bag and coat check service is available for you to store your belongings during conference hours for a nominal fee. During program hours, you can check your items at the bag check, located at the Colorado Convention Center, Thursday through Saturday. Please pick up all items each day by closing time; you may not leave items overnight.

First Aid

A first-aid station will be staffed at the Colorado Convention Center during the NCTM program. If you need medical services while in Denver, please check with the hotel concierge for the closest medical facilities. For any medical emergency, call 911 without hesitation.

Note on Sales Tax Exemptions: To qualify for sales tax exemption in the NCTM Bookstore, you must furnish a copy of a Colorado tax exemption certificate, issued by the state, at the time of purchase. The law requires NCTM to keep a copy of the certificate, which we cannot return to you. You must pay with a purchase order, check, or credit card from the school to which the exemption certificate is issued. NCTM cannot accept personal checks, personal credit cards, and cash in conjunction with tax exemption certificates.

The NCTM Bookstore is not equipped to handle shipping from the meeting site. A business center located at each meeting facility is ready to assist you with your shipping needs.
For Your Child’s Safety
Because of the size and nature of the NCTM 2013 Annual Meeting and Exposition, this event is not an appropriate setting for children under 16 years of age. Your hotel concierge will be able to recommend activities available for children while you attend the conference. We appreciate your understanding and cooperation. Children 16 years and over will need to register as nonteaching guests. To register a nonteaching guest, stop by the Registration Area at the Colorado Convention Center.

NCTM Clear Air Act
In accordance with a resolution of the 1978 Delegate Assembly, smoking is permitted only in designated areas.

Your Opinion Counts
Thank you for attending the NCTM 2013 Annual Meeting and Exposition. In the days after the Annual Meeting, you will receive an e-mail asking you to evaluate your meeting experience. Please complete the conference attendee 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.

Exhibit Hall Information
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 can also meet the people who produce these products, get fresh ideas, and see how products work. The hall will be open on Friday from 10:00 a.m. to 6:00 p.m. To give you dedicated time to visit the exhibits, no presentations will take place between 4:30 p.m. and 6:00 p.m. on Friday. Check out the list of exhibits and a map of the Exhibit Hall on pages 192–193.

Exhibitor Workshops
Do you want more in-depth and personal interaction with exhibitors? Plan to attend the Exhibitor Workshops. Held on Thursday, Friday, and Saturday, these workshops offer a wide variety of topics. See the program for Exhibitor Workshop offerings, indicated by the Conference App icon after the presentation number.

Professional Development Books from NCTM—Written by and for Mathematics Teachers
Find these and more books at the NCTM Bookstore located in the Exhibit Hall! Save 25% off the list price on all purchases, including special products!
We thank our sponsors for generously supporting NCTM by offering products and services to enhance your conference experience. Please stop by to thank the following sponsors when you are in the Exhibit Hall.

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McGraw Hill Education

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Once you have joined NCTM, membership in an NCTM Affiliate is a terrific way to round out your professional involvement. Affiliates offer you an opportunity to link with teachers in your state, region, or city for support, professional development opportunities, community outreach, political advocacy, and information sharing. The host Affiliate for the NCTM 2013 Annual Meeting and Exposition and the Affiliates-at-Large are listed below. 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 Web site at www.nctm.org/affiliates/.

Affiliate Information

Colorado Council of Teachers of Mathematics
Laurie Hillman, laurie.hillman@weldre4.k12.co.us

Affiliates-at-Large

Adult Numeracy Network
Lynda Ginsburg, ginsburg@rci.rutgers.edu

Association of Mathematics Teacher Educators
Sandra Cooper, sandra_cooper@baylor.edu

Association of State Supervisors of Mathematics
Charles Watson, chaswatson@sbcglobal.net

Benjamin Banneker Association, Inc.
Mylah Deliford, mdeliford@hotmail.com

Council for Technology in Mathematics Education
Stephanie Cooperman, scooperman@chatham-nj.org

Council of Presidential Awardees in Mathematics
Donald Scheuer, mathguy1@verizon.net

North American Study Group on Ethnomathematics
Blidi Stemn, catbs@hofstra.edu

National Council of Supervisors of Mathematics
Ruth Harbin Miles, smilesalot4u2@yahoo.com

Society of Elementary Presidential Awardees
Martha Short, mshort@ldd.net

TODOS: Mathematics for ALL
Maria Torres, met@edcom.us

Women and Mathematics Education
Dorothy Buerk, buerk@ithaca.edu
Colorado Convention Center
Meeting Room Level
Floor Plans

Hyatt Regency Denver
Third Level
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The National Council of Teachers of Mathematics is the public voice of mathematics education, supporting teachers to ensure equitable mathematics learning of the highest quality for all students through vision, leadership, professional development, and research. With nearly 80,000 members and more than 200 Affiliates, NCTM is the world’s largest organization dedicated to improving mathematics education in prekindergarten through grade 12. The Council’s Principles and Standards for School Mathematics includes guidelines for excellence in mathematics education and issues a call for all students to engage in more challenging mathematics. NCTM is dedicated to ongoing dialogue and constructive discussion with all stakeholders about what is best for our nation’s students.

To learn more about NCTM products or services, including membership benefits and opportunities, visit www.nctm.org, e-mail nctm@nctm.org, or call (800) 235-7566.
This certificate is presented to

in recognition of attendance and participation at the NCTM 2013 Annual Meeting and Exposition

Denver, Colorado • April 17–20, 2013

Linda M. Gojak
President, NCTM
Name of Provider: National Council of Teachers of Mathematics

Educator's Name: ____________________________________________________________________________________

Description of Professional Development Activity: This is a four-day annual meeting sponsored by the National Council of Teachers of Mathematics. More than 700 presentations are offered for teachers of prekindergarten through college. Topics range from administration to geometry, precalculus to statistics.

Note: PD time earned should be the time actually spent in sessions and/or workshops.

<table>
<thead>
<tr>
<th>Date</th>
<th>Session #</th>
<th>Session Title</th>
<th>Presenter Name(s)</th>
<th>Start/End Time</th>
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TOTAL Professional Development Hours Accrued: ___

I certify that the above-named educator accrued the indicated number of professional development hours.

Kichoon Yang
Executive Director, NCTM

Linda M. Gojak
President, NCTM

Please check with your state education agency and local administration to determine whether these conference hours can be used for professional development credits.
NCTM Individual Membership Application

Visit www.nctm.org/membership to learn more and join!

CONTACT INFORMATION (PLEASE PRINT)  All fields marked with an * are required for processing

First Name* ___________________________ Last Name* ___________________________

Please check ONE box for preferred mailing address, but please complete both columns for our records:

☐ Institutional Address  ☐ Home Address

Institution* ___________________________  Address* ___________________________

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Your grade level interest (check all that apply)*:  ☐ PreK–2  ☐ 3–5  ☐ 6–8  ☐ 9–12  ☐ Higher Education

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OPTION 1

Full Individual Membership

Includes a print subscription to one NCTM journal (print version includes online access to a digital edition). Select ONE journal below:

$81 ☐ Teaching Children Mathematics (PreK–6)
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OPTION 2

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Includes a digital edition, including online archives to one NCTM school journal or the research journal. E-Membership does not include a print journal. Select ONE journal below:

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☐ Mathematics Teaching in the Middle School (5–9)
☐ Mathematics Teacher (8–14)

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☐ $22 Mathematics Teaching in the Middle School (5–9)
☐ $22 Mathematics Teacher (8–14)
☐ $47 Journal for Research in Mathematics Education
☐ $20 Mathematics Teacher Educator (an NCTM/AMTE online journal)

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Membership Dues (Option 1 or 2) ............................................................. $

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For 2-year membership, multiply by 2 and deduct 10% .......................... $

For 3-year membership, multiply by 3 and deduct 15% .......................... $

☐ OR SIGN UP FOR THE AUTOMATIC RENEWAL PROGRAM: Check box to auto-renew your membership every year and save 5% off (each year). When your membership is due to expire, NCTM will renew it automatically using the credit card information provided for your most current membership transaction. Visit www.nctm.org/autorenew for details........................................ $

Foreign Postage (if applicable): For mailings outside the U.S., add $18 for the first journal subscription and $4 for each additional print journal subscription per year. For multiyear membership, please multiply foreign postage by 2 or by 3 and add to payment line at right. Note: Multiyear and auto-renew discounts do not apply to foreign postage  .................. $

Mathematics Educational Trust (MET) Support (Your contribution is tax deductible) ......................................... $

TOTAL Payment to NCTM in U.S. Dollars .............................................. $
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Advanced Training and Learning Technology develops 3D math video games for algebra that are more effective at engaging students than Web-based teaching tools. AT&LT math games can be used for student independent study or classroom augmentation and are one of the most efficient algebra remediation tools currently available.

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Booth: 231
Alexandria, Virginia
PH: 703-684-1221 FX: 703-684-2037
www.amstat.org/education/
The American Statistical Association (ASA) is a scientific and educational society that works to improve statistical education at all levels. ASA offers outreach activities and resources such as teacher professional development, student competitions, and publications. Stop by the ASA booth to chat with statistics educators and learn about ASA’s free K–12 statistics education resources.

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Washington, DC
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www.learner.org
Connect your teaching to the Common Core Practice Standards with Learner Express video modules. Preview the update of the popular statistics course Against All Odds, with shorter videos and a coordinated website. Get video programs on DVD, through digital download, or license for course use. Visit www.learner.org or call 1-800-LEARNER.

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Association of Mathematics Teacher Educators
Booth: 1234
San Diego, California
PH: 619-594-3971
www.amte.net
The Association of Mathematics Teacher Educators (AMTE) is the largest professional organization devoted to improving mathematics teacher education. Our members are devoted to enhancing the preservice education and professional development of K–12 teachers of mathematics.
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**Booth: 922**  
Waban, Massachusetts  
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Counting Together: a free app (iPad and iPhone). Develops the essential math skills of addition and subitizing (ability to recognize a certain number of objects without counting). 3-D eye-popping graphics. Automatically changes difficulty as you get better. Up to four players. Endorsed by educational celebrity Bob McGrath.

**BeAnActuary**

**Booth: 734**  
Schaumburg, Illinois  
PH: 847-706-3535 FX: 847-706-3599  
[www.beanactuary.org](http://www.beanactuary.org)

How many times do you answer the question, “What will I ever do with math?” Well, tell them to be an actuary. BeAnActuary.org is the comprehensive website providing information about the actuarial profession. Please visit us at booth 732 to pick up information for your students on building a great career as an actuary.

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Math Olympiads is a nonprofit 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 nonroutine problems. Certificates, medals, or trophies are awarded to all participants. Visit our booth for information, sample problems, and prizes.

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The MIND Research Institute is a neuroscience- and education research–based nonprofit. MIND applies its distinctive visual approach to illustrating math concepts and building problem-solving skills as the basis for innovative, research-proven math education programs for elementary and secondary schools. MIND is committed to helping all children achieve success in school and life. MIND’s ST (Spatial Temporal) Math programs currently reach 475,000 students and 16,000 teachers in 1,375 schools in 26 states. For more information, visit www.mindresearch.net.

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www.nationsreportcard.gov
The National Assessment of Educational Progress is the largest continuing and nationally representative assessment of what U.S. students know and can do.

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PH: 303-758-9611 FX: 303-758-9616
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NROC

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www.nroc.org

NROC is a nonprofit, member-driven project focused on new models of digital content development, distribution, and use. Our collaborative efforts bring open resources for personalized learning to the world. NROC is sustained by institutional members of the NROC Network, a community committed to improving access to high-quality education for all.

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North American Study Group on Ethnomathematics

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The North American Study Group on Ethnomathematics strives to increase teachers’ understanding of the role of diversity and culture in the teaching and learning of mathematics so that all students have optimal opportunities to succeed.

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ORIGO Education is committed to excellence and strives to create resources that inspire and empower both teachers and students. ORIGO’s new Web-based curriculum, Stepping Stones, is written for the Common Core State Standards. This world-class mathematics program seamlessly blends digital and print resources with embedded professional development to develop a deep understanding.

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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.

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Perfection Learning is a leading publisher of traditional and online math curriculum materials. Our Kinetic Math program—comprehensive, interactive digital math textbooks designed for the Common Core State Standards—engages students with hundreds of activities and whiteboards, thousands of interactive problems, audio, video lectures, built-in scoring, and more.

National Science Foundation

Booth: 534
Arlington, Virginia
PH: 703-292-5121 FX: 703-292-9179
www.nsf.gov

To familiarize NCTM members and guests with the White House program, Presidential Awards for Excellence in Mathematics and Science Teaching, a booth sponsored by the National Science Foundation (NSF), will be staffed by previous presidential awardees and an NSF official. Learn more about this most prestigious of national teacher award activities. Booth staff will have materials describing the award and how you can nominate an outstanding mathematics or science teacher for the 2014 competition round. Begun in 1993, and administered by the NSF on behalf of the White House, more than 4,200 mathematics and science teachers have received this award. Awardees travel to Washington to meet with the president and receive a White House certificate and $10,000 award.

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www.neufeldlearning.com

Neufeld Learning Systems provides browser-based technology solutions and customized professional development for reaching all learners of mathematics. UMath X goes deep to address Common Core State Standards content with diagnostic tests for grade 3 to algebra 1, providing timely information on student progress, and allowing instruction to be tailored to individual needs.

New York Times

Booth: 2039
www.nytimes.com

Visit the New York Times booth for reduced home delivery and receive a gift with subscription. Distributed internationally, the New York Times is the largest metropolitan newspaper in the United States. Although nicknamed the “Gray Lady” for its staid appearance and style, it is frequently relied on as the official and authoritative reference for modern events.

NROC

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www.nroc.org

NROC Network, a community committed to improving access to high-quality education for all.
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Boulder, Colorado  
PH: 303-492-6963 FX: 303-492-3352  
[phet.colorado.edu](http://phet.colorado.edu)

The PhET Interactive Simulations Project has developed more than 100 free simulations for teaching and learning science and math ([http://phet.colorado.edu](http://phet.colorado.edu)). Simulations such as Circuit Construction Kit create interactive, gamelike environments that encourage scientist-like exploration. They emphasize the connections to real life, make the invisible visible (e.g., electrons), and include expert visual models.

Presidential Awards for Excellence in Mathematics and Science Teaching  
**Booth: 534**  
[www.paemst.org](http://www.paemst.org)

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the nation’s highest honors for K–12 teachers of mathematics and science (including computer science). PAEMST awardees serve as models for their colleagues, inspiration to their communities, and leaders in the improvement of mathematics and science education. Since 1983, more than 4,200 teachers have been recognized for their contributions in the classroom and to their profession. If you know great teachers, nominate them to join this prestigious network of professionals.

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Saltire Software is the maker of Math Illustrations, the math teacher’s invaluable tool for quickly creating accurate, to-scale drawings for worksheets, tests, and presentations, and Geometry Expressions, the symbolic geometry modeling program that lets students investigate problems with numeric and symbolic representations. Available curriculum materials range from algebra through calculus.

SAT Subject Tests  
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[www.satsubjecttests.org/teachers/](http://www.satsubjecttests.org/teachers/)

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www.trianglecoalition.org

Triangle Coalition administers the Albert Einstein Distinguished Educator Fellowship Program for the Department of Energy in partnership with other participating federal agencies. The federally authorized Einstein Fellowship Program provides a unique professional development opportunity for educators to inform national policy and improve communication between the K–12 STEM education community and national leaders. Fellows spend 11 months working in a federal agency or in a U.S. Congressional office, bringing extensive knowledge and classroom experience to education programs and policy efforts. To learn more about the Triangle Coalition and the Einstein Fellowship Program, visit www.trianglecoalition.org.

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Women and Mathematics Education
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PH: 716-308-3555
www.wme-usa.org

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The winner will be chosen on Saturday April 20 at 10 a.m.
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Would you like to be contacted about a FREE two week trial?
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Complete this coupon and drop it at booth #1931 to enter into the drawing for the $5,000 Education Package.

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This is an advertisement and not a coupon and cannot be used towards additional savings off of the 25% conference discount.
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**NCTM**

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Complete the following and bring to Math Solutions BOOTH #1301 to enter for a chance to WIN!

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School/District ____________________________ Grade __________________________
Address ____________________________________________________________________________
City ____________________________ State __________  Zip Code __________________________
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