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Room 124

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Some speakers on this program have elected to print their e-mail addresses as a means for individual correspondence with conference attendees. NCTM expressly prohibits unsolicited commercial e-mail or unsolicited bulk e-mail, regardless of whether that e-mail is commercial. NCTM does not authorize any use of e-mail addresses beyond personal correspondence.

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 NCTM 2016 Annual Meeting & Exposition—the world’s largest annual meeting for mathematics education, bringing together classroom teachers and school, district and state mathematics education leaders, administrators, mathematics teacher educators, mathematicians, and researchers. You’ll have many opportunities to hear new ideas and approaches that you can take away from the conference to do your part to provide more and better mathematics for all students. We hope you will meet colleagues—both new and familiar—share ideas, and learn new information. The sessions, workshops, bursts, and networking opportunities in the conference will spark your imagination and send you back home eager and energized. Our goal is for you to have the best professional learning experience possible and for you to leave San Francisco with many new ideas, tools, and materials to share with colleagues.

If you are attending your first NCTM Annual Meeting, you’re in for a professional experience unlike any other. To make the most of the conference, be sure to attend one of the Annual Meeting Overview & Orientation sessions to familiarize yourself with everything that’s available. For those of you who are veterans of NCTM conferences, you may want to attend the orientation as well, to learn about new, innovative aspects of this year’s conference.

To support our theme of Building a Bridge to Student Success, the Program Committee has been working for two years to make this a diverse program with presentations covering a wide range of topics. You’ll find special sessions with insights into the implementation and assessment of the Common Core State Standards for Mathematics, sessions on best practices presented by the foremost experts in mathematics education, and you’ll have access to innovation in a variety of settings with new ideas for integrating mathematics into other disciplines in ways that support student learning. And those in their first few years of teaching will want to check out the special New Teacher strand with sessions designed to especially support those who are early in their careers.

The conference doesn’t end when you leave. This is the first NCTM Annual Meeting offering an extended meeting experience, go to annual.nctm.org to find out how you can extend your conference experience.

A conference this size depends on the work of hundreds of volunteers—many of them at the local level. We want to extend our thanks to all of them.

When the conference day is over, join your colleagues and experience one of the world’s great cities. You’re not far from the many attractions of Fisherman’s Wharf where there are breathtaking views of the bay, the Golden Gate Bridge, and Alcatraz. You can visit the beautiful vistas of Pacific Heights, the artistic riches of the Asian Art Museum and the DeYoung Museum, or regular Thursday night adult-only events at the Exploratorium and the Academy of Sciences. Wherever you go and whatever you do, enjoy your time in San Francisco.

Diane J. Briars
President, National Council of Teachers of Mathematics
Pittsburgh, Pennsylvania

Desha L. Williams
Program Committee Chair, Kennesaw State University, Kennesaw, Georgia

Gretchen Muller
Host Affiliate Liaison, California Mathematics Council

Robert M. Doucette
Executive Director, National Council of Teachers of Mathematics

SAN FRANCISCO TRAVEL ASSOCIATION PHOTO
The NCTM 2016 Annual Meeting & Exposition officially begins with the Opening Keynote, starting at 5:30 p.m. on Wednesday, April 13, in the Esplanade Ballroom at the Moscone Convention Center South Building. Presentations on Thursday, Friday, and Saturday begin at 8:00 a.m. each day and are scheduled concurrently throughout the day at both Moscone Center and the Marriott Marquis hotel.

We have made every attempt to offer adequate seating for participants at the Annual Meeting & 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, silence your cell phone during all presentations.

**Annual Meeting Overview & Orientation**

Whether you are new to NCTM or a seasoned veteran, there is something new at the conference for everyone! Hosted by members of the Board of Directors, this session will show you how to maximize your overall conference experience. Learn all the new, innovative aspects this year’s meeting is showcasing or discover something you’ve missed in the past. Find out how to navigate presentations, learn how to use the conference app, and network with other attendees.

**Wednesday**

Presentation #1
4:00 p.m.–4:30 p.m.
Room 134 (Moscone North)

**Thursday**

Presentation #3
7:15 a.m.–7:45 a.m.
Golden Gate A (Marriott)

**Reflection Coves**

New this year! Highlighted and invited speakers will be assigned coves on the second and third floors of the Moscone West building to continue the conversation from their sessions in an informal setting. You must be present at their sessions to receive information about the reflection times and locations for these speakers. Board members, Affiliate Services Committee members, as well as the President and President-Elect will also spend time in the Reflection Coves discussing topics of interest with attendees—or you can just stop by to say hello or for a photo op. There will also be two Math Teachers’ Circle coves, one dedicated to K–8 mathematics and another for 9–16 mathematics.

**Focus Strands**

**Building Capacity: Personal and Collective Professional Growth PCPG**

This strand focuses on stretching yourself as a mathematics professional but also strengthening the profession as a whole. Sessions in this strand will examine topics such as lesson study; professional learning communities, including blogging communities and networking; mathematics knowledge for teachers; enhancing a growth mindset for teachers and students; and growing leaders in the field of mathematics education.

**Instruction and Policies That Promote Equity and Access E&A**

This strand focuses on instruction and policies that promote equity and access for diverse students as defined by race/ethnicity, gender, ability (e.g., low-performing or gifted), bilingual, disabled, and others. Teaching practices and policies will be highlighted that ensure all students have the opportunity to reason and make sense of mathematics and have multiple career path options upon graduation from high school.

**Next Generation Mathematics for ALL NGM**

This strand will focus on mathematics for the future—the mathematics that our students need for the jobs and careers of tomorrow, in particular for fields that incorporate the theme of STEAM—and the opportunities and challenges that this poses for K–12 mathematics. Presentations will highlight the increased importance of modeling, statistics, and other areas of mathematics and will suggest recommendations for changes in the K–12 mathematics curriculum as well as the first two years of collegiate mathematics to ensure that all students are prepared for their futures.

**Principles to Actions: Mathematics Teaching Practices and Research PtA**

The sessions in this strand are aligned to the eight teaching practices from NCTM’s landmark publication. Sessions will be organized into broad categories focusing on establishing goals and progressions; discourse and questioning; fluency, understanding, and evidence of thinking; and productive struggle and problem solving. Additionally, several sessions are dedicated to the research supporting the ideas in Principles to Actions.

**Promoting Productive Dispositions about Mathematics PPD**

Sessions in this strand will address a variety of topics related to productive dispositions ranging from a growth (versus fixed) mindset, motivation, productive struggle, and perseverance to asking probing questions, supporting risk-taking, and encouraging students to believe they can and should dig deeper.
Program Information

**Equity Strand**
The Equity strand features presentations given by the Benjamin Banneker Association, TODOS: Mathematics for ALL, and Women and Mathematics Education.

**Hot Topics**
Current topics in mathematics education vary based on various factors: economics, current events, and politics, and state, regional, national, and international climate, to name a few. Sessions in this strand will be related to the hot topics in mathematics education.

**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.

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

**New Teacher Strand**
The New Teacher strand offers sessions and 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.

Start early with the New Teacher Workshop & Kickoff (presentation #48) on Thursday at 8:00 a.m. and finish with the New Teacher Celebration (presentation #511.6) on Friday at 4:15 p.m. for more fun. Visit www.nctm.org/newteacher for more information.

**Technology**
The sessions in this strand will show how technology can be utilized in the teaching and learning of mathematics.

**Daily News**
Start each morning with the NCTM Daily News, which will include late-breaking news about the NCTM 2016 Annual Meeting & Exposition, as well as program changes and cancellations. The Daily News will be distributed in the lobbies of the Moscone Convention Center and available in the Marriott Marquis.

**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.

**Workshops** (75 minutes) have rooms set with round tables for hands-on work. Workshop participants receive 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. 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:

- Grades Pre-K–2
- Grades 3–5
- Grades 6–8
- Grades 8–10
- Grades 10–12
- Higher Education—university- and college-level issues (including both two-year and four-year institutions)
- Coaches/Leaders/Teacher Educators
- General Interest—applicable to all grades and audiences
- Research
- Exhibitor Workshops
Get the Mathletics Advantage

Inspire confidence in your classroom with an award-winning K-12 math resource that encourages students and delivers results.

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“...There is a 100 percent likelihood that the schools who use Mathletics achieve higher results than schools that do not.”

Dr. Tony Stokes
ACU, 2014

Mathletic achievements from around the world.

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E-Learning solution of the year
Family Choice Award
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“Mathletics has provided our 137 schools with the curriculum, assessment and instructional tools to help our teachers track student success and importantly, our students have started to LOVE math!”

R. Loiacono, School Network Director

www.3plearning.com/usa/mathletics
Using NBA Data to Engage Students

Will Rajon Rondo tally more than 900 assists this season? Is there a formula that can be used to identify all-star players? The NBA season coincides with the school year, and current stats are always available from stats.nba.com. Powerful activities are possible when these stats are used for mathematical modeling. Come see how you can use NBA data to get middle and high school students excited about math.

Getting Started with Math Modeling

Students need to engage in mathematical modeling on a regular basis. Should they do it every day, or is once a semester sufficient? How do you start small and help students succeed without reinventing the wheel? This session will share some modeling activities, provide strategies for using modeling in your classroom, and point you to some of the best modeling resources available online.

Creating an Environment for Student-Centered Instruction

When students are the center of instruction, they are active, engaged, and noisy. Passionate discussion replaces passive absorption. Time passes quickly, and though students will be mentally fatigued, they won’t want to leave so they can keep exploring. Sound too good to be true? Come experience an inquiry-based classroom, and see examples of teacher moves and classroom activities that will make your students the center of attention.
**Highlights**
The Research Conference is free on Wednesday to Annual Meeting registrants.
Annual Meeting Overview & Orientation (Presentation 1)
Opening Keynote (Presentation 2)

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**Get Social**
Stay informed and get connected with attendees by using #NCTMannual on social media.

Conference App
www.nctm.org/confapp

Twitter
@NCTM

Instagram
@NCTM.math

Facebook
www.facebook.com/TeachersofMathematics

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**Registration Hours**
8:00 a.m.–7:00 p.m.

**NCTM Central 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

The NCTM Affiliates’ Regional Caucuses and Delegate Assembly are open to any interested NCTM member. These sessions provide a forum and opportunity for sharing information on emerging issues and offer insight into the ways in which the Council might address issues facing mathematics education and the organization. See Session 4 on page 10 for the Delegate Assembly information. The Regional Caucuses information is below.

2:30 p.m.–4:30 p.m.
Moscone Convention Center
Room: 2014/2016

<table>
<thead>
<tr>
<th>CAUCUS</th>
<th>PRESIDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affiliates-at-Large</td>
<td>Florence Glanfield, University of Alberta, Edmonton, Canada</td>
</tr>
<tr>
<td>Canadian</td>
<td>Marj Farris, (Retired), La Crete, Alberta, Canada</td>
</tr>
<tr>
<td>Central</td>
<td>Jean Lea, University of Indianapolis, Indiana, David Ebert, Oregon High School, Wisconsin</td>
</tr>
<tr>
<td>Eastern</td>
<td>Shawn Towle, Falmouth Middle School, Maine, Kathleen (Taffy) McAneny, West Chester University, Landenberg, Pennsylvania</td>
</tr>
<tr>
<td>Southern</td>
<td>Betty B. Long, Appalachian State University, Boone, North Carolina, Jeremy Zelkowski, University of Alabama, Tuscaloosa, Alabama</td>
</tr>
<tr>
<td>Western</td>
<td>Denise Trakas, Washoe County School District, Reno, Nevada, Jill Sumerlin, (Retired), Tillamook, Oregon</td>
</tr>
</tbody>
</table>

NCTM Gives You More—More Benefits, More Value

Your passion is ensuring your students receive the highest quality math education possible. NCTM provides a personalized, professional membership experience. We can help you:

- Discover new techniques and tools in the **mathematics education journal** that fits your students’ education level
- Inspire your students with **classroom-ready resources** tailored to grade-band needs—elementary, middle, high school, and higher education
- Enjoy readily available **professional development** opportunities relevant to your career goals
- **Save** up to 25% off professional development and 20%–50% on books and digital products.

**Learn More Today!**

at NCTM Central or
at [www.nctm.org/membership](http://www.nctm.org/membership)
Taste some wonderful wines, toast the 2016 NCTM Lifetime Achievement Award recipients, and mingle with mentors, colleagues, and friends on Wednesday evening after the Opening Keynote at the Mathematics Education Trust Wine Tasting. (Tickets can be purchased through registration.)
Build Your Professional Resource Library with New Books from NCTM

SAVE 25%! Conference attendees receive a 25% discount off the NCTM list price on all purchases made in the Bookstore, including special products!* 

Additional Titles to be Released at the Annual Meeting & Exposition
Get them here first!

Developing Mathematical Ideas: Building a System of Tens, Casebook and Facilitators Guide
©2016, Stock #15032 and #15039

On the Money: Math Activities to Build Financial Literacy in High School
©2016, Stock #14589

Annual Perspectives in Mathematics Education 2016
©2016, Stock #15198

Discovering Lessons for the Common Core Standards in Grades 9–12
©2016, Stock #14588

Visit the NCTM Bookstore in the Exhibit Hall to see these and other titles and products on display.

BOOKSTORE AND EXHIBIT HALL HOURS:
Wednesday 10 a.m. – 7 p.m.
Thursday 8 a.m. – 5 p.m.
Friday 8 a.m. – 4 p.m.
Saturday 8 a.m. – Noon

Visit nctm.org/store for tables of contents and sample pages.
For more information or to place an order, call (800) 235-7566 or visit nctm.org/store.

Developing Literate Mathematicians: A Guide for Integrating Language and Literacy Instruction into Secondary Mathematics
BY WENDY WARD HOFFER
How can we integrate literacy instruction authentically into mathematics content to support mathematical understanding? Busy secondary mathematics teachers who seek to respond to the needs of their students and the demands of the Common Core State Standards will welcome this book, which offers lively classroom examples, usable research, and specific ideas and resources. Enrich your students’ understanding of mathematics by attending to reading, vocabulary, discourse, and writing through a workshop model.
©2015, Stock #14522

Putting Essential Understanding of Geometry and Measurement into Practice in Grades 3–5
BY KATHRYN CHVAL, JOHN LANNIN, AND DUSTY JONES
BARBARA J. DOUGHERTY, SERIES EDITOR
Do your students have “concept images” that limit their ideas of shapes to specific examples, oriented in particular ways? Do they confuse the size of an angle with the length of the rays in a drawing of an angle? This book demonstrates how to use multifaceted knowledge to address the big ideas and essential understandings that students must develop for success with geometry and measurement—not only in their current work, but also in higher-level mathematics and a myriad of real-world contexts.
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More Lessons Learned from Research, Volume 2: Helping All Students Understand Important Mathematics
EDITED BY EDWARD A. SILVER AND PATRICIA ANN KENNEY
Applying research to strengthen teaching practice and ensure students’ success in mathematics
More than seventy years of research point to the importance of teaching mathematics for understanding. Successful students actively construct understanding rather than passively receive knowledge. Implications of this fundamental lesson from research are explored in different ways through twenty-four chapters presented in this book. Chapters cover investigations of a wide range of topics, approaches, and settings, and mathematics teachers at all levels will find examples of research that are relevant to the challenges they face.
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More Lessons Learned from Research, Volume 1
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Helps to link classroom teachers to all that original research has to offer
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DON’T MISS!
More Lessons Learned from Research, Volume 2
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DON’T MISS!
Problem Solving in All Seasons, Pre-K–Grade 2
BY KIM MARKWORTH, JENNI MCCOOL, AND JENNIFER KOSIAK
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©2016, Stock #14543
**Adding Talk to the Equation** (Video/Guide)

**Discussion and Discovery in Mathematics**

Lucy West

*Adding Talk to the Equation* helps teachers learn how to skillfully lead math conversations so all students stay in the game, stay motivated about learning, and ultimately deepen their understanding. This video features five case studies filmed in grades 1–6 and shows teachers at various stages in their practice of generating and managing rich mathematics conversations. Lucy emphasizes the progression that occurs as teachers get more comfortable with new talk moves and as they learn to tune in and respond to the math conversations taking place among their students. The companion guide includes transcripts of all of the case studies, with detailed commentary from Lucy.


---

**Well Played** (Series of 3 Books)

*Building Mathematical Thinking Through Number and Algebraic Games and Puzzles in Grades K–8*

Linda Dacey, Karen Gartland, and Jayne Bamford Lynch

Well Played shows you how to make games and puzzles an integral learning component that provides teachers with unique access to student thinking. The twenty-five games and puzzles in *Well Played*, which have all been field-tested in diverse classrooms, contain:

- explanations of the mathematical importance of each game or puzzle and how it supports student learning;
- variations for each game or puzzle to address a range of learning levels and styles;
- clear step-by-step directions; and
- classroom vignettes that model how best to introduce the featured game or puzzle.

Grades K–2 | 2015 | 224 pp/paper | 4Z-1034 | $25.00
Grades 3–5 | 2015 | 234 pp/paper | 4Z-1032 | $25.00
Grades 6–8 | April 2016 | 248 pp/paper | 4Z-1033 | $25.00

Package: 4Z-P323 | $60 (reg. $75) Save $15 when you buy all three!

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**Intentional Talk**

*How to Structure and Lead Productive Mathematical Discussions*

Elham Kazemi and Allison Hintz; Foreword by Megan Franke

*Intentional Talk* provides teachers with a framework for planning and facilitating purposeful mathematics discussions that enrich and deepen student learning.

Grades K–5 | 2014 | 168 pp/paper | 4Z-0976 | $20.00

**Making Number Talks Matter**

*Developing Mathematical Practices and Deepening Understanding, Grades 4–10*

Cathy Humphreys and Ruth Parker; Foreword by Jo Boaler

*Making Number Talks Matter* is about the myriad decisions facing teachers as they make this fifteen-minute daily routine a vibrant and vital part of their mathematics instruction.

Grades 4–10 | 2015 | 212 pp/paper | 4Z-0998 | $23.00

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**Visit us at Booth 932**

25% Conference Discount!
Math is Supposed to Make Sense!
Cathy Seeley
Thursday, April 14, 2016
9:30–10:30 AM / Moscone, 135

Beyond Invert & Multiply: Making Sense of Fraction Computation
Julie McNamara
Thursday, April 14, 2016
9:45–10:45 AM / Moscone, 3008

Math Talk: Mathematical Sense-Making Through Mental Math
Connie Horgan
Friday, April 15, 2016
8:00–9:00 AM / Moscone, 3003

Building a Conceptual Understanding: Solving Systems of Linear Equations
Sheila Yates
Friday, April 15, 2016
1:00–2:15 PM / Moscone, 2003

It Makes Sense: Using Number Lines in K-2
Ann Carlyle
Friday, April 15, 2016
3:30–4:30 PM / Nob Hill C/D (Marriott)

Tool Time! Implementing Tools to Help Students Achieve Number Sense
Lisa Rogers
Thursday, April 14, 2016
8:00–9:00 AM / Moscone, 306

NEW Books!
Visit Booth 911 for fun activities, book raffle and more!
Highlights
Annual Meeting Overview & Orientation (Presentation 3)
Sixty-Seventh Annual Delegate Assembly (Presentation 4)
New Teacher Workshop & Kickoff (Presentation 48)
NCTM’s President’s Address (Presentation 208)

Strands

<table>
<thead>
<tr>
<th>Strands</th>
<th>Presentation Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCPG Building Capacity: Personal and Collective Professional Growth</td>
<td>121, 128, 134.1, 152</td>
</tr>
<tr>
<td>EQUITY Equity</td>
<td>131, 173, 244, 257</td>
</tr>
<tr>
<td>EW Exhibitor Workshops</td>
<td>34.2, 34.3, 34.4, 34.5, 34.6, 34.7, 34.8, 85.2, 85.3, 85.4, 85.5, 85.6, 85.7, 85.8, 134.2, 134.3, 134.4, 134.5, 134.6, 134.7, 134.8, 168.1, 168.2, 168.3, 168.4, 168.5, 168.6, 216.1, 216.2, 216.3, 216.4, 216.5, 216.6, 216.7, 266.2, 266.3, 266.4, 266.5, 266.6</td>
</tr>
<tr>
<td>E&amp;A Instruction and Policies that Promote Equity and Access</td>
<td>30, 83, 85.1, 174, 210</td>
</tr>
<tr>
<td>NCTM Committee</td>
<td>119, 124, 134</td>
</tr>
<tr>
<td>NT New Teacher</td>
<td>48, 162, 188, 224, 247, 266.1</td>
</tr>
<tr>
<td>NGM Next Generation Mathematics for ALL</td>
<td>106, 156, 251</td>
</tr>
<tr>
<td>PtA Principles to Actions: Mathematics and Teaching Practices and Research</td>
<td>13, 63, 158</td>
</tr>
<tr>
<td>PPD Promoting Productive Dispositions about Mathematics</td>
<td>18, 56, 79, 113, 133, 146</td>
</tr>
</tbody>
</table>

Get Social
Stay informed and get connected with attendees by using #NCTMannual on social media.

Conference App
www.nctm.org/confapp

Twitter
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Instagram
@NCTM.math

Facebook
www.facebook.com/TeachersofMathematics

Registration Hours
7:00 a.m.–4:00 p.m.

Exhibit Hours
8:00 a.m.–5:00 p.m.

NCTM Central Hours
8:00 a.m.–5:00 p.m.

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

3 Annual Meeting Overview & Orientation
General Interest Session
Whether you are new to NCTM or a seasoned veteran, there is something new at the conference for everyone! Hosted by members of the Board of Directors, this session will show you how to maximize your overall conference experience. Learn all the new, innovative aspects this year’s meeting is showcasing or discover something you’ve missed in the past. Find out how to navigate presentations, learn to use the Conference App, and take the opportunity to network with other attendees.

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

GOLDEN GATE A (MARRIOTT)

7:30 A.M.–9:00 A.M.

4 Sixty-Seventh 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.

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

YERBA BUENA 9 (MARRIOTT)

8:00 A.M.–9:00 A.M.

5 A Core Teaching Practice—Establishing and Using Goals Effectively
General Interest / All Audiences Session
Formulating clear learning goals sets the stage for everything from planning to instruction to assessment. Both teachers and students need to be able to answer: What math is being learned? Why is it important? What is the learning progression? Examine ideas, issues, and examples of effectively implementing this core mathematics teaching practice.

DeAnn Huinker
University of Wisconsin–Milwaukee

2020 (MOSCONE WEST)

6 Assessment and Grading Practices: Consideration of Academic and Non-Academic Factors
Research Session
Participate in a discussion about determining and designing assessments! In an era of student accountability and high-stakes testing, assessment and grading practices serve as an important responsibility. Learn and discuss research on the challenges and recommendations of determining which factors accurately represent student achievement.

Diana M. Yesbeck
Randolph-Macon College, Ashland, Virginia
303 (MOSCONESOUTH)

7 Build Capacity through Lesson Study
6–8 Session
Investigative. Interesting. Practical. Engaging. These were some of the words teachers used to describe lesson study. Come learn how we made lesson study a reality in an urban middle school. We will watch videos, share best practices, and provide tools to implement lesson study in your school as a means to build capacity and improve teacher practice.

Megan Gundogdu
New York City Department of Education, New York
Nicora Placa
New York University, New York
2001 (MOSCONE WEST)

8 Building Proficiency in Mathematical Modeling
10–12 Session
Using bite-size modeling settings, many features of math modeling can fit into everyday lessons. This helps students make sense of the math they are learning and prepares them for more extensive modeling problems. Classroom-tested modeling problems and solutions will be shared as we move from small modeling problems to the more extensive variety.

Cheryl Gann
North Carolina School of Science and Math, Durham
2007 (MOSCONE WEST)
Developing Productive Dispositions through Technology-Based Problems Involving Algebra and Geometry

Coaches / Leaders / Teacher Educators Session

Productive dispositions about mathematics include confidence in mathematical practices such as using structure and developing viable mathematics arguments. Tasks designed to engage secondary teachers and students in non-routine technology-based problems that integrate algebra and geometry can broaden their confidence in engaging in such practices.

M. Kathleen Heid
Pennsylvania State University

YERBA BUENA 10/11 (MARRIOTT)

Choosing and Using Tasks to Provide Access for All Students

3–5 Session

What makes a mathematical task accessible to ALL students? In this session, participants will examine a variety of fraction tasks, consider the extent to which they provide multiple entry points to a wide range of learners, and discuss ways that teachers can modify tasks and implement them to enhance their accessibility.

Rachael M. Welder
Western Washington University, Bellingham
Amy Hillen
Kennesaw State University, Georgia
Ziv Feldman
Boston University, Boston, Massachusetts

YERBA BUENA 8 (MARRIOTT)

Creating a Learning Environment: How to Plan and Execute

Pre-K–2 Session

Planning and implementation of highly engaging and differentiated lessons can be challenging. Creating equity in a diverse classroom requires intentional planning and implementation of differentiated lessons that are built on the standards and math practices. I’ll show how to use assessments and resources to create strong learning environments.

Teresa A. Ryan
Napa Valley Unified School District, California

YERBA BUENA 12/13 (MARRIOTT)

Disrupting the Failure Mindset in Algebra: Rethinking Assessment Practices

8–10 Session

This session will describe an assessment system that centers on students’ levels of understanding. This system is part of a larger teaching practice that disrupts students’ failure mindset in algebra I, as it holds students accountable for completing and revising assignments and assessments for mathematical understanding.

Dechelle Rasheed
Deer Valley High School, Antioch, California
Mara Landers
Los Medanos College, Pittsburg, California

YERBA BUENA 10/11 (MARRIOTT)
8:00 A.M.–9:00 A.M.

**15**

**Empowering ELLs to Speak: Strategies That Make a Difference**

3–5 Session

Constructing arguments and critiquing the thinking of others is challenging for many students. It is even more so for our English language learners. Come learn concrete strategies to support ELL students in explaining their mathematical thinking and being more active participants in classroom discussions, partner games, and group activities.

Lisa M. Meyer  
Dual Language Education of New Mexico, Albuquerque  
Erin R. Mayer  
Dual Language Education of New Mexico, Albuquerque  
YERBA BUENA 5/6 (MARRIOTT)

**16**

**Expressions to Equations to Functions: Building Algebraic Concepts through Technology**

6–8 Session

Making sense of expressions and equations is fundamental to building algebra concepts. The dominant role of technology to date has been through multiple representations of functions: graphing, tables, and to a lesser extent, computer algebra. We will show how much more is possible by exploiting dynamic interactive technology in support of CCSSM.

Thomas P. Dick  
Mathematics Department, Oregon State University, Corvallis  
Wade Ellis  
West Valley College, San Jose, California  
3012 (MOSCONE WEST)

**17**

**Geometry from Scratch**

8–10 Session

Through the use of Scratch (free, web-based, drag and drop programming environment) we will see how students can informally explore many different Common Core geometry topics, including regular polygons and their properties, the coordinate plane, transformations, and so on. No prior knowledge of programming necessary (just like your students!).

Daniel S. Anderson  
Queensbury High School, New York  
3009 (MOSCONE WEST)

**18**

**Helping Students Develop Productive Dispositions toward Mathematics**

3–5 Session

How can we help students learn to appreciate and enjoy mathematics? How can we help them develop confidence in their ability to learn mathematics? This session will address ways that teachers support students in developing more productive dispositions toward mathematics.

Randolph Philipp  
San Diego State University, San Diego, California  
John Zig Siegfried  
James Madison University, Harrisonburg, Virginia  
2024 (MOSCONE WEST)

**19**

**Goal-Setting and Self-Assessment Strategies to Promote Achievement**

10–12 Session

Teaching students to self-assess and set clear goals enables them to take charge of their learning. Successful strategies and rubrics, adaptable for any class, and examples of student goal setting will be shared. Action research in our professional learning community has resulted in decreasing the achievement and opportunity gaps.

Karen E. Hyers  
Tartan High School, Oakdale, Minnesota  
3005 (MOSCONE WEST)

**20**

**Harnessing the Power of Transformations to Transform Your Teaching**

10–12 Session

The power of transformations has been underutilized in math curriculum. This session shows how to incorporate transformations as a common theme from eighth grade to precalculus. The goal is for students to develop an understanding of the connection between geometry and algebra and to utilize geometric interpretations to simplify complex calculations.

Selena Oswalt  
Eureka Math, Washington, D.C.  
Wendy L. DenBesten  
Eureka Math, Washington, D.C.  
3016 (MOSCONE WEST)
Develop 21st Century Problem-Solving Skills

**EXEMPLARS OFFERS:**

- 500+ engaging problems that connect the Common Core Content Standards and Mathematical Practices.
- Preliminary Planning Sheets serve as the teacher’s guide to the task, outlining math concepts and skills that students will need to know as well as alternative strategies they may use to solve the problem.
- Differentiated tasks for instruction, exploration and formative assessment.
- Corresponding summative assessments include student anchor papers and scoring rationales.
- Assessment rubrics provide teachers with clear guidelines for evaluating their students’ understanding and providing meaningful feedback.
- Student rubrics provide a tool for self- and peer-assessment.
21 How We Can “Attend to Precision” in Classroom Mathematics Discussions

General Interest Session

Explore examples of teacher and student imprecision in classroom mathematics discourse. Discuss types of imprecision that occur in classrooms, the ramifications of this imprecision, and strategies for addressing that imprecision. Learn how to minimize your own imprecision and to view student imprecision as an opportunity to learn mathematics.

Keith R. Leatham
Brigham Young University, Provo, Utah

Blake E. Peterson
Brigham Young University, Provo, Utah

Lindsay Merrill
Brigham Young University, Provo, Utah

305 (MOSCONE SOUTH)

22 Math for Change: A Different Approach to Math PD

Coaches / Leaders / Teacher Educators Session

Learn about an innovative program that an Arizona district initiated to offer job-embedded professional development that deepens teacher’s conceptual understanding of mathematics and creates math leaders who can better serve their students.

Andrea R. Munoz
Casa Grande Elementary School District, Arizona

Rachel A. McCoy
Casa Grande Elementary School District, Arizona

Teena Daniels
Casa Grande Elementary School District, Arizona

307 (MOSCONE SOUTH)

23 MMMMMM (Making Math More Meaningful with Models) in Pre-K–2

Pre-K–2 Session

Too often we push our students directly to abstract algorithms without first giving students the prerequisite experience with models such as empty number lines, number bonds, arrow method, area model, etc. Teachers will learn how to use these models to make math meaningful for their students.

Duane Habecker
Pleasanton Unified School District, California

NOB HILL C/D (MARRIOTT)

24 NAEP and the International Assessments: What Are They Really About?

General Interest Session

Results from the 2015 NAEP, TIMSS, TIMSS Advanced, and PISA assessments have or will be released by the end of 2016. This presentation provides insight into how these assessments compare by examining the content each measures, who participates, and the results reported. There will be an opportunity to ask questions about current and future assessments.

Kim Gattis
American Institutes for Research, Washington, D.C.

Ebru Erberber
American Institutes for Research, Washington, D.C.

135 (MOSCONE NORTH)

25 Pre-K–2 Students as Problem Solvers

Pre-K–2 Session

What is the role of problem solving in PK–2 mathematics? What are essential elements of rich tasks in the PK–2 classroom? In this session, you will explore several robust problem-solving tasks across multiple CCSSM content domains and practice standards. We will also examine student work samples to investigate common strategies and misconceptions.

Jenni K. McCool
University of Wisconsin-La Crosse

Kim A. Markworth
Western Washington University, Bellingham

Jennifer Kosiak
University of Wisconsin-La Crosse

GOLDEN GATE C1 (MARRIOTT)
26 **Problem Structures for Tape Diagrams**  
6–8 Session  
Tape diagrams can model relationships in a wide variety of problems involving the arithmetic operations, fractions, ratios, and percent. We will examine the problem structures most amenable to tape diagram solution and illustrate how tape diagrams can be used to develop and support proportional and algebraic reasoning.  
Nirmala Nutakki  
SUNY Buffalo State, Buffalo, New York  
2011 (MOSCONE WEST)

27 **Productive Math Talk in K–2 Classrooms? Absolutely!**  
Pre-K–2 Session  
Students as young as age five can engage in classroom discussions that focus on explaining their own thinking and responding to the reasoning of others. In this session, participants will learn about talk moves that help teachers manage productive discussions in K–2 math classes. Participants will view video clips of discussions in K–2 classes.  
Nancy C. Anderson  
Consultant, Pembroke, Massachusetts  
YERBA BUENA 7 (MARRIOTT)

28 **Providing Students with the Power to Prove!**  
10–12 Session  
Proof is typically introduced by limiting the students’ responsibilities and scaffolding in new skills, but this gives students a false impression of what it means to prove. In our presentation we present activities that place the burden of proof on students but discuss ways to scaffold their reasoning toward mathematical proof.  
Mark A. Creager  
Indiana University, Bloomington  
Michael Daiga  
Indiana University, Bloomington  
3001 (MOSCONE WEST)

29 **Reflections after Implementing a Problem-Based Mathematics Curriculum**  
8–10 Session  
Thoughts and experiences will be shared from a seven-year period of curriculum research, development, implementation, and assessment which resulted in a problem-based math program adapted from materials written by the teachers at Phillips Exeter Academy.  
Richard Tony  
Solebury School, New Hope, Pennsylvania  
Michele Ament  
Shady Side Academy, Pittsburgh, Pennsylvania  
2005 (MOSCONE WEST)

30 **Response to Intervention: Supporting Students Who Struggle in Mathematics**  
3–5 Session  
Rather than “telling” students how to do mathematics, this session will help you think about ways to build instruction that engages students in “doing math.” There will be an emphasis on teaching mathematics through a multi-tiered system of support such as Response to Intervention.  
Karen S. Karp  
Johns Hopkins University, Baltimore, Maryland  
301 (MOSCONE SOUTH)

31 **Students with Disabilities CAN Do Math**  
General Interest Session  
Students with disabilities need to be part of the conversation as we move toward a focus on the equitable access of high-quality mathematics instruction for all students. Come explore strategies and modifications that allow students with developmental disabilities to access rich mathematics, highlighting the Standards for Mathematical Practice.  
Rachel Lambert  
Chapman University, Orange, California  
Andrew Gael  
Cooke Center Academy, New York, New York  
Danielle Egic  
Cooke Center Academy, New York, New York  
134 (MOSCONE NORTH)
32
Take a Walk on the Random Side
6–8 Session
Learn about the Museum of Math’s 2014 Rosenthal Prize winning lesson! We’ll stand shoulder-to-shoulder and let coin flips lead us forward or back. What will happen? For certain, you’ll learn about randomness, compound events, combinations, and data distributions. Join our random walk! A greater sample size = a stunning display of probability!
Ralph Pantozzi
Kent Place School, Summit, New Jersey
Cheryl Kaplun
Kent Place School, Summit, New Jersey
8:00 A.M.–9:00 A.M.

33
Teaching High School Math through Real-World Applications
10–12 Session
How much should Nintendo charge for the Wii U? Can you really trust your memory? In this presentation, we’ll explore lessons in which students apply mathematics to think critically about the world. Math is a powerful tool, and math class can be a place for the most interesting and important conversations.
Ginny Stuckey
Mathalicious, Austin, Texas
GOLDEN GATE A (MARRIOTT)

34
The Front Lines of Modeling: Bar/Tape Models from Real Classrooms
3–5 Session
Tried your hand at bar modeling? Examine common errors, misunderstandings, and dispositions in actual student work. Leave with a deeper understanding of how children use (and misuse) models. Dr. Kevin Mahoney is a national presenter on Singaporean teaching strategies and will present examples from both his classroom and his own doctoral research.
Kevin Mahoney
Tenacre Day School, Wellesley, Massachusetts
GOLDEN GATE C3 (MARRIOTT)

34.1
What Mathematics Is Truly Important for College and Career Readiness?
Higher Education Session
The essence of the Common Core State Standards for Mathematics is the notion that we want students to be college and career ready. But what mathematics is truly important for students to be college and career ready? This session will explore a new approach to ensuring college and career readiness through modularizing developmental mathematics.
April D. Strom
Scottsdale Community College, Arizona
2018 (MOSCON WEST)
8:00 A.M.–9:00 A.M.

**34.2**  
**Unleash the Power of Games-Based Learning with Mangahigh**  
6–8 Exhibitor Workshop
Discover how Mangahigh ignites passion and engagement so that students learn to love math through an effective games-based environment that builds skills, increases academic achievement, and promotes collaboration through exciting competition. We will offer ideas and strategies to motivate and raise the bar for all math learners in your class.

Mangahigh  
London, United Kingdom

123 (MOSCONC NORTH)

**34.3**  
**Bar Modeling with Math Buddies, the Singapore Math® Online Resource**  
3–5 Exhibitor Workshop
Discover how students learn and use the Singapore Math® bar model in K–5. The foundations set in kindergarten with number sense and number bonds develop into meaningful links in the problem-solving process. Math Buddies, a K–5 digital resource will take your students through the Singapore Math® bar model approach to problem solving.

Marshall Cavendish  
Tarrytown, New York

124 (MOSCONC NORTH)

**34.4**  
**Ask the Right Questions to Increase Achievement and Prepare for the Next Generation Assessments**  
General Interest Exhibitor Workshop
Looking for the answers in the wrong places? This workshop explores research-based techniques to increase cognitive demand in your classroom. You will experience how engaging the math practices, anticipating misconceptions, and shining a light on content will transform your classroom and prepare your students for Next Generation assessments.

Pearson  
Boston, Massachusetts

125 (MOSCONC NORTH)

**34.5**  
**Facilitating Rich and Rigorous Discussion in the Mathematics Classroom**  
General Interest Exhibitor Workshop
This session focuses on ways to facilitate and enhance classroom mathematical discourse. Simulated lessons provide opportunities to practice questioning strategies, giving attendees tools and techniques they can immediately use to manage conversations, evaluate student responses, and elevate the rigor of discourse to boost college and career readiness.

Curriculum Associates  
North Billerica, Massachusetts

130 (MOSCONC NORTH)

**34.6**  
**HP Prime: A Breakthrough in Mathematics Education Technology!**  
10–12 Exhibitor Workshop
Here’s your chance to get acquainted with HP Prime: the app-based, full-color graphing calculator with a multi-touch, gesture-driven user interface. You will receive a free copy of the virtual HP Prime for PC at the end of the session. Come experience the simplicity and power of HP Prime, pinch to zoom on a graph, a table of function values, and more.

HP Inc.  
San Diego, California

122 (MOSCONC NORTH)

**34.7**  
**What’s Your Math Problem!?! Rich Problem Solving to Support Today’s Standards**  
General Interest Exhibitor Workshop
Come learn how to evaluate and create rich tasks as well as how to support students as they develop their toolbox of effective problem-solving strategies. Easy-to-use resources to support the Standards for Mathematical Practice will be shared. Participants will also receive hands-on materials and participate in a drawing for free resources.

Teacher Created Materials  
Huntington Beach, California

120 (MOSCONC NORTH)
8:00 A.M.–9:00 A.M.

34.8 General Interest Exhibitor Workshop

Using NBA Data to Engage Students

Will Rajon Rondo tally more than 900 assists this season? Is there a formula that can be used to identify all-star players? The NBA season coincides with the school year, and current stats are always available from stats.nba.com. Powerful activities are possible when these stats are used for mathematical modeling. Come see how you can use NBA data to get middle and high school students excited about math.

Discovery Education
Silver Spring, Maryland

121 (MOSCONENORTH)

8:00 A.M.–9:15 A.M.

35 6–8 Workshop

A Hands-On Approach to Operations and Equivalent Expressions

The Lab Gear manipulatives help students transition from numbers to variables, and from the concrete to the abstract, through activities that promote an understanding of operations: the distributive law, combining like terms, factoring, and so on. This is a necessary prerequisite to understanding equivalent expressions, a key concept in middle school.

Henri Picciotto
MathEducationPage.org, Berkeley, California

3022 (MOSCONENORTH)

36 3–5 Workshop

Bridging Math and Science through Elementary Engineering

How does math add meaning to science? Why is science essential to engineering? Come be a civil engineer and test bridge models, graph your data, and use what you learned to design a strong, stable bridge. Find out how the three disciplines of math, science, and engineering depend upon each other and together lead to a powerful learning experience.

Chantal Balesdent
Engineering Is Elementary, Boston, Massachusetts

308 (MOSCONESOUTH)

37 10–12 Workshop

Building a Whole School Foundation for Mathematical Rigor

Coaches / Leaders / Teacher Educators Workshop

How do we design and implement strategic, focused professional development that ensures movement toward rich mathematical opportunities for all students? This session will provide you with the content and structures you need to lead your teachers into the world of rigorous mathematics in a cohesive, sequential format.

Patricia Stephens-French
Canyons School District, Sandy, Utah
Jennifer Throndsen
Utah State Office of Education, Salt Lake City

YERBA BUENA 3/4 (MARRIOTT)

38 10–12 Workshop

Conceptual Understanding to Procedural Fluency: Reversing Your Ideas of Inverse

The concept of inverse function is a fundamental mathematical idea. Many students miss the concept and develop misconceptions about inverses because the focus in classrooms has been on procedures. Embedding inverse functions in meaningful contexts supports students in developing robust understanding that can be applied across function types.

Barbara B. Kuehl
Mathematics Vision Project, Salt Lake City, Utah

2016 (MOSCONENORTH)

39 Pre-K–2 Workshop

Developing Fact Fluency with Understanding—Not Gimmicks!

Fluency is more than memorization of isolated facts. Students need to see connections between facts. They need visual models to help form a “mind picture” that connects to a thinking strategy. This session will utilize powerful visual aids and games that help students to master the basic addition and subtraction facts—with understanding!

James Leslie Burnett
ORIGO Education, St. Charles, Missouri

302 (MOSCONESOUTH)
40 Dive into Modeling: The Mathematics of Sustainability
10–12 Workshop
Engage your students in modeling problems that evolved from a math teacher’s field experience on the coast of Virginia. We will explore sustainability topics such as measuring biodiversity, how to weigh your fish with a ruler, and fish population models. Mathematical topics include data analysis, logarithmic, exponential, and recursive functions.

Maria L. Hernandez
North Carolina School of Science and Mathematics, Durham
Taylor Gibson
North Carolina School of Science and Mathematics, Durham

41 Engaging Children with Literature and Improving Discourse in the Classroom
Pre-K–2 Workshop
This workshop will explore five practices that promote mathematical discourse in the elementary classroom. Learning experiences with fractions and measurement will be used to actively engage workshop participants in firsthand use of these practices while modeling teacher and student interaction.

Monique C. Lynch
Walden University, Minneapolis, Minnesota
Mel Griffin
Walden University, Minneapolis, Minnesota

42 Get on Board with GeoGebra!
8–10 Workshop
This workshop is aimed toward novice users of GeoGebra. Bring a device loaded with GeoGebra for a hands-on experience where you will learn the basics of sketch design and operation illustrating the versatility of GeoGebra in the classroom. It’s not just for geometry—algebra teachers will leave with at least one sketch they can’t wait to use!

Suzanne R. Harper
Miami University, Oxford, Ohio
Dana C. Cox
Miami University, Oxford, Ohio

43 Literature and Manipulatives: Use BOTH to Teach the Standards
6–8 Workshop
Literature enlivens math concepts and invites understanding. Manipulatives turbo-charge the learning by making it experiential. In this fast-moving hands-on session, author Schwartz and manipulatives expert Moore show how books + manipulatives = a broader understanding of exponents, scaling, ratio, proportion, patterns, and structure.

David M. Schwartz
Author, Oakland, California
Sara Delano Moore
ETA hand2mind, Vernon Hills, Illinois

44 Math in the Moment: Exploring Number in Early Childhood
Pre-K–2 Workshop
In this session, participants will consider how our youngest learners explore math concepts. What does math learning look like in the early years? How does learning in younger grades set the foundation for math in the elementary years and beyond? This session will include video of PK/TK classrooms and hands-on math activities.

Barbara Chisholm
San Francisco Unified School District, California
Son-Hui (Sonny) Wong
San Francisco Unified School District, California

45 Math Mistakes and Error Analysis: Diamonds in the Rough
6–8 Workshop
Explore why error analysis can help drive our instruction, curb student misconceptions, and strengthen formative assessment. Math mistakes are a valuable window into student thinking. We will turn student mistakes into free lesson ideas connected to the Common Core and opportunities for ongoing learning.

Andrew Stadel
Tustin Unified School District, California
8:00 A.M.–9:15 A.M.

**46**
**Motivating the Unmotivated: Access to Learning**

6–8 Workshop

Participants will explore ways to change traditional tasks to tasks that actively engage all students in rigorous mathematics, regardless of their achievement level. Aligned with the tasks are techniques to motivate students to do the tasks and discuss resulting generalizations. Establishing a positive classroom environment will be included.

Barbara J. Dougherty
University of Missouri, Columbia
Lisa G. Bendall
Sigsbee Charter School, Key West, Florida

2006 (MOSCON WEST)

**47**
**My New BFF, the Number Line!**

3–5 Workshop

Come and learn why the number line is my BFF. Learn to intergrate manipulatives with the number line for deeper understanding. Participants will learn how to address every grades 3–5 Common Core standard involving a line. Hands-on activities and technology resources to follow the progression of the number line are an intergral part of this presentation.

Keysha G. McIntyre
Fulton County Schools, Atlanta, Georgia
Lauri Susi
Conceptua Math, Petaluma, California

310 (MOSCON SOUTH)

**48**
**New Teacher Workshop and Kickoff**

Coaches / Leaders / Teacher Educators 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 other early career teachers and those still in school to learn some strategies for addressing your most pressing problems. We’ll have prizes, and good ideas! All welcome.

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

3011 (MOSCON WEST)

**49**
**Oh, the Math You’ll Know!**

Pre-K–2 Workshop

This games workshop focuses on activities for centers, small group and guided math stations that teach the following Common Core concepts: counting and cardinality, number sequences to 20 and 100, counting forward from a number, understanding properties of + and −. Easily found number lines, dice, multi-sided dice to 20, and 0–9 to build place value will be used.

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

310 (MOSCON SOUTH)

**50**
**PR1ME: PD-Embedded Program**

Coaches / Leaders / Teacher Educators Workshop

How is professional development embedded in a program to ensure teachers get the necessary guidance, help, and direction to teaching more and better mathematics? Professional development is key to great teaching and learning in the classroom, but since time taken to attend PD sessions is a major concern, the ideal solution is to receive PD with each lesson.

Yueh Mei Liu
Scholastic International, Singapore

3018 (MOSCON WEST)

**51**
**Statistical Significance: What Is It?**

6–8 Workshop

Get ready to experience a task that shows how student expectations in statistics change as students move from middle into high school. Participants will engage in a hands-on activity that follows the progression of the CCSSM statistics standards. Leave the presentation with activities ready to be used immediately.

Jeff Ziegler
Brookhill Institute of Mathematics, Waukesha, Wisconsin
Sara Brown
Brookhill Institute of Mathematics, Waukesha, Wisconsin
Paige Richards
Brookhill Institute of Mathematics, Waukesha, Wisconsin

3002 (MOSCON WEST)
8:00 A.M.–9:15 A.M.

52  
**Tool Time! Implementing Tools to Help Students Achieve Number Sense**  
Pre-K–2 Workshop  
This hands-on session will unravel the sequence of many teaching tools that can be used to support young students in learning number sense. Activities will be explored as we take a look at a variety of tools including ten-frames, 100s charts, number paths, and lines. The progression is designed to deepen mathematical understanding and reasoning.  
Lisa K. Rogers  
Math Solutions, Sausalito, California  
Diane Reynolds  
Math Solutions, Sausalito, California  
306 (MOSCONIE SOUTH)

53  
**Touching Screens or Touching Objects: Which Is Better and When?**  
3–5 Workshop  
Concrete manipulatives have been used in classrooms for many years. Recently, digital manipulatives have become much more common. When is it important to use physical manipulatives, and when do digital manipulatives offer advantages? Come and discuss the affordances and costs of touchscreens versus physical objects.  
Carla E. Strickland  
University of Chicago, Illinois  
Kathryn M. Rich  
University of Chicago, Illinois  
Catherine A. Donaldson  
3006 (MOSCONIE WEST)

54  
**Two-Way Frequency Tables: Teaching a New Statistics Standard Conceptually**  
8–10 Workshop  
CCSSM asks students to investigate patterns of association in bivariate categorical data by creating and interpreting two-way frequency tables and constructing viable arguments. Attendees will deepen their knowledge of two-way tables in an engaging presentation and leave with conceptually driven lesson resources they can use with their students.  
Chase L. Orton  
Center for Mathematics and Teaching, Los Angeles, California  
Shelley Kriegler  
Center for Mathematics and Teaching, Los Angeles, California  
2003 (MOSCONIE WEST)

54.1  
**Focus on Visual Representations: A Gold Mine for Reasoning and Sense Making**  
6–8 Workshop  
President’s Series presentation  
Visual models promote mathematical habits of mind and interaction that provide access and mathematical power to a wide range of student backgrounds and age levels. Participants will be challenged to represent and solve some number sense and geometry problems using only visual representations.  
J. Michael Shaughnessy  
Past President, National Council of Teachers of Mathematics; Portland State University, Oregon  
GOLDEN GATE B (MARRIOTT)

55  
**Visualizing Mathematics Concepts: A Key to Making Connections**  
8–10 Workshop  
Making connections, both within a concept and between concepts, is an important part of developing understanding. Discovering concepts through visual representations can provide a powerful entry point into making these connections. We’ll explore a variety of tasks that can engage high school students to “see” the mathematics.  
Marc Garneau  
Surrey School District, Canada  
3008 (MOSCONIE WEST)
**56**  
**PPD**  
**Abracadabra: Was That Really Magic?**  
**General Interest Session**  
In order to build math competence, we must first build math curiosity. Participants in this session will explore “magic” as a tool to cultivate the desire to grapple with math in everyday encounters. By providing opportunities for students to wonder, teachers can reduce math anxiety and increase mathematical understanding.  
Jessica N. Hiltabidel  
Center for Inspired Teaching, Washington, D.C.  
Monisha Karnani  
North Carolina New Schools, Raleigh  

**301 (MOSCON南 SOUTH)**

**57**  
**A Flipped-Traditional Teaching Hybrid to Optimize Time in Calculus I**  
**Higher Education Session**  
Do you struggle with covering all the material without overwhelming students in your introductory college calculus class? This session will offer classroom-tested strategies for balancing flipped teaching with traditional methods to gain class time. Tools, technology, time and lesson structure, activities, and students’ feedback will be discussed.  
Jessica Pfeil  
Fairfield University, Connecticut  

**2022 (MOSCON南 WEST)**

**58**  
**Already Flipping—How Do You Make It Better?**  
**8–10 Session**  
Are you already flipping? Do you understand how the technology works but feel that something is missing? We will use hands-on examples to model Common Core topics in geometry and algebra, demonstrating how to effectively use class time to check for understanding. We will provide examples related to practice standards, technology, and class strategies.  
Shelly K. Lindsey  
Lake Forest High School, Illinois  
Kyle Wilhelm  
Lake Forest High School, Illinois  

**2001 (MOSCON南 WEST)**

**59**  
**Children Living in Poverty Can Solve Common Core OA Word Problems**  
**Pre-K–2 Session**  
Children in kindergarten-grade 2 from backgrounds of poverty and non-native speakers of English can solve the ambitious types of word problems in the Operations and Algebraic Thinking (OA) domain of the Common Core. The learning path that the children experienced, and helpful relationships among the OA standards will be described. Participants will discuss how children represent and solve with math drawings.  
Karen C. Fuson  
Consultant, Fallbrook, California  
Steven T. Smith  
Self-Employed, North Hills, California  

**YERBA BUENA 10/11 (MARRIOTT)**

**60**  
**Diving Deeper into Decimals**  
**3–5 Session**  
How do you build a strong understanding of decimals so that computation makes sense? What is involved in teaching standard 5.NBT.7 that will ensure student concept attainment? Participants will discover how place value, estimation, and an understanding of decimal notation will build a strong foundation that will lead to successful computation.  
Kelly Krownapple  
Howard County Public Schools, Columbia, Maryland  
Maria Merrill  
Howard County Public Schools, Columbia, Maryland  

**YERBA BUENA 12/13 (MARRIOTT)**

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**Download the mobile conference app to view sessions, create a schedule, network with attendees, and much more! Search “NCTM Annual Meeting” in the App Store and Google Play.**
9:30 A.M.–10:30 A.M.

61 Exploring Fraction Equivalence through Complex Fractions
6–8 Session
Join us and explore different ways to model and interpret complex fractions to identify equivalent fractions. Find out how students manipulated and transformed complex fractions into equivalent fractions and used this experience to improve their understanding of fraction equivalence.
Elif Safak
Illinois State University, Normal
Jennifer M. Tobias
Illinois State University, Normal

3009 (MOSCONE WEST)

62 Facilitating Rich and Rigorous Discussion in the Mathematics Classroom
3–5 Session
This session focuses on ways to facilitate and enhance classroom mathematical discourse. Simulated lessons provide opportunities to practice questioning strategies, giving attendees tools and techniques they can immediately use to manage conversations, evaluate student responses, and elevate the rigor of discourse to boost college and career readiness.
Gladis Kersaint
University of South Florida, Tampa

3003 (MOSCONE WEST)

63 From Principles to Actions: Research You Can Use
General Interest Session
NCTM recently published two volumes that compile useful and useable research on mathematics teaching and learning. This talk will provide a glimpse of some of the research featured in these volumes related to equitable teaching practices and the teaching and learning of important mathematics content and core mathematical practices.
Edward A. Silver
University of Michigan, Ann Arbor

2024 (MOSCONE WEST)

64 Hour Two—What Follows the “Hour of Code”?
10–12 Session
The “Hour of Code” is a worldwide initiative that introduces students to coding with the hopes of sparking an interest in computer science. But if it works—then what?! Come to learn a variety of activities (many of which are free) to help students continue their exploration into this exciting field.
Martin Funk
New Trier High School, Winnetka, Illinois
Julie Bar
New Trier High School, Winnetka, Illinois

2005 (MOSCONE WEST)

65 How Good Are U.S. Students in Math? Fact and Fiction
General Interest Session
This session explores the conflicting mathematics results from the TIMSS, PISA, and NAEP assessments over the last fifty years. Examples of assessment items where U.S. students do well and where they struggle will be presented along with options for using assessment items to promote discourse in the classroom.
Peter Kloosterman
Indiana University, Bloomington
Mark A. Creager
Indiana University, Bloomington

GOLDEN GATE A (MARRIOTT)

66 How to Engage Students in a Mathematics Discussion
8–10 Session
Want a guaranteed response in the classroom? Try this: “Tell which problem you don’t like and why.” The right question stimulates conversation. This presentation discusses how to set tone with a growth mindset, provides examples of teacher questions and responses to encourage conversation, and offers discussion tools to encourage student discourse.
Kathleen Strange
College Park High School, Pleasant Hill, California

3016 (MOSCONE WEST)
67
Interpreting Mathematics Communications Standards: Relating Policy, Pedagogy, Communication, and Understanding
Research Session
Meaningful discourse is a key aspect of effective teaching and learning, and this discourse is used both to acquire and assess math understanding. A study of teachers in Denmark indicates that forms of math communication, and resulting student understanding, used in classroom curricula depend on educational policy and teachers’ ideas about pedagogy.

Matthew D. Reames
University of Virginia, Charlottesville

307 (MOSCONE SOUTH)

68
It’s All about the Task!
Pre-K–2 Session
Participants will glimpse inside K–2 classrooms to see the impact that mathematical tasks, small group instruction, lesson debriefs, and formative assessments have on the development of number sense and mathematical reasoning throughout a year. Video clips, work samples, and interviews will be used to highlight this journey. K–2 tasks provided.

Loria A. Allen
Alabama Math, Science, and Technology Initiative, University of Alabama in Huntsville

YERBA BUENA 5/6 (MARRIOTT)

69
Jumps and Leaps: Number Lines, Number Sense, and Solving Problems
3–5 Session
There are many advantages to using the number line model for building students’ number sense. Learn more about this important representation and how it supports students’ math understanding. This session will provide participants opportunities to learn the math behind the number line and obtain easy-to-implement number sense activities.

Jessica F. Shumway
Utah State University, Logan, Utah

GOLDEN GATE C1 (MARRIOTT)

70
Lunchroom Ladies, Truck Drivers, and Native American Beadworkers: Mathematical Modelers
6–8 Session
The session shares mathematical models built by students in middle grades as they analyzed tasks developed by teachers. Teachers used the lived work experiences of head cooks, truck drivers, and Native American beadworkers to design tasks that required the use of mathematical modeling. We share work samples and reflections from students.

Nirmala Naresh
Miami University, Oxford, Ohio
Lisa Poling
Appalachian State University, Boone, North Carolina
Tracy Goodson-Espy
Appalachian State University, Boone, North Carolina

2007 (MOSCONE WEST)

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Miami University, Oxford, Ohio
Lisa Poling
Appalachian State University, Boone, North Carolina
Tracy Goodson-Espy
Appalachian State University, Boone, North Carolina

2007 (MOSCONE WEST)
9:30 A.M.—10:30 A.M.

71 Making It Work! Aligning Math IEP Goals with Math Practices
General Interest Session
How are needs of struggling learners and students with Individualized Educational Programs (IEPs) addressed in math classrooms? Howard County, Maryland, schools use a transformative tool created in partnership with math and special education teachers and leaders. Learn how one tool has shifted IEP goals from low-level skills to high-cognitive-demand processes. Finally, a tool that unites us!

Joyce E. Agness
Howard County Public School System, Ellicott City, Maryland
Kym Craig
Howard County Public School System, Ellicott City, Maryland
Bill Barnes
Howard County Public School System, Ellicott City, Maryland

72 Making the Mathematical Practices Routine
3–5 Session
Today’s classrooms are full of routines. We often think of routines as being used for organizational purposes, but routines can also be used to develop the Standards for Mathematical Practice described in the Common Core. Come and learn some easily implemented routines that will help your students become proficient with the mathematical practices.

Joann Barnett
Missouri State University, Springfield
Ann McCoy
University of Central Missouri, Warrensburg
Emily Combs
Clinton Public Schools, Missouri

73 Math Content Professional Development—Focus on Understanding
Coaches / Leaders / Teacher Educators Session
What’s new about Common Core math? The word “understand” is on 72 of its 93 pages. What’s new is that students must understand it thoroughly, use it fluently, and apply it with confidence. Teacher content knowledge is essential. Teachers who don’t understand math well can’t teach for understanding. A PD content model will be presented.

Richard Bisk
Worcester State University, Massachusetts

74 Math Is Supposed to Make Sense!
General Interest Session
President’s Series presentation
Helping students develop mathematical habits of mind may be the most important thing we do. How can every student learn to build numerical, spatial, and logical reasoning? Let’s help them expect math to make sense—even demand that it make sense—both in what they learn and in what they and others do. Let’s help them see that math is supposed to make sense!

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

Visit NCTM Central—connect with peers in the Networking Lounge, renew your membership, meet with The Math Forum staff, and shop the latest titles at the Bookstore!
76 Parent Partnerships: Collaborative Efforts to Promote Students’ Mathematical Thinking

3–5 Session

Learning does not just happen in school. Parents can be powerful allies in their children’s education. In this session, we share ways we have included and engaged parents around students’ mathematical thinking and provide a space for participants to share and develop ideas for authentic family engagement in supporting mathematics learning.

Carolee Koehn Hurtado
UCLA Mathematics Project, Los Angeles, California

Brandon McMillan
UCLA Mathematics Project, Los Angeles, California

Karen Recinos
UCLA Mathematics Project, Los Angeles, California

NOB HILL C/D (MARRIOTT)

77 Problems of the Month: Problem Solving for ALL

General Interest Session

This session introduces Problems of the Month (POMs)—non-routine problems that engage K–8 students in extensive inquiry and exploration of mathematical concepts, expanding their reasoning skills, problem-solving strategies, and perseverance. Come see how POMs can help build a schoolwide culture of mathematical inquiry.

Trisha A. Bergthold
Casa di Mir Montessori School, Campbell, California

Ariadne Georgiou
Casa di Mir Montessori School, Campbell, California

Catherine Williams
Casa di Mir Montessori School, Campbell, California

2011 (MOSCONEx WEST)

79 Snorkelers to Scuba Divers: Engaging Deep-Thinking Brains in Mathematics

General Interest Session

Developing deep-thinking brains in mathematics starts early and is strongly associated with engaging experiences in the classroom. This session will explore the latest research on student engagement in mathematics and how to design classrooms that unlock students’ minds to promote deeper thinking (scuba divers) in mathematics.

John T. Almarode
James Madison University, Harrisonburg, Virginia

134 (MOSCONEx NORTH)

80 Strategies and Scaffolds: Bridges to Understanding for Struggling Math Learners

6–8 Session

Students with LD, ADHD, and executive function weaknesses need alternative approaches in order to access the math curriculum. We will define the developmental factors that affect math, discuss the ways different types of learning problems affect the acquisition of math skills, and share differentiated math learning strategies.

Joan L. Steinberg
Institute for Learning and Development and Research ILD, Lexington, Massachusetts

Bethany N. Roditi
Institute for Learning and Development and Research ILD, Lexington, Massachusetts

3001 (MOSCONEx WEST)

Visit the NCTM Bookstore and save 25% off the list price of all publications and specialty items!
Introducing
A new K–5 intervention program

Bridges Intervention provides targeted instruction and support, addressing Tier 2 and Tier 3 within the RTI framework. Each volume contains activities, games, and practice pages that can be used for re-teaching key numeracy skills and concepts. Placement and progress monitoring assessments are included.

To learn more, stop by The Math Learning Center booth or visit the link below.

mathlearningcenter.org/intervention
9:30 A.M.–10:30 A.M.

81
The Art of Engineering for Elementary Grades
Pre-K–2 Session
As our society evolves, more engineering challenges will develop that need to be addressed. Children need to be engaged in the process of solving challenges. Our presentation is designed to introduce engineering to younger children with the hope that it inspires them to become engineers themselves while developing math, science, and art skills.

Peter Nosalik
Roylco Limited, Kitchener, Canada

GOLDEN GATE C3 (MARRIOTT)

82
The Matrix: A Mathematical Thriller
10–12 Session
Matrices are not only useful in solving systems of equations. Learn to teach matrix operations through real-world applications such as transportation networks, creating and breaking codes, and programming video games.

Pam Goodner
Eureka Math, Washington, D.C.

3005 (MOSCON WEST)

83
Using Identity and Agency to Frame Equitable Teaching Practices
General Interest Session
This session uses vignettes and the voices of students and teachers to frame the Access and Equity Principle. Mathematics identity and agency serve as the framework for equitable teaching practices. Equitable teaching practices has significant implications for the eight Mathematics Teaching Practices discussed in Principle to Actions.

Robert Q. Berry
University of Virginia, Charlottesville

3007 (MOSCON WEST)

84
Video Club: Creating Vision, Pushing Beliefs, and Supporting Teacher Communities
General Interest Session
Ever wonder how to discuss video with colleagues? Experience the power of community by doing math, seeing video, and participating in a facilitated discussion centered on student strengths. Hear how our teacher-facilitated Video Club builds a common vision of an equitable math classroom for teaching communities through pushing on teacher beliefs.

Angela Torres
San Francisco Unified School District, California
Noam Szoke
San Francisco Unified School District, California
Alison Ellsworth
San Francisco Unified School District, California

303 (MOSCON SOUTH)

85
Visualizing Instructional Equity
Coaches / Leaders / Teacher Educators Session
Mathematics teachers dismiss the relevance of equity in the classroom because they view mathematics as a culture-free subject. Teachers and leaders in the mathematics education community must value the cultural and lived experiences of all children. Participants will engage in discussing three cases they may use to explore issues related to equity.

Cynthia E. Taylor
Millersville University, Pennsylvania
Christa Jackson
Iowa State University, Ames, Iowa
Kelley E. Buchheister
University of South Carolina, Columbia

305 (MOSCON SOUTH)
9:30 A.M.–10:30 A.M.

85.1 E&A Mathematics Teaching as Subversive Activity: Common Core, Social Justice, Creative Insubordination

Real teaching requires more than just knowledge of content, pedagogy, or students. Using examples from teachers who are successful at negotiating the politics of such things as racism, language policies, and high-stakes education, this session offers knowledge and tools for teachers to reclaim the profession.

Dr. Rochelle Gutiérrez’ research focuses on equity in mathematics education, race/class/language issues in teaching and learning mathematics, effective teacher communities, and the kinds of political knowledge that mathematics teachers need to negotiate high stakes education. She has served as a member of the RAND National Mathematics Study Panel and the National Academy of Sciences’ Committee on Increasing Urban High School Students’ Engagement and Motivation to Learn, and is currently on the Association of Mathematics Teacher Educators’ Standards Writing Team. In 2011, the Association of Mathematics Teacher Educators awarded her the Excellence in Research Award for the work she has conducted and the theories on equity she has offered to the field. On a Fulbright fellowship, she studied secondary mathematics teachers in Zacatecas, México, where she was able to document the different cultural practices and algorithms used in Mexican classrooms. Before and throughout graduate school, she taught middle and high school mathematics to adolescents in East San José, California.

Rochelle Gutiérrez
University of Illinois at Urbana-Champaign

85.2 ew 10 Minutes of Code

Want to get your students interested in coding? This hands-on session will introduce you to the basics of coding on the TI-84™ Plus in just 10 minutes—no experience needed! Learn how coding in the math classroom can strengthen students’ reasoning and problem-solving skills. Get free resources that you can start using in class right away.

Texas Instruments
Dallas, Texas

85.3 ew Making Every Day Count with Daily Math Discussion

Calendar time offers teachers and students a wonderful opportunity to engage in daily discussion that involves reasoning, review, and preview, and develops number sense. Come hear this presentation by the author of Every Day Counts Calendar Math as she explains how you can make the most of 10–15 minutes daily. It’s so much more than a calendar.

Houghton Mifflin Harcourt
Boston, Massachusetts

85.4 ew Crazy 8s: It’s Not Your Ordinary Math Club!

Get the scoop on Crazy 8s, a high-energy after-school club for kids ages 5 to 10. Hands-on activities like Spy Training and Toilet Paper Olympics appeal to any kid. Bedtime Math provides a free kit with scripts and most materials; schools provide a few supplies and an enthusiastic coach. It’s time to make math the cool thing to do after school!

Bedtime Math Foundation
Summit, New Jersey
9:30 A.M.–10:30 A.M.

85.5  
BYOD: Mathspace—Why You’ll Never Grade Math Assignments Again. Seriously.
6–8 Exhibitor Workshop
Meet Mathspace. You’ve seen it all, right? Adaptive learning? Yep. Handwriting recognition? Hmm. Every math question graded line-by-line? Whoa, that’s new! Students can finally show their work, and get feedback at every step: all auto-graded for you. Bye-bye, multiple choice! BYOD (Bring Your Own Device) to try the award-winning Mathspace live, and ask about a free trial!

Mathspace
New York, New York
124 (MOSCON NORTH)

85.6  
It’s Here: the NEW Investigations 3 K–5
3–5 Exhibitor Workshop
Intrigue students by creating a learning environment of high expectations. Guide students as they actively explore mathematical ideas to develop understanding and fluency. Create a New Learning Culture. Focus on mathematical problem solving, learner-centered activities, and guided inquiry. Welcome to Investigations 3 in Number, Data, and Space.

Pearson
Boston, Massachusetts
125 (MOSCON NORTH)

85.7  
Teaching Mathematics from a Growth Mindset: Strategies To Support Math Success for All Learners
General Interest Exhibitor Workshop
In this workshop, participants will experience instructional strategies that support the development of positive attitudes toward math. Attendees will explore and practice ways of sharing feedback, asking questions, and recognizing multiple ways of approaching a problem that help equip learners with a growth mindset toward mathematics learning.

Curriculum Associates
North Billerica, Massachusetts
130 (MOSCON NORTH)

85.8  
Demystify Math Using Targeted Math Practice
General Interest Exhibitor Workshop
Accelerated Math 2.0 and STAR Math assessment software help teachers personalize dynamic math practice for both grade-level standards and foundational skill development. Learn how students who use these math solutions are nearly twice as likely to be college and career ready.

Renaissance Learning
Wisconsin Rapids, Wisconsin
123 (MOSCON NORTH)

Check out the Exhibitor Workshops!
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Type</th>
<th>Time</th>
<th>Speaker(s)</th>
<th>Location</th>
</tr>
</thead>
</table>
| 86      | **3 Act Math: A How-To**                                             | 8–10 Workshop | 9:45 A.M.–11:00 A.M. | Dane Ehlert  
Mesquite Independent School District, Texas | 2004 (MOSCONEN WEST) |
| 87      | **A Pedi for the Lady and Other Engaging Calculus Investigations**    | 10–12 Workshop | 9:45 A.M.–11:00 A.M. | Deedee Stanfield Henderson  
Oxford High School, Alabama | 2006 (MOSCONEN WEST) |
| 88      | **Beyond Invert and Multiply: Making Sense of Fraction Computation** | 3–5 Workshop | 9:45 A.M.–11:00 A.M. | Julie McNamara  
University of Michigan, Ann Arbor | 3008 (MOSCONEN WEST) |
| 89      | **Cuisenaire Rods to Number Lines: Multiplication and Division of Fractions** | 6–8 Workshop | 9:45 A.M.–11:00 A.M. | Adam P. Harbaugh  
Missouri State University, Springfield  
Kurt Killion  
Missouri State University, Springfield  
Gay Ragan  
Missouri State University, Springfield | 2003 (MOSCONEN WEST) |
| 90      | **Envisioning 1, 2, 3**                                              | Pre-K–2 Workshop | 9:45 A.M.–11:00 A.M. | Carol A. Matsumoto  
Retired, Seven Oaks School Division, Winnipeg, Canada  
Angela Bubnowicz  
Seven Oaks School Division, Winnipeg, Canada | GOLDEN GATE B (MARRIOTT) |
NCTM ANNUAL MEETING & EXPOSITION 2017

April 5–8 | San Antonio

Creating Communities and Cultivating Change

It’s never too early to plan ahead for the leading math education event of the year. Network with thousands of your peers and fellow math education professionals to exchange ideas, engage with innovation in the field and discover new learning practices that will drive student success.

The latest teaching trends and topics will include:

- **Access and Equity**: Teaching Mathematics with an Equity Stance
- **Assessment**: A Tool for Purposeful Planning and Instruction
- **Building Conceptual and Procedural Understanding**
- **Professionalism**: Learning Together as Teachers
- **Teaching, Learning, and Curriculum**: Best Practices for Engaging Students in Productive Struggle
- **The “M” in STEM/STEAM**
- **Tools and Technology**: Using Technology to Effectively Teach and Learn Mathematics

The NCTM Annual Meeting & Exposition is ideal for:

- PRE-K–12 TEACHERS
- MATH TEACHER EDUCATORS
- NEW AND PROSPECTIVE TEACHERS
- MATH COACHES AND SPECIALISTS
- MATH RESEARCHERS
- SCHOOL AND DISTRICT ADMINISTRATORS

Learn more at [nctm.org/annual](http://nctm.org/annual) and follow us on [Facebook](http://facebook.com), [Twitter](http://twitter.com), [LinkedIn](http://linkedin.com), [YouTube](http://youtube.com), [Google+](http://googleplus.com), and [NCTMannual](http://nctmannual)
91
High on a Hill: Visualization, Spatial Reasoning, and Geometric Modeling
Pre-K–2 Workshop
The role of visualization, spatial reasoning, and geometric modeling will be explored to create mental images and predict how models will vary through various representations, cuts, folds, and transformations. Connections to other topics will include number, measurement, data, maps, children’s literature, language arts, art, and physical education.

Mary C. Cavanagh
Arizona State University, Tempe
Carole E. Greenes
Arizona State University, Tempe

3006 (MOSCONE WEST)

92
Making Mathematicians: Daily Routines That Build Number Sense
Pre-K–2 Workshop
Develop deep, conceptual understanding through quick, engaging daily number sense routines and workstation activities. Learn how to use a variety of visual tools for subitizing, composing, and decomposing numbers. Number sense apps will also be shared, and you will leave with activities to use immediately.

Karen Pasiuk
Lyme-Old Lyme Public Schools, Connecticut
Heidi Hayes
Old Saybrook Public Schools, Connecticut
Kate Madura
Clinton Public Schools, Connecticut

308 (MOSCONE SOUTH)

93
Making Middle School Math Come Alive with Games and Activities
6–8 Workshop
Participants will be actively engaged in this session. Manipulatives and games will be used to introduce and practice integer operations. We will work on order of operations not using PEMDAS. Participants will also do activities around graphing and tables. They will also do a scavenger hunt to look at justifying their answers to math situations.

Christine Mikles
CPM Educational Program, Sacrament, California

3004 (MOSCONE WEST)

94
Mathematics Carnival: A Vehicle for ALL to Learn CCSSM Geometric Concepts!
8–10 Workshop
Ferris wheels, spinning tops, roller coasters! Hands-on activities that deepen the knowledge of key transformational 3-D and 2-D geometric concepts. Build, construct, solve, relate, and prove using the math practices. Differentiate tasks and activities. Go home with manipulatives and many activities that can be used in your classroom on Monday!

Vivian La Ferla
Rhode Island College, Providence

2016 (MOSCONE WEST)

95
Mentoring Each Other: Teaching Teachers to Teach with PBL
Coaches / Leaders / Teacher Educators Workshop
To move to a problem-based approach in secondary math, we are pushed toward methods outside of our training and experience. A mentor and novice PBL teacher share their experience of learning together and how best practices were observed and imitated. Enjoy a simulated PBL class and leave with resources for supporting colleagues in PBL training.

Carmel Schettino, Ph.D
Deerfield Academy, Massachusetts
Miriam Singer
Deerfield Academy, Massachusetts

YERBA BUENA 14/15 (MARRIOTT)

96
Nspiring Students in Data Representation and Scientific Inquiry
6–8 Workshop
Experience the power of allowing students the freedom to design, implement, and film their own scientific investigations in the mathematics classroom. Utilizing TI-Nspire calculators, students then engage in meaningful data representation and analysis. See student-made projects and receive full lesson plans and rubrics.

Amber L. Muscarello
Fort Bend Independent School District, Sugar Land, Texas

2008 (MOSCONE WEST)
9:45 A.M.–11:00 A.M.

97  
One’s Good But More is Better  
8–10 Workshop
Good mathematics instruction and good problem solving includes problems with multiple answers as well as problems with multiple approaches. Join us as we explore a number of interesting problems and explorations that can have multiple answers or are accessible by a variety of approaches.

Michael Serra  
Self-Employed, San Francisco, California

100  
Routines + Great Questions + Small Changes = Number Sense  
3–5 Workshop
How can changing one word dramatically improve understanding? Which visual models and routines deepen number sense? What questions should you ask to reveal student understanding? In this interactive session, you will fill your tool box and leave armed with routines, questions, and visuals to help you build number sense! Small changes = big results!

Alison J. Mello  
Foxborough Public Schools, Massachusetts

98  
Paper Cup + Gust of Wind = Yearlong Rich Task  
8–10 Workshop
Explore how what began as a cup rolling on a table became a low-floor, high-ceiling problem used to build significant math over the course of a year in geometry. Revisiting the same task emphasizes math as reasoning not simply answer-getting, as ideas from cut and paste to application of trig functions are employed to reason about the same scenario.

Peg Cagle  
Vanderbilt University, Nashville, Tennessee

101  
Solving the Mystery: Using Digital Tools to Identify Proportional Relationships  
6–8 Workshop
Try to solve the “Gas Pump Mystery!” Engage in an interesting, middle school project that requires teamwork and communication. Investigate proportional relationships and engage with the Standards of Mathematical Practice as you determine which gas pumps have been hacked. Bring your own device! We will use a variety of technology to crack the case.

William G. McGowan  
Amplify, Brooklyn, New York
Sean Berg  
Amplify, Brooklyn, New York

99  
Professional Development 2.0: The Next Generation of PD  
Coaches / Leaders / Teacher Educators Workshop
Effective professional development should improve the learning experience for students. Instructional rounds, coaching cycles, modelling, and deliberate practice are tools for the next generation of professional learning. Participants will engage in these structures and develop a plan for implementation.

Erin Wheeler  
Eureka Math, Washington, D.C.
Kate Austin  
Eureka Math, Washington, D.C.
Dawn Pensack  
Eureka Math, Washington, D.C.

102  
Supporting Teacher Teams with Talk Protocols  
Coaches / Leaders / Teacher Educators Workshop
Teaching is a complex, dynamic activity best understood collaboratively. Working on a team studying practice is critical but unfamiliar. Team skills are learned and can be improved. We will share and practice protocols to support learning how better to collaboratively improve practice, developing critical structures for feeling safe in a team.

Jesse E. Johnson  
New Visions for Public Schools, New York, New York
Russell West  
New Visions for Public Schools, New York, New York
103  
**Taylor Series: A Beautiful Story behind the Most Dreaded Topic**  
10–12 Workshop  
Explore a carefully built progression of activities for the “sequence and series” topic of the AP Calculus BC curriculum that starts in precalculus and is woven into the entire BC course. Visualize series using Desmos. Participants will leave with ready-to-use materials and a deep appreciation for the beauty and connectedness of the topic.  
Bence Szamosfalvi  
Math for America Los Angeles, California  

3010 (MOSCONIE WEST)

104  
**The Scaling Factor**  
3–5 Workshop  
Scaling isn’t scary! Come explore Common Core 5.NF.5 more deeply to understand what prior math skills are needed to teach this standard as well as how to deepen your own understanding of what scaling means. We will engage in real-world problems and view multimedia resources that promote discussions that will lead to deeper math understanding.  
Jennifer L. Stairs  
Howard County Public Schools, Columbia, Maryland  
Joan Tellish  
Howard County Public Schools, Ellicott City, Maryland  
Meghan Hearn  
LearnZillion, Washington, D.C.  

YERBA BUENA 3/4 (MARRIOTT)

105  
**Visual Models: Connecting Representations and Algorithms for Multiplication and Division**  
3–5 Workshop  
Visual representations connect concepts with procedures. Help students make sense of mathematics by making these relationships explicit as students master multiplication and division. A variety of physical, visual, verbal, and symbolic representations will be used to work with whole numbers, decimals, and fractions.  
Sara Delano Moore  
ETA hand2mind, Vernon Hills, Illinois  

302 (MOSCONIE SOUTH)

106  
**What Is the Current State of Mathematical Modeling Education**  
General Interest Workshop  
The panel will describe new developments in mathematical modeling education. Garfunkel will discuss the new GAIMME report along with developments in high school modeling competitions. Hirsch will discuss the new NCTM Annual Perspectives in Mathematics Education (APME) 2016 volume on modeling. Turner will describe the efforts of the Society of Industrial and Applied Mathematics (SIAM). And Zbiek will relate present and future plans of NCTM and what those developments mean for our members.  
Solomon Garfunkel  
COMAP, Bedford, Massachusetts  
Christian R. Hirsch  
Western Michigan University, Kalamazoo  
Peter Turner  
Clarkson University, Potsdam, New York  
Rose Mary Zbiek  
Board of Directors, National Council of Teachers of Mathematics; Penn State University, University Park, Pennsylvania  

306 (MOSCONIE SOUTH)

106.1  
**Cross-State Collaboration for Common Core Implementation**  
Coaches / Leaders / Teacher Educators Burst  
Attendees will learn about professional learning modules that have enabled our states to reach larger audiences. Iowa, Montana, South Dakota, and North Dakota were awarded the Leona Helmsley Grant for effective implementation of the Common Core in rural states. With CCSSO’s support the project has strengthened the collaboration among the states and within their PK–16 systems.  
LaCosta M. Potter  
South East Education Cooperative, Fargo, North Dakota  
Lynn Mitzel  
South East Education Cooperative, Fargo, North Dakota  
Cathy J. Williams  
Grand Forks Public Schools, Grand Forks, North Dakota  

2003 (MOSCONIE WEST)
11:00 A.M.–12:00 P.M.

107
3 Reasons Kids Don’t Know Facts and How to Help
Pre-K–2 Session
Children have an overreliance on counting, they lack number sense, and the manipulatives we use in the early grades actually hinder students’ abilities to progress to more advanced addition strategies. This session will discuss why these three ideas keep kids from being fluent with their addition facts and what we can do in the classroom to help.

Christina Tondevold
Mathematically Minded, Orofino, Idaho
Lynn Rule
MathRack, Wheaton, Illinois

YERBA BUENA 7 (MARRIOTT)

108
Algebraic Reasoning in Multiplication: The Power of Multiplicative, Contextual Tasks
3–5 Session
What is algebraic about multiplication with whole numbers? This session explores how to use multiplicative, contextual tasks to develop and assess algebraic reasoning. Activities with the research-based tasks and videos of students working will illuminate their classroom implementation and connection to the Common Core.

Jerry A. Woodward
Ball State University, Muncie, Indiana

GOLDEN GATE A (MARRIOTT)

109
A Not-So-Average Talk about Averages
General Interest Session
This talk discusses how mathematical ideas from arithmetic, algebra, geometry, and calculus are intimately connected with the arithmetic mean, an idea often taught only as a statistical measure.

Zalman Usiskin
University of Chicago, Illinois

3009 (MOSCON WEST)

110
Building a Mathematics Growth Mindset
8–10 Session
Students do not need the “math gene” to succeed in mathematics. Come learn how the use of micromessaging, self-monitoring, and other techniques can help reduce inequality in the classroom, improve student achievement, and open the doorway to STEM careers.

Tujuana Greene Hinton
Baltimore County Public Schools, Maryland

3012 (MOSCON WEST)

111
Challenging Precalculus Alternative Assessments Using the Free Online Desmos Calculator
10–12 Session
Learn about two major precalculus projects that will transform your students and help them to learn and to understand what they are doing. There is a “huge” difference between “doing” mathematics and “understanding” mathematics. Come learn how to make that happen. If possible, bring your laptop or smart device to begin to experience this yourself.

Neil D. Cooperman
Association of Mathematics Teachers of New Jersey, Chester
Stephanie H. Cooperman
School District of the Chathams, Chatham, New Jersey

2001 (MOSCON WEST)

112
Create Debate
10–12 Session
Participants will leave this session with a set of strategies to create rich debates in their classroom, regardless of the content. Strategies include question stems and lesson structures. Participants will also learn how to choose rich problems for debate and where to find them. Research on the benefits of debate will be presented.

William Stafford
E. L. Haynes Public Charter School, Washington, D.C.
Beth Thompson
Georgetown Day School, Washington, D.C.

3003 (MOSCON WEST)
First In Math® is the most effective, cost-efficient supplemental math program available—helping students succeed since 2002.
113 Developing Growth Mindsets: Motivating Students to Grow Their Minds

In this session we will examine the growth mindset, which is needed to unleash students’ motivation and self-efficacy. Eduardo will summarize key takeaways from research and practice, including insights on how we can foster school cultures that facilitate this higher level of learning, resilience, and performance.

Eduardo Briceño is the co-founder and CEO of Mindset Works, the creator of a number of products and programs, such as Brainology, that now serve hundreds of schools and tens of thousands of teachers and students, helping people to develop as motivated and effective learners. He has spoken at numerous industry conferences and has delivered a highly rated TEDx talk on the growth mindset that has been viewed by over one million people.

Eduardo Briceño
Mindset Works, San Jose, California

114 Principles to Actions: For Young Learners, Too

Through ideas for instructional tasks and examples of student work, learn how to use questioning to promote discourse and representation for young learners in counting, place value, problem solving, geometry, and measurement. Learn how the practices in Principles to Actions are important and appropriate for all students.

Marcy M. Myers
Carroll County Public Schools, Westminster, Maryland
Laura C. Hunovice
Carroll County Public Schools, Westminster, Maryland

115 Five Functions of Fractions

Too often children are exposed to only one function of fractions: the part-whole model. This workshop will focus on all five functions of fractions and how to use them to increase children’s conceptual and procedural understanding of fractions. Come and learn several easy ways to incorporate all five functions of fractions into your teaching!

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

116 Illustrating the Statistical Process with Regression

Does sitting in the front improve test scores? How much does the value of a used car decrease for each extra mile it is driven? In this session, we will use technology to illustrate the four-step statistical problem solving process (formulate questions, collect data, analyze data, draw conclusions) in contexts involving two quantitative variables.

Josh Tabor
Canyon del Oro High School, Oro Valley, Arizona
Daren Starnes
The Lawrenceville School, New Jersey

117 “No, That’s a Rectangle”: Activities to Combat Shape Misunderstandings

This session’s focus is to take a deeper look at shape hierarchies through inclusive and exclusive shape definitions and to discuss typical student misunderstandings. Participants will complete classroom-ready activities that allow young students to interact rigorously with shape attributes, categories, and subcategories.

Michael Daiga
Indiana University, Bloomington
Mark A. Creager
Indiana University, Bloomington
11:00 A.M.–12:00 P.M.

118 I’ve Got My Students Sharing Their Mathematical Thinking—Now What?  
General Interest Session  
Once students share their ideas, creating meaningful mathematics discourse requires that teachers decide which ideas are worth pursuing and how to capitalize on those ideas. We will share a framework for determining which student ideas have significant potential to support mathematics learning, and we will discuss how teachers might productively use those ideas.

Shari L. Stockero  
Michigan Technological University, Houghton  
Laura R. Van Zoest  
Western Michigan University, Kalamazoo  
Keith R. Leatham  
Brigham Young University, Provo, Utah

119 Learning from Research: Using Worked Examples in Math Class  
6–8 Session  
Research suggests that engaging students in explaining “worked examples” is more effective than completing traditional problem sets. In this session, you will experience some samples of and strategies for using “worked examples” while engaging students with the Standards for Mathematical Practice.

Cathy Carroll  
WestEd, Redwood City, California

120 Lessons from Our Students: Stories from Railside High School  
General Interest Session  
Many concerned with issues of equity and math learning are discussing the story of Railside High, a math department that developed a program focused on detracking, multidimensional curriculum and Complex Instruction. Now let’s hear from some of the students who were math learners at Railside. What did they take away from their experiences?

Lisa M. Jilk  
University of Washington, Seattle  
Ana Mayen Torres  
Oakland Unified School District, California

121 Lesson Study: Exemplary Process for Implementing the NCTM Teaching Practices  
10–12 Session  
This session will demonstrate how the lesson study process can serve as a catalyst for improvements in teaching and learning through its effectiveness in facilitating implementation of NCTM’s eight Mathematics Teaching Practices. The session will also consider strategies for addressing challenges to engaging in lesson study.

Yvelyne Germain-McCarthy  
University of New Orleans, Louisiana

122 Math Literacy! Acquire the Language of K–12 Mathematics  
General Interest Session  
Apply the process of learning a second language to acquiring the language of mathematics. Students encounter a series of well-orchestrated reading, writing, listening, and speaking structures that allow them to progress from a beginning level of proficiency with the mathematics language to an advanced level of proficiency in grades K–12.

Algrenon T. Nelson  
Educator, Houston, Texas

123 Native American–Based Mathematics Materials for Undergraduate Courses  
Higher Education Session  
This project develops and researches undergraduate mathematics materials based in the culture and mathematics of Native American Peoples for integration into undergraduate courses. These materials are classroom ready. Topics include probability, number theory, transformational geometry, and elementary and secondary education.

Miles R. Pfahl  
Turtle Mountain Community College, Belcourt, North Dakota  
Charles P. Funkhouser  
California State University, Fullerton
124  NCTM’s Mathematics Education Trust Provides Grants and Scholarships

General Interest Session
Don’t miss out! NCTM’s Mathematics Education Trust (MET) supports teachers, students, and schools with funds for materials, lesson development, conferences, courses, professional development, and action research. Learn what’s available and how to apply. Hear tips for choosing the most appropriate award for you and enhancing your chances to win it.

Carol A. Edwards
Chair, MET Board of Trustees, Chandler, Arizona

305 (MOSCONE SOUTH)

125  Not Using Speed Tests? Now What?? Assessing Math Fluency

3–5 Session
Learn how to develop automaticity and mental math skills with multiplication and division facts. We will explore strategies that assist students in developing their conceptual understanding of these concepts. Participants will leave with activities, games, and assessments that can immediately be implemented into their classroom routines.

Kristin Alyssa Hilty
Staff Development for Educators, Peterborough, New Hampshire

GOLDEN GATE C3 (MARRIOTT)

125.1  Mathematical Practices for Advanced Placement Calculus

10–12 Session
The AP Calculus course and exam description (also called the Acorn book) is being replaced with a new framework. What is different about this framework, and how do the mathematical practices for AP Calculus align with the effective teaching practices in NCTM’s Principles to Actions? How can past exams inform how we teach calculus to support these practices?

Vicki M. Carter
West Florence High School, Florence, South Carolina
Stephen Davis
Davidson University, Davidson, South Carolina
Gail Burrill
Michigan State University, East Lansing, Michigan
Ben Hedrick
The College Board, Duluth, Georgia

2018 (MOSCONE WEST)

126  Perspectives on Mathematics Methods Courses

Coaches / Leaders / Teacher Educators Session
We will share three perspectives (situated, sociopolitical, and cognitive) from nationally prominent panelists who were keynote speakers at a NSF-funded conference on mathematics methods courses. We will share a research agenda along with goals, activities, and ways to assess activities in methods courses based on outcomes of the conference.

Wendy B. Sanchez
Kennesaw State University, Georgia
Alyson E Lischka
Middle Tennessee State University, Murfreesboro

2022 (MOSCONE WEST)

127  Posing Powerful Questions by Exploring World Flags

8–10 Session
When you investigate the flags of nations, you discover that mathematics is an integral part of the design and construction of these flags. This session will allow teachers to see how high-quality, contextualized mathematics tasks are formed using these flags. Come and write more tasks of your own!

Ron Lancaster
University of Toronto, Canada

3007 (MOSCONE WEST)

Explore the Exhibit Hall for the latest educational resources.
11:00 A.M.–12:00 P.M.

128  PCPG
Professional Collaborative Inquiry: Creating Responsive Mathematical Experiences for Elementary Students
Pre-K–2 Session

Two collaborative inquiry projects will be shared including the structures used to support professional growth. The Reggio-Inspired Mathematics Project (K–3) looked at how Reggio-inspired practices enhance mathematical thinking and how the Place-Based Mathematics Project (K–5) examined practices that connect mathematics to the story of place.

Janice Novakowski
University of British Columbia, Vancouver, Canada

3005 (MOSCONE WEST)

130
Social Networks for Teaching Graph Theory
10–12 Session

Graph theory is an important topic in discrete mathematics and an excellent low-threshold topic for mathematical reasoning and problem-solving. In this presentation, we discuss the use of social networks for introducing and teaching graph theory. Social network theory is relatable and rich in context. Key ideas and activities will be discussed.

Todd A. Abel
Appalachian State University, Boone, North Carolina
Mary E. Searcy
Appalachian State University, Boone, North Carolina

2005 (MOSCONE WEST)

131  EQUITY
Spaces for Mathematics Learning: Advancing Equity and Excellence in Schools
General Interest Session

In this session, I draw from research with mathematics doers of all ages (ranging from elementary students to professional mathematicians) to discuss ways to ensure students’ opportunities to learn high-quality mathematics in all schools. I also use cases from practice to show how teachers and administrators can facilitate mathematics excellence.

Erica N. Walker
Teachers College, Columbia University, New York, New York

134 (MOSCONE NORTH)

132
Teachers Lead Teachers in Professional Development
Research Session

We explore the role and development of a teacher-driven professional development organization and its impact on teachers’ classroom practices and self-efficacy toward teaching mathematics. Survey data was collected from teacher participants, and an online learning community was established to explore how teachers share practices and support colleagues.

Patricia A. Dickenson
National University, San Jose, California
Judith Montgomery
University of California Santa Cruz

2011 (MOSCONE WEST)

133  PPD
The Power of Students’ Perceptions of Their Mathematical Ability
General Interest Session

In this session, I will highlight and summarize research focused on relationships between students’ perceptions of their mathematical ability and their mathematical performance. I will discuss implications of these research findings, and suggest ways teachers can better promote productive mathematics dispositions in students through a deeper understanding of students’ perceptions of their mathematical ability.

Lawrence M. Clark
University of Maryland, College Park

2024 (MOSCONE WEST)
134.1 **PCPG**

**Becoming the Math Teacher They Need!**

*General Interest / All Audiences Session*

The mathematics knowledge for teaching that teachers in K–12 need to be comfortable with must go beyond the details of curriculum standards to reveal the big ideas in mathematics. It is by focusing on the bigger picture that teachers will help their students make critical connections. Experience a new perspective on what these big ideas are!

**Marian Small** speaks around the world showing how we can teach math more effectively and help a broader spectrum of students to succeed. Formerly the Dean of Education at the University of New Brunswick, she has written or co-authored around 100 publications for K–12 students and teachers, including such books as *Good Questions: Great Ways to Differentiate Mathematics Instruction*.

**Marian Small**
One, Two… Infinity Ltd; Ottawa, Ontario, Canada

135 (MOSCONE NORTH)

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134.2 **CW**

**Embracing Principles to Actions**

*General Interest Exhibitor Workshop*

Wondering how to incorporate NCTM’s *Principles to Actions* in your school? Let CPM show you! For over 25 years CPM has provided rich mathematics curricula that is student centered and problem based, encouraging thinking, persevering, and sense making. Experience the excitement that students do when exploring CPM’s curriculum. Receive free access to the curriculum.

**CPM Educational Program**
Elk Grove, California

120 (MOSCONE NORTH)

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134.3 **CW**

**How Do Global Top Performers Do It? Effective Math Practices of Top-Performing Nations**

*3–5 Exhibitor Workshop*

Top-performing nations—such as Singapore, Hong Kong, and South Korea—share common practices for math instruction. This workshop demonstrates how five effective practices—making problem solving central, metacognition and mathematical thinking, Concrete-Pictorial-Abstract approach, process of learning mathematics, and consistent formative assessment—can be incorporated into everyday teaching.

**Scholastic**
New York, New York

122 (MOSCONE NORTH)

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134.4 **CW**

**Empower Your Students with Algebra and Fractions Sense!**

*3–5 Exhibitor Workshop*

Experience how visual and concrete models can make a dramatic difference in your students’ understanding of algebra and fractions. With Hands-On Equations, they quickly learn to solve equations such as $4x + 3 = 3x + 9$ and $2(2x + 1) = 14$. With fraction blocks, they can make solve equations such as $5/3 = ?/6$ and display the solution to $3/5 \times 2 \frac{1}{2}$.

**Borenson and Associates**
Allentown, Pennsylvania

123 (MOSCONE NORTH)
11:00 A.M.–12:00 P.M.

**134.5  Full STEAM Ahead: How Casio Can Unify Your School’s Efforts**

*General Interest Exhibitor Workshop*

In our current educational climate, non-core classes are being cut, budgets are being squeezed, and yet more and more mandates require cross-curricular experiences, sharing of resources, and ingeniously efficient lesson planning. Come and discover how Casio supports complete solutions for your school, including STEM and STEAM professional development, wide-ranging resources that are not curriculum-specific, and even synergistic equipment technology that provides schoolwide benefits.

Casio America
Dover, New Jersey

**134.6  A Look at enVisionMath2.0 K–8—Now for Middle School!**

*6–8 Exhibitor Workshop*

Pearson’s rigorous new curriculum supports the habits of mathematical thinkers and learners through carefully differentiated instructional tools and personalized practice. Find out how optimal content organization, problem-based learning, visual learning, and smart assessments work together to support learning—and teaching.

Pearson
Boston, Massachusetts

**134.7  Deci-Blocks: A Powerful Tool to Promote Rich Learning Tasks**

*General Interest Exhibitor Workshop*

Explore how Deci-Blocks can be used in a variety of meaningful ways to promote rich learning tasks. Deci-Blocks expand the power of pattern blocks by adding six additional shapes to create a base ten manipulative. This combination forms a powerful mathematical tool designed to deepen students’ understanding of numerous strands of mathematics.

Nasco
Atlanta, Georgia

11:30 A.M.–12:00 P.M.

**135  Fraction (or Fractured?) Understanding**

*3–5 Burst*

Did you know that using a limited number of visual models for fractions hinders students’ abilities to internalize and generalize fraction concepts? Explore four different representations of fractions and why each is so critical. Learn how different types of models provide different perceptual features and therefore serve different purposes.

Debi DePaul
Origo Education, Inc., St. Charles, Missouri

121 (MOSCON North)

**134.8  Mathletics by 3P Learning**

*3–5 Exhibitor Workshop*

Meet the Mathletics team and learn how our supplemental online math resource is helping American students achieve better results. Targeted, adaptive, and engaging K–12 content—designed to meet the requirements of the Common Core and state-based curricula, with reporting and assessments to match. Plus fun and engaging math challenges students love!

3P Learning
New York, New York

124 (MOSCON North)

Don’t forget your badge! Name badges are needed to attend presentations and explore the Exhibit Hall.
11:30 A.M.–12:00 P.M.

136
Magical Makeover! Strategies for Content Rigor, Relevance, and Richness
Coaches / Leaders / Teacher Educators Burst

Participants will learn how to give problems a 3R (rigor, relevance, rich) makeover. Makeovers will be demonstrated using given feedback and revised user-submitted CueThink community (OER) content. The session will include before/after examples, audience-enabled polling, and sharing of resources for coaching magical makeovers.

Norma Gordon
CueThink, Boston, Massachusetts

GOLDEN GATE C2 (MARRIOTT)

137
Navigating the Tricky Teens
Pre-K–2 Burst

Language plays a critical role in the development of children’s mathematical thinking and ability. In this session, we will look at how altering the complicated language of the teen years can help teachers to help all students make more sense of mathematics.

TJ Jemison
Math Coach/Consultant for TJ Consulting, Colchester, Vermont
Barbara Blanke
California Polytechnic State University, San Luis Obispo

310 (MOSCONE SOUTH)

138
Smarter Balanced: Connecting Test Items to Instruction
6–8 Burst

The phrase “teaching to the test” conjures up the image of students sitting in desks organized neatly in rows filling out endless worksheets. It’s time to change that image. Participants examine Smarter Balanced test questions and discuss how they support the goal of deeper learning and how they signal a critical shift away from rote skills practice.

Judy Hickman
Smarter Balanced at UCLA, Los Angeles, California
Shebli Cole
Smarter Balanced Assessment Consortium, Olympia, Washington

3022 (MOSCONE WEST)

139
The Unreasonable Effectiveness of Mathematics
10–12 Burst

Self-proclaimed “educational games” often aren’t very good games. Thankfully, the potential for rich mathematical thinking exists in all sorts of games, not just ones that are billed as educational. In this session, we’ll explore examples of mathematics in video games that don’t typically come to mind when thinking about education.

Matt Lane
Math Goes Pop, San Francisco, California

3006 (MOSCONE WEST)

12:30 P.M.–1:30 P.M.

140
3 Sets of 3 Questions—Practicing Inquiry with Taylor Series
10–12 Session

Participants will be introduced to a framework for teaching mathematics, in the context of Taylor series, that starts the learning conversation with generative questions. This inquiry is the seed out of which grows lots of rich mathematical fruit, including patterns, theorems, and habits of mind.

John Millar
The Lawrenceville School, New Jersey
Brent Ferguson
The Lawrenceville School, New Jersey

2007 (MOSCONE WEST)

141
Algebra Intervention, Rigor, Problem Solving, and CCSSM
8–10 Session

What’s rigor? What’s procedural fluency at the conceptual level? What’s it look like for intervention? Examine essential elements for conceptually based algebra intervention that supports CCSSM; embeds its Standards for Mathematical Practice; and emphasizes discourse, problem solving and writing. ELL and PLC friendly. Do math, and receive material that models the CCSSM assessments. Focused on grades 6–10

Mardi A. Gale
WestEd, Sherman Oaks, California

3009 (MOSCONE WEST)
12:30 P.M.–1:30 P.M.

142
Choosing Tasks for Productive Struggle, Not Frustration
10–12 Session
Identifying cognitively demanding real-world tasks is the first step toward promoting productive struggle in mathematics. Participants will explore how to choose worthwhile tasks for productive struggle, how to effectively implement them while keeping frustration in check, and how these experiences can shape students’ mathematical dispositions.
Jaclyn M. Murawska
Saint Xavier University, Chicago, Illinois
3005 (MOSCON WEST)

143
The Status Quo Is Unacceptable: A Common Vision for Improving Collegiate Mathematics and Its Implications for K-12 and Preservice Mathematics Education
General Interest / All Audiences Session
This session examines two efforts to support systemic improvement in curriculum, instruction, and assessment in the first two years of collegiate mathematics: the MAA Common Vision for Undergraduate Mathematical Science Programs in 2025 project and Transforming Post-Secondary Education in Mathematics (TPSE Math). We will also discuss the implications for pathways from K–12 to collegiate mathematics and for teacher preparation and professional learning.
Diane J. Briars
President, National Council of Teachers of Mathematics; Reston, Virginia
Linda Braddy
Tarrant County College; Hurst, Texas
Uri Treisman
The Charles A. Dana Center, University of Texas; Austin
Christine D Thomas
Georgia State University; Atlanta
2022 (MOSCON WEST)

144
Developing a Conceptual Understanding of Proportional Reasoning Using Manipulatives
6–8 Session
Explore how manipulatives can be used to help your students develop a conceptual understanding of proportional relationships and unit rates, topics which are crucial in middle school and beyond. See how they can be used to develop effective strategies other than “cross-multiply and divide.” Walk away with ideas that you can implement immediately.
Kevin Dykema
Mattawan School District, Michigan
GOLDEN GATE C3 (MARRIOTT)

145
Development and Validation of the Elementary Teacher Efficacy Beliefs Instrument for Math
Research Session
This session describes the development of an instrument to measure preservice and in-service teachers’ efficacy to teach elementary mathematics, based on revisions to the Mathematics Teacher Efficacy Beliefs Instrument (MTEBI). Data from the validation study will be presented as well as how to use the instrument as a formative assessment to refine methods courses or professional development.
Elisabeth Johnston
Plymouth State University, New Hampshire
Elizabeth K. Ward
Texas Wesleyan University, Fort Worth
307 (MOSCON SOUTH)

Pick up a copy of the Daily News for up-to-date conference information.
12:30 P.M.–1:30 P.M.

146  
**Do More for Students by Doing Less for Students**

*General Interest Session*

Why are students so quick to ask for help? Because teachers are so quick to give them help. This session features classroom structures and strategies that help students unlearn learned helplessness and become persistent, proficient problem solvers. Activities include modeling via video and problems that engage participants in productive struggle.

David Ginsburg  
Ginsburg Educational Consulting and Coaching, Philadelphia, Pennsylvania

305 (MOSCONE SOUTH)

147  
**Do You Know It When You See It? CCSSM Implementation**

*Coaches / Leaders / Teacher Educators Session*

Many districts are helping their teachers understand the shifts in CCSSM, but how can we gauge the degree to which teachers are shifting their practice? With the support of Dr. Tim Kanold, Dr. Dylan Wiliam, and WestEd, ten California districts are collaborating to answer this question.

Christine D. Roberts  
Tulare County Office of Education, Visalia, California

Neal Finkelstein  
WestEd, San Francisco, California

Nick Resnick  
California Education Partners, San Francisco

2024 (MOSCONE WEST)

148  
**Fortifying the First Five Minutes: Effective Period-Opening Activities**

*10–12 Session*

Eleven specific strategies designed to upgrade the “do now” will be presented via a 20+ page handout of sample work. These strategies, field-tested for over thirty years, include using foreign language math textbooks, manipulatives, explorations, history, quotations, amazing math facts, partner problems, optical illusions, quizzes, and much more.

Robert K. Gerver  
North Shore High School, Glen Head, New York

3003 (MOSCONE WEST)

149  
**Fractional Division Interpretation: Why Do Students “Keep, Change, Flip?”**

*6–8 Session*

The age-old “Keep, Change, Flip” strategy came from somewhere, right? Why does it work? And how can students make an intuitive connection to partitive division interpretation? In this session, participants will distinguish between two interpretations of division, partitive and measurement, in order to divide fractions.

Erika Silva  
Eureka Math, Washington, D.C.

Stafanie Hassan  
Eureka Math, Washington, D.C.

2001 (MOSCONE WEST)

150  
**Healing Math Trauma: What to Do When Math Hurts**

*General Interest Session*

The evidence is mounting. What we once called math anxiety appears to be a form of trauma for many people—about a third of the population. The damage can begin at a very young age and last a lifetime. Come hear about recent findings in neuroscience as well as psychology. Discuss the implications and learn about strategies to support healing.

Kasi C. Allen  
Lewis & Clark College, Portland, Oregon

Kemble Schnell  
Inza Wood Middle School, Wilsonville, Oregon

James D. Coombs  
West Linn - Wilsonville School District, Oregon

2011 (MOSCONE WEST)
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sales@bre.com.sg 1-800-293-7909 www.matholia.com
12:30 P.M.–1:30 P.M.

151 High-Yield Algebra Routines: Building a Strong Algebra Foundation
6–8 Session
President’s Series presentation
Explore a few key activities that can serve as class openers to facilitate students’ developing their understanding of foundational algebraic concepts (i.e., expressions, equations, and functions) throughout the school year. Participants will engage in several high-yield algebra routines and discuss connections to the mathematical practices.

Juliana Utley
Oklahoma State University, Stillwater
Stacy Reeder
University of Oklahoma, Norman

3001 (MOSCONE WEST)

152 Investing in Teaching: Creating Enduring and Joyful Professional Learning Environments
General Interest Session
We want to create schools where children are invested in learning, where they are known, and where their social and emotional well-being is nurtured. Using cases and lessons learned from school-based professional development, we will learn how this vision is inextricably linked with the way we invest in collective teacher learning.

Elham Kazemi
University of Washington, Seattle
Allison Hintz
University of Washington Bothell
Anita Lenges
University of Washington, Seattle

PCPG
3016 (MOSCONE WEST)

153 Making Sense of Fractions: The Journey Is the Destination
3–5 Session
Children struggle as they learn fractions, but this is a good thing! Productive struggle and learning go hand in hand. Kids take many paths as they make sense of fractions. We used the work of thousands to identify critical learning signposts. We will share these signposts, student work, and activities that help them explore these important ideas.

Terry Wyberg
University of Minnesota, St. Paul
Krista Marks
Woot Math, Boulder, Colorado

GOLDEN GATE C1 (MARRIOTT)

154 Making the Leap from Patterns to Formulas
6–8 Session
Come study a rich spectrum of pattern problems that give middle school students the opportunity to leap into the abstraction of creating formulas. Foster algebraic reasoning as students learn to create variables, expressions, and equations to describe and solve patterns. Help your students make authentic transitions from numbers to variables.

Darin E. Beigie
Harvard-Westlake School, Los Angeles, California

3012 (MOSCONE WEST)

155 Measurement Concepts for Early Grades: Building Teachers’ Level of Understanding
Coaches / Leaders / Teacher Educators Session
How well do elementary teachers understand the importance of the big ideas in the conceptual development of measurement—zero point, partitioning, and units? In this presentation, results will be shared from a study conducted with elementary teachers and ideas for professional development will be highlighted.

Sandi Cooper
Baylor University, Waco, Texas
Shametria Routt
Round Rock Independent School District, Texas

303 (MOSCONE SOUTH)
12:30 P.M.–1:30 P.M.

156 NGM
Moving from Remembering to Thinking: The Power of Mathematical Modeling
10–12 Session
Mathematical modeling introduces an exciting new world of mathematics, where creativity and thinking are paramount. Examples will illustrate both beginning quasi-modeling experiences and later truly open-ended opportunities which demonstrate student creativity, illuminate student understanding, and motivate the continued study of the mathematics.

Daniel J. Teague
North Carolina School of Science and Mathematics, Durham
301 (MOSCONE SOUTH)

158 P&A
Posing Purposeful Questions
General Interest Session
Student talk is essential for learning math. Yet, as teachers, it is quite challenging to both reduce our talk and encourage students to say more. This presentation will describe how posing questions can purposefully engage students in rich mathematical discussions. We will also discuss how to overcome barriers that frequently stop student talk.

Marcy B. Wood
University of Arizona, Tucson
135 (MOSCONE NORTH)

159
Ready to Run a Business? Linking LEGO and Algebra
6–8 Session
This Lego™ Pets activity models a real-world problem situation. After concretely creating ducks and dogs from Lego™ pieces, participants will decide how many of each to make in order to make the most profit. Then they will find and interpret a solution to a larger problem with the help of a spreadsheet application.

Thomas G. Edwards
Wayne State University, Detroit, Michigan
S. Asli Ozgun-Koca
Wayne State University, Detroit, Michigan
Kenneth R. Chelst
Wayne State University, Detroit, Michigan
134 (MOSCONE NORTH)

160
Stop Overgeneralizing: Should Math Instruction Look Like Reading Instruction?
Pre-K–2 Session
Far too often research-based reading practices and structures are overgeneralized to mathematics instruction. Come join us as we examine research-based practices in elementary mathematics instruction and how to combat reading overgeneralizations to truly engage K–5 students in meaningful and important mathematical thinking.

Claire Riddell
St. Johns County School District, St. Augustine, Florida
Zachary Champagne
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Florida State University, Tallahassee
YERBA BUENA 5/6 (MARRIOTT)
12:30 P.M.–1:30 P.M.

161
Talking Math: Facilitating Academic Language in Math Education
General Interest Session
This session will provide participants with a practical definition of academic language to support students during math instruction. An academic language tool will be presented to guide students in expressing what they have learned.

Eugenia Mora-Flores
University of Southern California, Los Angeles

2009 (MOSCONE WEST)

162
Developing and Extending the Concept of a Radian
10-12 Session
This presentation engages you in a discovery-based task that supports students’ development of a deep conception of radian angle measures. You will investigate ways to use this understanding as a solid foundation for exploring related topics in trigonometry, guided by the Mathematics Teaching Practices specified by NCTM’s Principles to Actions.

Roger S. Wolbert
University at Buffalo, New York
Erin R. Moss
Millersville University of Pennsylvania

NOB HILL C/D (MARRIOTT)

163
Tier 2 without All of the Tears!
Pre-K–2 Session
All students should have access to effective teaching and high learning expectations in any mathematical setting. Come hear about the eight researched recommendation for Tier 2 intervention in a problem-solving setting using visual models and genuine questioning.

Laurie Kilts
Natrona County School District #1, Casper, Wyoming

GOLDEN GATE A (MARRIOTT)

164
Understanding Quadratic Functions through Transformations
8–10 Session
How can you help your students see the mathematics of quadratic functions? During this session, participants will explore how transformations of quadratic functions explain the properties of their graphs. Participants will explore connections between the graphs of functions and their relationship to the algebra used with solving quadratic equations.

Carrie Hair
Washoe County School District, Reno, Nevada
Jenny Salls
Washoe County School District, Reno, Nevada

2005 (MOSCONE WEST)

165
Using Formative Assessment Strategies Every Day in Every Classroom
Coaches / Leaders / Teacher Educators Session
What does it mean to use formative assessment strategies to gauge students’ conceptual understanding and use of the SMPs? With the support of Dr. Timothy Kanold and Dr. Dylan Wiliam, ten California schools districts have been collaborating to answer this particular question on their journey toward full CCSSM implementation.

Nick Resnick
California Education Partners, San Francisco
Eric Frandsen
Oceanside Unified School District, Oceanside, California

2020 (MOSCONE WEST)

166
Using Problem-Solving Situations to Develop Operation Sense
3–5 Workshop
President’s Series presentation
Do your students struggle to apply their understanding of operations to solving problems? The Common Core standards offer the opportunity to rethink that process and begin by using problems to develop operational “sense” in our students. Application of the effective teaching practices from Principles to Actions will be included.

Linda M. Gojak
Past President, National Council of Teachers of Mathematics, Willowick, Ohio

YERBA BUENA 7 (MARRIOTT)
12:30 P.M.–1:30 P.M.

167 Mathematical Card Tricks
General Interest / All Audiences Session
President’s Series presentation
I will present a selection of card tricks based on the mathematics of card shuffling. No sleight of hand required!
Francis Edward Su
Harvey Mudd College; Claremont, California
2018 (MOSCONE WEST)

168 Using Temperature to Support Understanding with Integer Addition and Subtraction
6–8 Session
The teaching and learning of integer operations is challenging, but foundational to students’ mathematical success. Come explore strategies and problems to help students represent integer addition and subtraction and learn instructional techniques to help them develop these ideas through temperature contexts.
Jennifer M. Tobias
Illinois State University, Normal
Nicole M. Wessman-Enzinger
Illinois State University, Normal
3007 (MOSCONE WEST)

168.1 The Answer Still Matters . . . Eventually
General Interest Exhibitor Workshop
In effective classrooms today, teachers use engaging problems to help students develop mathematical thinking and learn mathematical skills. Sometimes we even say, “It’s not the answer that matters, it’s the process.” But the answer does matter—we just need to find ways to slow down the race to answers and use the journey as a vehicle for learning.
Houghton Mifflin Harcourt
Boston, Massachusetts
121 (MOSCONE NORTH)

168.2 Using Technology to Achieve Equity in the STEM Classroom
General Interest Exhibitor Workshop
Dr. Katrise Perera, National Director, Urban Markets for McGraw-Hill Education, discusses how technology helps level the playing field where physical equipment is lacking. Learn how technology extends learning beyond the classroom, integrates authentic assessments, and delivers content tailored to each student’s learning needs.
McGraw-Hill Education
Columbus, Ohio
122 (MOSCONE NORTH)

168.3 Meeting Standards through Personalized Learning
3–5 Exhibitor Workshop
Students arrive in our classroom with varying skill levels and content understanding. However, it is still an educator’s job to ensure standards are met. Learn how LoveMath™ can be used to meet and improve progress toward standards through personalized learning.
LoveMath™ by GPA Learn
Atlanta, Georgia
123 (MOSCONE NORTH)

168.4 AP Calculus Panel Discussion
10–12 Exhibitor Workshop
A panel with the current and immediate past chief readers, a representative of the College Board, and others will highlight this discussion for AP Calculus teachers. The lessons learned from grading the 2015 exams and the new Curriculum Framework will be among the topics discussed. There will be time for questions and answers, and a raffle.
Hamilton, New Jersey
124 (MOSCONE NORTH)
Thursday

12:30 P.M.–1:30 P.M.

168.5 **Using Technology to Support Observational Assessments in K–5**

General Interest Exhibitor Workshop

Observation assessments are a critical element for monitoring student progress. Learn how technology can be used to support capturing, tagging, and using observational assessments.

Pearson
Boston, Massachusetts

125 (MOSCONENORTH)

168.6 **Empower Your Instruction, Engage Students, Make Math Fun: Intervention That Does It All**

General Interest Exhibitor Workshop

Come learn how to empower your instruction through a rich, engaging, and fun intervention model that provides effective strategies for rigorous instruction, blending both conceptual and procedural learning. Participants will receive hands-on materials and participate in a drawing for free resources.

Teacher Created Materials
Huntington Beach, California

120 (MOSCONENORTH)

1:00 P.M.–2:15 P.M.

169 **Accessing All Learning Styles through Math Poetry and Music Experience**

Coaches / Leaders / Teacher Educators Workshop

Music, Music, Music is what society uses to reach students on a daily basis. This session will focus on how rap music and poetry can be used in the classroom to improve student growth percentiles and address all learning styles. Attendees will leave with strategies and an understanding of how to incorporate music to promote student engagement.

Takeelie Hicks
Teaching Everyday Math, Atlanta, Georgia

Ebony Bass
Teaching Everyday Math, Atlanta, Georgia

3004 (MOSCONENORTH)

170 **Be DI-nspired!: Exciting and Challenging Differentiated Instruction Tasks for ALL!**

6–8 Workshop

This highly participatory workshop will engage teachers in challenging, creative, and current problems that allow for differentiation in content, activity, and product. Join with us as we get a great math workout with energetic Common Core-aligned tasks and DI strategies that will allow all kids to enter and attack big problems.

Marcie Abramson
Lesley University, Cambridge, Massachusetts

3010 (MOSCONENORTH)

171 **CCSS, Transformational Geometry, and the Pythagorean Theorem**

8–10 Workshop

The Common Core State Standards call for a renewed study of transformational geometry. Come see how a transformational approach with the TI-Nspire calculator and the use of geometric transformations will give new insights to an old friend, the Pythagorean theorem.

Ray Klein
T3: Teachers Teaching with Technology, Glen Ellyn, Illinois

2006 (MOSCONENORTH)

172 **Challenging All Students with Cognitively Demanding Tasks: Samples and Key Insights**

6–8 Workshop

We have been leading an Australian project with middle grades teachers that has focused on teacher strategies for encouraging student persistence on cognitively demanding tasks. We will share some exciting math tasks, student work, and classroom stories, and we will offer some key strategies for persistence that project teachers have found to be successful.

Doug M. Clarke
Australian Catholic University, Melbourne, Australia

Barbara Clarke
Monash University, Melbourne, Australia

2004 (MOSCONENORTH)
1:00 P.M.–2:15 P.M.

173 EQUITY
Math Fluency: Adding Clarity to a Divided Topic
Coaches / Leaders / Teacher Educators Workshop
Attendees will participate in a number of hands-on activities designed to engage, challenge, and motivate students. Activities will include a number of games from the 24 game series. Number and pattern sensing, critical thinking skills, and “speaking mathematically” will all be part of this workshop.

Cred Dobson
Suntex International, Easton, Pennsylvania
Melissa Walsh
Suntex International, Easton, Pennsylvania

308 (MOSCONER SOUTH)

174 E&A
Connecting Children’s Multiple Mathematical Knowledge Bases in K–8 Instruction
Coaches / Leaders / Teacher Educators Workshop
The TEACH Math group will present a series of activities for prospective and practicing teachers. These activities are intended to support teachers in engaging in equitable and ambitious mathematics teaching practices by connecting to students’ mathematical thinking and students’ home and community-based funds of knowledge.

Corey Drake
Michigan State University, East Lansing
Tonya Gau Bartell
Michigan State University, East Lansing
Mary Q. Foote
Queens College–CUNY, New York, New York
Amy Roth McDuffie
Washington State University Tri-Cities, Richland, Washington
Erin E. Turner
University of Arizona, Tucson
Julia M. Aguirre
University of Arizona–Tacoma

GOLDEN GATE B (MARRIOTT)

175
Engaging Parents by Hosting a Family Math Night
Coaches / Leaders / Teacher Educators Workshop
Family math game nights have proven to be a great way for schools to connect in a meaningful way with their parents to help them gain the capacity to assist their children at home with their math. Participants in this session will learn a variety of formats to insure success and receive an outline for games to teach; planning ideas will be shared.

Allison Riddle
Davis Unified School District, Salt Lake City, Utah

YERBA BUENA 3/4 (MARRIOTT)

176
Fraction Interventions: Empowering Struggling Learners to Master CCSSM Expectations
3–5 Workshop
Evidence-based interventions (RtI) for high-needs learners can help all students master fractions. Explore manipulatives and visual models for dividing fractions and ways to help students connect the models to standard symbolic representations. Leave with handouts containing activities, a summary of the recommendations, and a list of resources.

Linda L. Forbringer
Southern Illinois University Edwardsville

306 (MOSCONER SOUTH)

177
Fractions: Tools, Tasks, and Talk
3–5 Workshop
Are you looking for resources that meet your students’ needs in understanding fractions? Are you struggling to find tools that build fraction sense? This interactive session will explore the key ideas of unit fraction (“What is the whole? Part? Fraction?”), foundations for fraction computation, and various tools needed to build that understanding.

Lynette R. Sharlow
Wichita Public Schools, Kansas
Debbie M. Thompson
Wichita Public Schools, Kansas

GOLDEN GATE C2 (MARRIOTT)
178
Getting Students Talking . . . Open Questions in High School Math
10–12 Workshop
In this session, teachers will learn questioning strategies that can be used to provoke student thinking and develop argumentation in the math classroom. In particular, we will explore how to build math communication and discourse by integrating open questions in high school algebra, functions, and geometry based on the work by Dr. Marian Small.

Mishaal Surti
Thames Valley District School Board, London, Canada
3018 (MOSCONE WEST)

179
Incredible Math Tasks!—Activating the Teaching Practices
8–10 Workshop
In this hands-on session, we will explore how to use worthwhile math tasks to support student’s productive struggle. We will examine student work and videos to explore how tasks, paired with teacher moves and questions, can promote student engagement in the Standards for Mathematical Practice. Leave with 200+ resources you can use Monday morning.

Jenny Novak
Howard County Public Schools, Maryland
Bill Barnes
Howard County Public School System, Ellicott City, Maryland
3003 (MOSCONE WEST)

179.1
Teaching Mathematics through Problem Solving
Pre-K–2 Workshop
This presentation will guide participants through the process of teaching mathematics through problem solving in the primary grades. It will highlight how teachers have used Lesson Study to design mathematics lessons that allow primary students to make sense of problems, persevere in solving them, and communicate their ideas to fellow students.

Andrew Friesema
Dr. Jorge Prieto Math and Science Academy, Chicago, Illinois
Aubrey Perlee
Dr. Jorge Prieto Math and Science Academy, Chicago, Illinois
Sari Freier
Dr. Jorge Prieto Math and Science Academy, Chicago, Illinois
3022 (MOSCONE WEST)

180
Linear or Quadratic? Engaging in Two Effective Mathematics Teaching Practices
8–10 Workshop
Participants will explore a rich algebraic task that provides unique opportunities to uncover students’ thinking about linear and quadratic functions. Participants will also examine student work samples and consider how to respond to students’ current thinking as well as how to extend their ideas in order to deepen their conceptual understanding.

Amy Hillen
Kennesaw State University, Georgia
Jennifer A. Outzs
Pinellas County Schools, Seminole, Florida
Matthew Blue Taylor
New Visions for Public Schools, New York, New York
3011 (MOSCONE WEST)

Don’t miss the Closing Keynote on Saturday afternoon with featured speaker Hill Harper, Actor, Author, and Philanthropist.
1:00 P.M.–2:15 P.M.

181 Making Meaning from Multiple Strategies
Pre-K–2 Workshop

Students may have multiple strategies, but do they understand how various strategies relate or how to choose which is best and most efficient? Learn how to support students in making connections among multiple addition and subtraction strategies so they become flexible and strategic problem solvers.

Jennifer Mundt Leimberer
University of Illinois at Chicago
Elizabeth Cape
Teaching Integrated Mathematics and Science (TIMS) Project, University of Illinois at Chicago

310 (MOSCONE SOUTH)

182 Mathematical Thinking across the Curriculum
Pre-K–2 Workshop

Math in everyday life doesn’t always come neatly packaged as a math problem. How can other subject areas provide opportunities for engaging in mathematical thinking and practices? Explore the ways that science and engineering activities provide opportunities for young learners to engage in math, with a focus on the use of mathematical practices.

Jeanne Di Domenico
Center for Elementary Mathematics and Science Education, University of Chicago, Illinois
Liz Lehman
Center for Elementary Mathematics and Science Education, University of Chicago, Illinois
Deborah A. Leslie
University of Chicago, Illinois

183 Place Value: Beyond the Chart!
3–5 Workshop

Upper elementary children can easily identify how many 1s, 10s, 100s are in any given number. Yet a common complaint among teachers is that their kids “don’t understand place value.” Why is this? Participants will engage in activities that have been modified from traditional place value exercises to extend and deepen student base-ten relationships.

Angie Godfrey
Idaho Regional Mathematics Center, Idaho State University, Pocatello

3006 (MOSCONE WEST)

183.1 Exploring Length, Area, and Volume: Three Sequenced Hands-On Geometry Activities
6–8 Workshop

Can you measure the length of an arc, compute the percentage of the sun’s disk covered by the moon in an eclipse, and compare volumes of cylindrical boxes and prisms with the same heights and base perimeters? Take these mathematically linked classroom-tested tasks (and artifacts) back to your students!

Patricia Baggett
New Mexico State University, Las Cruces
Jacqueline S. Lopez
Lynn Middle School, Las Cruces, New Mexico

304 (MOSCONE SOUTH)

184 Professor CBR Solves Another Case
6–8 Workshop

Armed with graphing calculators and calculator-based rangers (CBR), you will help Professor CBR unravel another mystery. A unique CBR performance task that assesses understanding of rates of change will also be shared. Appropriate for both beginner and advanced users.

Jane E. Damaske
Retired, Lakeshore Public Schools, Stevensville, Michigan
Judith Hicks
Mathematics Consultant, Arvada, Colorado

2016 (MOSCONE WEST)
1:00 P.M.–2:15 P.M.

**185**

**Putting Principles to Action through Math Modeling with Science**

10–12 Workshop

Dive into Standard for Mathematical Practice #4 with this interactive session exploring a science phenomena! Participants will experience the modeling cycle of gathering data, creating math models in multiple representations, analyzing and interpreting results, and communicating reasoning with justification, using large “whiteboards” to show thinking.

David A. Leib
Wichita Public Schools, Kansas

Arthur Ballos
Wichita Public Schools, Kansas

**2008 (MOSCON WEST)**

2:00 P.M.–3:00 P.M.

**188**

**Be an Even Better Teacher Next Year by Tinkering This Spring!**

6–8 Session

It’s back to reality on Monday . . . or is it? This time of the year is a perfect time to tinker with your teaching and prepare for full implementation in the fall. Learn how to build on what you learned and on what inspires you from the NCTM meeting, to design, implement, and refine pedagogical changes to address problems of practice.

Joel Amidon
University of Mississippi

**YERBA BUENA 8 (MARRIOTT)**

189

**Breaking Down Division**

3–5 Session

Do your students struggle with division? In this session participants will explore how place value, properties of operations, and making connections to multiplication will help build a deeper understanding of multi-digit division. Walk away with classroom strategies, lesson ideas, and resources for independent practice.

Susan A. Jensen
Howard County Public School System, Ellicott City, Maryland

Cheryl Akers
Howard County Public School, Ellicott City, Maryland

Kim Quintyne
Howard County Public Schools, Columbia, Maryland

**YERBA BUENA 5/6 (MARRIOTT)**
Essential Classroom Strategies to Advance Student Learning

Preparing your students for success is all about building the right foundation. NCTM’s Interactive Institute on Mathematical Practices includes two and half days of interactive sessions and workshops to help you effectively address the eight Mathematics Teaching Practices from Principles to Actions: Ensuring Mathematical Success for All, the Common Core mathematical practices, and NCTM Process Standards.

Immerse yourself in professional development that addresses these questions:

• How can I reframe what I’m already doing so that it sticks with students?
• How do I make these concepts come alive in the classroom?
• What tools and strategies can I learn to improve my teaching?
• How do I make these capacities part of my students’ thinking habits?

Learn more at nctm.org/institutes and follow us on Facebook, Twitter, LinkedIn, YouTube, Pinterest, #NCTMinstitutes

Register by May 22 and save $40!
2:00 P.M.–3:00 P.M.

190 **Children’s Literature and Manipulatives: When the Math Tells the Story**
Pre-K–2 Session
Children’s literature integrated with manipulatives has the potential to be a powerful math learning experience in pre-K–2 classrooms. But how do we help our students “find” the math in a story? How might we connect story, activity, and problem solving in a meaningful way? Which manipulatives should we use? Come to this workshop and find out!
Jennifer Edelman
jedelman@westga.edu University of West Georgia, Carrollton

191 **Coaching through Cognitive Dissonance: Using Video to Promote Change**
Coaches / Leaders / Teacher Educators Session
Engage in experiences designed to create an environment to support changing teachers’ practices within schools and districts by creating disequilibrium using classroom videos connected to tasks. Four essential cues for coaching through cognitive dissonance will be shared and illustrated within this session.
Juli K. Dixon
University of Central Florida, Orlando

192 **Connecting Word Problems and Manipulatives to Understanding of Basic Facts**
Pre-K–2 Session
Learn about research-based frameworks of students’ mathematical understanding, how to use word problems effectively in your class, and targeted activities to make connections to help your students understand basic facts.
Jeffrey C. Shih
University of Nevada, Las Vegas
Linda M. Gojak
Past President, National Council of Teachers of Mathematics; John Carroll University, University Heights, Ohio

193 **Engaging in Math Tasks: How to Get Students Started!**
3–5 Session
Given the emphasis of the role of tasks and nonroutine problems in supporting students’ reasoning and problem solving, what can teachers do if students are not actively engaging in the problem-solving process? In this session, we will examine three effective strategies for scaffolding student engagement in mathematical tasks.
James C. Willingham
Middle Tennessee State University, Murfreesboro
Matthew Duncan
Middle Tennessee State University, Murfreesboro
Kristin S. Hartland
Middle Tennessee State University, Murfreesboro

194 **Explore Absolute Value & Contribute to the Development of NCTM’s ARCs**
8–10 Session
Be a part of NCTM’s effort to restructure Classroom Resource content available on nctm.org so that it best meets your needs. This workshop introduces the storyboard for a set of Activities with Rigor and Coherence (ARCs). Attendees will discuss the mathematics and pedagogy of an evolving ARC and participate in the co-creation of a storyboard for a potential future ARC. The ARCs are works in progress, so participants will be asked for feedback.
Janet Oien
Fort Collins High School, Fort Collins, Colorado
Sarah DeLeeuw
National Council of Teachers of Mathematics, Reston, Virginia
2:00 P.M.–3:00 P.M.

195
Flippin’ Fun Professional Development
Coaches / Leaders / Teacher Educators Session
Flipped instruction and elements of gaming are being used as ways to engage students. But have you thought about how these same techniques could be used to engage teachers in professional development? We will explore ways flipping and gaming can be used to help teachers grow, in both large and one-on-one professional development settings.
Amy L. Nebesniak
University of Nebraska at Kearney

196
Flipping with a Twist: Promoting Inquiry While Flipping the Classroom
10–12 Session
This presentation encourages people to amend the usual lecture/homework flipped classroom. I have added inquiry-based statistics activities both before and after video lectures. Many of these activities can be done in other non-statistics classes to explore many Common Core concepts. We will simulate a two-day cycle of this form of instruction.
Jonathan M. Osters
The Blake School, Minneapolis, Minnesota

197
Geometry Tasks That Promote Habits of Mathematical Thinking
10–12 Session
We wanted problems that would stretch our students and allow them to develop their mathematical habits of mind and practices, particularly their abilities to persevere and strategize. So we invented “synthesis tasks,” which are assessment-like in nature, are challenging yet doable, and will definitely have your students thinking creatively.
McKendry Marano
James River High School, Midlothian, Virginia
Ben Hyman
Walter Payton College Prep, Chicago Public Schools, Illinois

199
Guided Math: Differentiating Small-Group Instruction
General Interest Session
Meet students’ needs through small-group instruction with this interactive Guided Math workshop. Explore two ways to differentiate standards-based, small-group lessons using data. Learn to use a task-based lesson structure to maximize mathematical thinking. Experience ways to use existing curricula within Guided Math. Receive lessons and resources.
Karie F. Gladis
Consultant, San Clemente, California

200
Improving Student Outcomes through Family and Community Engagement
General Interest Session
Family and community engagement is a powerful tool for improving student outcomes. Join the team from the Alameda County Office of Education as we share some research on family engagement and discuss how the Common Core State Standards for Mathematics are a lens to make parents and families authentic partners in the various learning communities we support.
Celine Liu
Alameda County Office of Education, Hayward, California
Juwen Lam
Alameda County Office of Education, Hayward, California
James R. Town
Alameda County Office of Education, Hayward, California
2:00 P.M.–3:00 P.M.

201  INVESTigating Way to Integrate Mathematics and Financial Literacy  
6–8 Session
We will share a set of activities that address both goals for mathematics (CCSSM) and financial literacy (Jump$tart Standards). See how number, algebra, and statistics can support students in building a stronger understanding of financial literacy topics such as doubling discounts, owning a car, and getting a job.
Maggie B. McGatha  
University of Louisville, Kentucky
Jennifer M. Bay-Williams  
Board of Directors, National Council of Teachers of Mathematics; University of Louisville, Kentucky
Susan A. Peters  
University of Louisville, Kentucky

202  iPad Fun with Early Childhood Math Apps  
Pre-K–2 Session
Early childhood apps provide enriching opportunities for children to learn mathematics. Clearly, students who acquire number sense will have success in future mathematics courses. This session emphasizes the importance of number instruction for pre-K students. A collection of apps will be shared and discussed to promote mastery of math concepts.
Amy Adkins  
University of Nevada, Las Vegas
Dawn Lockett  
Clark County School District, University of Nevada, Las Vegas
Lina DeVaul  
University of Nevada, Las Vegas

204  Making Sense of Inference Questions on the AP Statistics Exam  
10–12 Session
Inference makes up about half of most introductory statistics courses, including AP Statistics. In this session, we will examine the issues that make confidence intervals and hypothesis tests so difficult for students. Then we will discuss strategies for helping students perform inference successfully on the AP Statistics exam.
Daren Starnes  
The Lawrenceville School, New Jersey
Josh Tabor  
Canyon del Oro High School, Oro Valley, Arizona

205  Mathematical Practices for AP Calculus  
10–12 Session
AP Calculus is changing in the 2016–17 academic year and now includes and emphasizes Mathematical Practices for AP Calculus. What are these practices? How are they related to conceptual understanding of calculus? How are they similar to and different from the Common Core Standards for Mathematical Practice?
Stephen Davis  
Davidson University, North Carolina
Ben Hedrick  
The College Board, Duluth, Georgia
Vicki M. Carter  
West Florence High School, South Carolina
206
Math with Intent: The Power of Intentional Instruction Strategies
Pre-K–2 Session
Early childhood educators must establish specific goals to assure that their students gain the foundational mathematics knowledge and skills they require to succeed. This session will focus on the practice of intentional instruction, teacher- and child-driven learning opportunities, modeling thinking and behaviors, and visual learning strategies.
Stuart J. Murphy
Self-Employed Consultant, Boston, Massachusetts
GOLDEN GATE C1 (MARRIOTT)

207
Meaningful Ways to Develop Math Facts
3–5 Session
Games provide meaningful opportunities for students to develop problem solving and number-sense strategies for the math facts. We will share characteristics of a number-sense approach to developing students’ math facts and an array of engaging and motivating games that you can take back to your classroom.
Sandy Niemiera
Learning Sciences Research Institute, University of Illinois at Chicago
Liz Cape
Learning Sciences Research Institute, University of Illinois at Chicago
GOLDEN GATE C3 (MARRIOTT)

208
President’s Address: Capitalizing on New Opportunities for Systemic Improvement in Mathematics Education
General Interest Session
Recent reports and research studies, such as the Mathematics Association of America’s “A Common Vision for Undergraduate Mathematical Sciences Programs in 2025” (2015) and the National Research Council’s Education for Life and Work (2012), as well as NCTM’s Principles to Actions: Ensuring Mathematical Success for All (2014), present very similar descriptions of high-quality mathematics teaching and learning. This emerging consensus provides new opportunities for systemic improvement in mathematics education, with particular emphasis on pathways from high school to collegiate mathematics. How can we best capitalize on these new opportunities? What actions should each of us, as teachers, school and district leaders, and professional organizations, including NCTM, take to turn these opportunities into increased mathematics learning for all students?
Diane J. Briars is president of the National Council of Teachers of Mathematics (NCTM). Previously, she was a mathematics education consultant, working primarily to support schools and districts in interpreting and implementing the Common Core State Standards for Mathematics. Briars has been mathematics director for Pittsburgh Public Schools and began her career as a secondary mathematics teacher.
Diane J. Briars
President, National Council of Teachers of Mathematics, Reston, Virginia
135 (MOSCONE NORTH)

209
Putting the M in STEM to Drive Learning
8–10 Session
STEM units engage learners to reason, problem-solve, and think critically across disciplines. Learn the basics of creating and implementing integrated STEM units that are relevant to students. Two classroom-tested STEM units will be presented, along with successes and challenges of these units to help teachers in their classrooms.
Valerie R. Thomas
Jefferson High School, Lafayette, Indiana
3005 (MOSCONE WEST)
2:00 P.M.–3:00 P.M.

210 **E&A**
Teaching Mathematics for Social Justice: Grieving through Probability

10–12 Session
You will learn how high school students learned probability by investigating teenage driving fatalities after a peer died in a car accident. They mastered standards and performed as well as students who learned through traditional probability tasks. Using data on teenage fatalities, we will derive the addition rule of probability.

Erin N. Talley
Cobb County School District, Marietta, Georgia
Wendy B. Sanchez
Kennesaw State University, Georgia
Jennifer Glendenning
Cobb County School District, Marietta, Georgia

3001 (MOSCONE WEST)

211
The Development of Modeling Integers in a Translation/Relativity Context

6–8 Session
Operating and modeling with integers is challenging for students, but crucial for success. Come explore the ways a Translation/Relativity context was modeled with integers across twelve weeks by grade 5 students. Learn instructional techniques to help students develop these ideas with contexts that support Translation and Relativity reasoning.

Nicole M. Wessman-Enzinger
Illinois State University, Normal

3009 (MOSCONE WEST)

212
The Importance of Meaningful Mathematics Discourse in the Elementary Classroom

3–5 Session
Participants in this session will evaluate levels of math discourse in classrooms and will understand their role in establishing an environment that encourages students to analyze and compare approaches and arguments to build mathematical understanding. Educators will use a rubric to evaluate current levels of math talk in their own classrooms.

Jennifer Christensen
Math Learning Center, Salem, Oregon
Pia M. Hansen
Math Learning Center, Salem, Oregon

GOLDEN GATE A (MARRIOTT)

213
Too Hot! or Too Cold!: An Integrated Hands-On Investigation

8–10 Session
President’s Series presentation
Let’s do a fun activity integrating math, science, and technology by exploring the concepts of heat, temperature, measurement, statistics, and modeling. It will be open-ended, allowing participants to develop their own procedure for determining how to calibrate an unmarked Celsius thermometer to measure the temperature of a glass of tap water.

Kathleen Cage Mittag
Retired, University of Texas at San Antonio
Gilbert Naizer
Texas A&M University, Commerce, Texas

301 (MOSCONE SOUTH)

Thank you to the Program Committee members. Your time and dedication made this year’s Annual Meeting a huge success!
2:00 P.M.—3:00 P.M.

214
Translanguaging: How ELLs Use Language in an Online Precalculus Course
Research Session

English language learners have language barriers they must overcome in order to participate in online courses. This qualitative pilot study addresses how ELLs engage in an online course. Students at a Hispanic-serving university describe translanguaging strategies in an online mathematics course and learning both English and math content.

Julian Viera
University of Texas at El Paso
Olga M. Kosheleva
University of Texas at El Paso

215
Using Student-Response Systems in Entry-Level College Mathematics Courses
Higher Education Session

Student-response systems (clickers) have been used extensively in physics classrooms. This session details how clickers can be used in introductory mathematics courses to help teachers determine what students know about mathematical topics during instruction, rather than at the end of instruction.

Jonathan A. Engelman
Kettering College, Ohio

216
Why S.T.E.A.M. Should Be Your Cup of T.E.A.!
Coaches / Leaders / Teacher Educators Session

Technology, engineering, and art are the T.E.A. in S.T.E.A.M. education. Whatever your knowledge of or current position on the S.T.E.A.M. initiatives happening across the country, this engaging, interactive session will provoke you to consider why integrating T.E.A. in a mathematics curriculum should be your cup of tea!

Jordana Benone
Teacher Created Materials, Huntington Beach, California

216.1 Building Concepts: A Path for Discovering Connections in Math
6–8 Exhibitor Workshop

What is the role of a variable in an expression? How can slope be explored through proportions? What can a sample tell us about a population? In this session, we will look at new ways of using technology to help students visualize, think about, connect, and discuss mathematics across grades 6 through 8.

Texas Instruments
Dallas, Texas

216.2 Six Secrets of Highly Effective Lesson Design!
General Interest Exhibitor Workshop

In this inspirational and interactive session we will explore six research-affirmed lesson design elements that inspire student learning of mathematics each and every day. Students’ mathematical learning experiences must be meaningful and relevant, and served with a high degree of active engagement! Let’s uncover the secrets to great lessons together!

Houghton Mifflin Harcourt
Boston, Massachusetts

216.3 AP Calculus Panel Discussion
10–12 Exhibitor Workshop

A panel with the current and immediate past chief readers, a representative of the College Board, and others will highlight this discussion for AP Calculus teachers. The lessons learned from grading the 2015 exams and the new Curriculum Framework will be among the topics discussed. There will be time for questions and answers, and a raffle.

Hamilton, New Jersey
<table>
<thead>
<tr>
<th>Time</th>
<th>Session Number</th>
<th>Title</th>
<th>Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2:00 P.M. – 3:00 P.M.</td>
<td>216.4</td>
<td><strong>Leveraging Adaptivity in Your Grades 3–5 Classroom</strong></td>
<td><strong>3–5 Exhibitor Workshop</strong></td>
<td>Personalized learning. Adaptive learning. Assessment-driven instruction. Whatever you call it, the question is how can you use technology-driven adaptivity in the classroom. Learn how adaptivity can be used to support student progress and save you time in a core classroom as we look at a new partnership between enVisionmath and Newton to bring adaptivity to grades 3–5.</td>
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<td><strong>Using Investigations to Engage All Learners in Geometry</strong></td>
<td><strong>10–12 Exhibitor Workshop</strong></td>
<td>Geometry investigations provide an opportunity for learners at all levels to engage in meaningful tasks. This session will provide examples of guided investigations and performance tasks from the new edition of <em>Discovering Geometry</em> that provide multiple entry points into the mathematics of CCSS.</td>
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<td><strong>Engage Media-Savvy Students with Songs, Videos, Games, and Rewards</strong></td>
<td><strong>General Interest Exhibitor Workshop</strong></td>
<td>Teachers are turning to a new collection of musical, high-interest lessons called Math Upgrade to engage today’s media-savvy students. Find out how teachers use games and rewards to bring below proficient students up to grade level. Join us for math, music, and fun!</td>
</tr>
</tbody>
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**2:45 P.M. – 4:00 P.M.**

<table>
<thead>
<tr>
<th>Session Number</th>
<th>Title</th>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>218</td>
<td><strong>4 Games X 5 Ways = 20 Differentiated Activities</strong></td>
<td><strong>Coaches / Leaders / Teacher Educators Workshop</strong></td>
<td>We have a diversity of ability in our classrooms and integrate RTI and ELL along with our regular students. In this session, learning 4 games and then adapting them 5 ways = 20 differentiated activities for immediate use. Through carefully designed lesson planning and learning a repertoire of games and strategies, you’ll ensure active engagement for all K–5 students.</td>
</tr>
</tbody>
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**Be a speaker! Submit your proposal now for the 2017 Annual Meeting & Exposition at NCTM.org/speak. Deadline is May 1.**
2:45 P.M.–4:00 P.M.

219  But My Kids Don’t Think That Way!
Pre-K–2 Workshop

The Common Core math standards repeatedly reference building fluency with computational strategies based on place value, the properties of the operations, and the relationship between addition and subtraction. Learn what these strategies look like and how they build students’ computational fluency.

Kevin Larkin
Pinellas County Schools, Largo, Florida
Adrienne DeLong
Pinellas County Schools, Largo, Florida

3008 (MOSCONE WEST)

221  Changing the Math Mindsets for Struggling Learners and Their Teachers
Coaches / Leaders / Teacher Educators Workshop

Higher expectations for student learning need to be accompanied by the belief that everyone can learn. In our second year of working with K–12 teachers about mindsets, we will share how we are using research and data through curriculum and professional development. Strategies, resources, and tools will be shared.

Samantha Wuttig
Fairbanks North Star Borough School District, Alaska
Michelle Daml
Fairbanks North Star Borough School District, Alaska

3022 (MOSCONE WEST)

220  Explore Real-World Statistics, Simulate a Bungee Jump & Meet NCTM’s ARCs
10–12 Workshop

Be a part of NCTM’s effort to restructure Classroom Resource content available on nctm.org so that it best meets your needs. This workshop introduces the first component—newly developed Activities with Rigor and Coherence (ARCs). Participants will work through the mathematics in an exemplar ARC, led by a member of the ARC writing team. The ARCs are works in progress, so participants will be asked for feedback.

Luke W. Wilcox
East Kentwood High School, Kentwood, Michigan
Diedra Baker
Keota High School, Keota, Iowa

3010 (MOSCONE WEST)

222  Creating and Implementing CCSS-Based Family Math Nights: Scaffolding Success
3–5 Workshop

Have you hosted a FMN in the past with little success, or do you plan to host one soon? Come learn how to create successful Family Math Nights for your classroom, school, or system. Participants will learn how to easily organize and reuse “hands-on” activities for engaging parental events year after year.

Stephanie A. Shultz
Marietta City Schools, Georgia

302 (MOSCONE SOUTH)

223  Developing Early Multiplication Understandings with Intensification Strategies
3–5 Workshop

Why is it important to think intensification instead of remediation? This session will engage participants in exploring some big ideas, strategies, and models to help support students’ construction of multiplicative reasoning while using research-based intensification strategies.

Heather Crawford-Ferre
University of Nevada, Reno
Denise N. Trakas
Washoe County School District, Reno, Nevada

3018 (MOSCONE WEST)
2:45 P.M.—4:00 P.M.

224 Teaching Tuesday
Developing Partnerships with Parents to Support Their Child’s Learning
Pre-K–2 Workshop
Do you have parents who are baffled by the math their children are learning? Do you have parents who show kids how to solve problems in ways that conflict with developing understanding? Learn how to engage your students’ parents in understanding math and strategies to best support their children with homework and math learning.

Kathy Ernst
Thinking Foundation, Lyme, New Hampshire
YERBA BUENA 3/4 (MARRIOTT)

225 Finding Fractional Thinking through Cuisenaire Rods
3–5 Workshop
The bigger understandings of fraction concepts can be daunting. Cuisenaire rods is a concrete model that provide context for developing the big ideas in fractions. Attend the session and experience first hand how students use Cuisenaire rods to establish these big ideas and how to make sense of the operations of fractions.

Selina Millar
SD 36 Surrey School District, Surrey, Canada
3004 (MOSCONE WEST)

226 Get Your Model On: Mathematical Modeling in the Elementary Classroom
Pre-K–2 Workshop
Elementary students are missing the mark when it comes to modeling with mathematics. As teachers, we’ve misinterpreted the term “model” as simply the use of manipulatives in math. By engaging in problem-based lessons, participants will leave with a deeper understanding of the modeling process and how to ensure it’s happening in their classrooms.

Graham Fletcher
Griffin-Spalding County Schools, Georgia
GOLDEN GATE B (MARRIOTT)

227 Hands-On Discovery of Trigonometric Functions
10–12 Workshop
Given any circle of unknown diameter, how can we build all six trig functions leading to a complete trig unit? Come create your own measuring device and collect data to explore trig through a data-driven lens. How does this help our students unfold and understand the unit circle without memorizing anything? Let’s explore together.

Ronda Davis
Ronda Davis, Albuquerque, New Mexico
304 (MOSCONE SOUTH)

228 Lesson Study Collaboration: Creating a Teaching “Take Two”
3–5 Workshop
Imagine you could watch the lesson you were going to teach, before you taught it. In a collaborative lesson study around an Illustrative Mathematics task, a diverse group of educators did just that. From design, implementation, observation, and revision, participants will engage in a lesson study process and leave with a vision for personal implementation.

Kristin N. Gray
Cape Henlopen School District, Lewes, Delaware
Shelbi K. Cole
Smarter Balanced Assessment Consortium, Olympia, Washington
Alicia Farmer
Anacortes School District, Washington
310 (MOSCONE SOUTH)

229 Modeling Your Way to Understanding with Realistic Mathematics Education
10–12 Workshop
Realistic Mathematics Education (RME) is a philosophy of math education that has guided the Netherlands to two top-five rankings on the Program for International Student Assessment (PISA). Participants in this session will learn about RME and explore a coherent series of informal, preformal, and formal tasks designed to support student understanding of advanced algebra and precalculus topics.

Raymond Johnson
University of Colorado Boulder
Frederick Peck
Freudenthal Institute US, Boulder, Colorado
David C. Webb
University of Colorado Boulder
3011 (MOSCONE WEST)
2:45 P.M.–4:00 P.M.

![Image of a page with text]

230 Pop-Up Math: Algebra and Geometry through Paper Engineering  
6–8 Workshop  
Become a paper engineer! Learn to make your own pop-up mechanisms using card stock and tape. Explore how these mechanisms work by measuring distances and angles, and analyze your data for its underlying patterns. Design and analysis of pop-ups offer entry points into linear equations and plane geometry in an engaging and surprising way!

Cherubim Cannon  
P.S. 5, Brooklyn, New York  
Donna M. Johnson  
C.S. 21, Brooklyn, New York  
Janice Porter  
P.S. 5, Brooklyn, New York

231 Strengthening Conceptual Understanding through Formative Assessment Strategies  
3–5 Workshop  
Participants will learn about and engage in formative assessment strategies that elicit student evidence of understanding. By promoting classroom discussions and engaging students, teachers strengthen connections between content and practices standards, deepening their conceptual lens. A tool for planning and coaching, will be shared.

Astrid Fossum  
Milwaukee Public Schools, Wisconsin  
Marni Greenstein  
Student Achievement Partners, New York, New York

232 Supporting Productive Struggle in Secondary Classrooms  
8–10 Workshop  
*Principles to Actions* identifies promoting productive struggle as one of eight Effective Mathematics Teaching Practices that support student learning. In this session, we will explore tasks and teacher moves that support productive struggle and how productive struggle can support and foster other Effective Mathematics Teaching Practices.

Mike Steele, Ed.D  
University of Wisconsin–Milwaukee

233 Talk Moves and Task Structures for Cultivating Mathematical Practice #3  
10–12 Workshop  
In theory, Standard for Mathematical Practice #3 (constructing viable arguments and critiquing reasoning) ought to be a fertile field for group work, but in practice, it often breaks down into a social and emotional minefield. This session will present new talk moves and task structures that turn MP.3 into a rich, equitable, and sustainable set of classroom practices.

Elizabeth Statmore  
Lowell High School, San Francisco, California

234 The Amazing Geometry of Bicycle Tracks: Math Teachers’ Circle Demonstration  
6–8 Workshop  
Math Teachers’ Circles (MTCs) are professional development communities of middle school mathematics teachers and mathematicians focusing on the practice of mathematics. Participants in this session will experience a MTC firsthand by exploring this mathematical mystery: Can we tell which way a bicycle went based only on its tracks?

James Tanton  
Mathematical Association of America, Washington, D.C.  
Brianna Donaldson  
American Institute of Mathematics, San Jose, California
235
Using Origami Boxes to Visualize Mathematical Concepts

10–12 Workshop

During this session, we will construct an origami box from a sheet of paper and discuss the mathematical ideas that are involved with the activity. We will explore the relationship between the dimensions of the sheet and the dimensions of the constructed box. We will also explore the volume of the constructed using graphing technology.

Arsalan Wares
Valdosta State University, Georgia

2016 (MOSCONE WEST)

236
Who, Me? I Am Going to Teach Statistics?

8–10 Workshop

If you are teaching algebra 1 or algebra 2, come join us for a hands-on workshop engaging in the statistics content that is part of the Common Core standards. Participants will work collaboratively with in-class activities using technology and NCTM Effective Mathematics Teaching Practices. One- and two-variable data will be highlighted in this session.

Robin Levine-Wissing
Glenbrook North High School, Northbrook, Illinois

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

2008 (MOSCONE WEST)

ORIGO GRANT PROGRAM

Making $100,000 available to schools in need. The Grant designates funding to assist districts in piloting a new curriculum.

To learn more about ORIGO’s Grant Program visit bit.ly/NATL_NCTM

Applications accepted through April 30, 2016.
3:30 P.M.—4:30 P.M.

237
Algebra I Experiments: Engaging All Students through Exciting Applications
8–10 Session
President’s Series presentation
Are you looking for some hands-on activities for your algebra I students? Come to this workshop and engage in experiments that simulate real-world situations. You will collect data, convert the data into multiple representations, and analyze the results. Learn how to ask questions related to the experiments that promote sense making and discourse.

Amy T. Herman
Council of Presidential Awardees in Mathematics (CPAM), Louisville, Kentucky

238
Arrays: Access to Complex Properties of Multiplication and Division
3–5 Session
We will examine how the array provides students with a deeper understanding of the meaning of multiplication and the two meanings of division. Experience how grade 3 students are introduced to the properties of multiplication through the array and how it sets the foundation for using these strategies in grades 4 and 5 with the area model.

Susan B. Lee
Eureka Math, Washington D.C.,
Saffron L. VanGelder
Curriculum Associate, Common Core, Inc.; Teacher, Spencer-Van Etten Elementary School, Washington, D.C.

239
Building Students’ Discourse in Mathematical Reasoning and Sense Making
Coaches / Leaders / Teacher Educators Session
President’s Series presentation
This session presents teacher moves and instructional tasks that support students as they build personal mathematical knowledge, structures, facts, relations, and practices. Also, we will share strategies for you to assess your students’ concept development and misconceptions that can inform your instructional decisions.

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

240
Choosing Tasks: Shallow or Deep?
Higher Education Session
How do we create rich learning environments where all students learn at a high level? This session focuses on teaching elementary teacher candidates to sort tasks into categories based on Webb’s Depth of Knowledge. They rewrite level 1 or 2 tasks to be a level 3. They then use these tasks in a classroom and revisit depth. The results are surprising!

Erica Slate Young
University of Alabama in Huntsville
Sheila Holt
University of Alabama in Huntsville; AMSTI (Alabama Math Science Technology Initiative), Huntsville, Alabama

241
Collaborative Problem Solving through Productive Persistence
3–5 Session
In this interactive session, leaders explore a student-centered paradigm that embraces complex problem solving through productive persistence. Through the lens of the mathematical practices, we investigate and evaluate a process in which problems are thoroughly understood and entry points identified prior to solving. Student samples will be shared.

Robyn Silbey
Robyn Silbey Professional Development, Gaithersburg, Maryland
3:30 P.M.–4:30 P.M.

242
Co-Teaching as a High School and College Mathematics Partnership
8–10 Session
This session will detail a co-teaching partnership between high school and college math faculty. Through this partnership we have developed pedagogical content knowledge in geometry as well as teaching strategies. The session will use specific classroom examples to describe what we have learned and ingredients for an effective partnership.

Jessika Tate
Deer Valley High School, Antioch, California
Mara Landers
Los Medanos College, Pittsburg, California

3012 (MOSCONE WEST)

243
Creating Thinkers—Not Mimickers
3–5 Session
This interactive session uses the Standards for Mathematical Practice to frame an understanding of cognitive demand that tasks require and explores ways to raise the demand through question strategies. Participants consider best practices for including the mathematical practices in lesson design. Come engage in tasks appropriate for grades 3–5.

Kit Norris
Mathematics at Work, Bloomington, Indiana
Sarah Schuhl
Mathematics at Work, Bloomington, Indiana

301 (MOSCONE SOUTH)

244
Developing and Running Out-of-Schooltime Math Programs for Girls
General Interest Session
After-school and summer programs can support classroom mathematics learning and can be especially important for underrepresented groups. This session will provide information on developing and conducting out-of-schooltime programs as a way to support math learning for diverse girls. A handout with key ideas and resources will be provided.

Lynda R. Wiest
University of Nevada, Reno
Heather Crawford-Ferre
University of Nevada, Reno
Jafeth E. Sanchez
University of Nevada, Reno

YERBA BUENA 7 (MARRIOTT)

245
Drop the Timer and Step Away from the Flashcards!
Pre-K–2 Session
Fluency is not about speed and memorization of facts; it’s a deep understanding of how numbers work together. We will look at current brain-based research and explore developing fluency without all the anxiety-producing “drill-and-kill” practices. We will engage in intentional activities that allow students to develop their fluency and confidence.

Becky Smith Nance
Center for Mathematics and Science Education, University of Mississippi, Oxford

YERBA BUENA 5/6 (MARRIOTT)
246  
**Embracing Feedback: How to Orchestrate Lesson Study for Preservice Teachers**  
*Coaches / Leaders / Teacher Educators Session*  
Lesson Study is a dynamic, strength-based, professional development tool for transforming educational practice through “just in time” feedback. The challenge for teacher training programs is how to develop these practices within our programs. In this presentation, you will see how to structure your courses to harness the power of Lesson Study.  
Anthony Matthew Rodriguez  
Providence College, Rhode Island  
2020 (MOSCONTE WEST)

247  
**Engaging Students In Active Learning: Tasks, Teaching Actions & Practices**  
*General Interest Session*  
Participate in an active learning mathematics task that is fun, content rich, and spans multiple levels. Experience as the learner, and analyze the teaching actions that make the learning possible and the connections to the mathematical practices. Group discussions and information on specific strategies and resources to support engaged learning.  
Angie Hodge  
University of Nebraska Omaha  
YERBA BUENA 8 (MARRIOTT)

248  
**Essential Knowledge for Effective Teaching and Learning of Statistics**  
*General Interest Session*  
The Common Core and various state standards emphasize statistics, particularly in grades 6–12. This session presents the Statistics Education of Teachers recommendations, including putting the Standards for Mathematical Practice under a statistical lens as well as grade-band examples illustrating the statistical thinking process.  
Anna E. Bargagliotti  
Loyola Marymount University, Los Angeles, California  
Denise A. Spangler  
Board of Directors, National Council of Teachers of Mathematics; University of Georgia, Athens  
YERBA BUENA 10/11 (MARRIOTT)

249  
**Exploring the Connection between Recursive Sequences and Composition of Functions**  
*10–12 Session*  
In this session, we will examine multiple representations of recursive sequences through iterative techniques. Various learning styles will be addressed through modeling of real-world situations. See how handheld technology promotes algebraic thinking and a deeper understanding of sequences, functions, and limits to help students move from algebra to calculus.  
David Kapolka  
Forest Hills Public Schools (Emeritus), Grand Rapids, Michigan  
Tom Beatini  
Union City Public Schools, New Jersey  
2001 (MOSCONTE WEST)

250  
**Fractions: Making Complex Mathematics Accessible to All Students**  
*3–5 Session*  
This session will engage participants in examining specific mathematical-instructional practices that support all students in doing complex mathematical work. These practices make it possible for teachers to unpack the mathematics in ways that give all students access to challenging ideas and kinds of reasoning without reducing the complexity.  
Meghan Shaughnessy  
University of Michigan, Ann Arbor  
Nicole Garcia  
University of Michigan, Ann Arbor  
Sarah Kate Selling  
University of Michigan, Ann Arbor  
NOB HILL C/D (MARRIOTT)

251  
**GAIMME—Mathematical Modeling for Elementary School**  
*General Interest Session*  
This talk will present the content and recommendations of the new SIAM/COMAP report, Guidelines for Assessment in Mathematical Modeling Education. It will contain many modeling examples and practical advice for teaching modeling at the elementary grades.  
Rachel Levy  
SIAM Vice-President of Education, Harvey Mudd College, Claremont, California  
305 (MOSCONTE SOUTH)
252
How Do You Know? Helping Students Build Justifications
3–5 Session
Having students justify claims is a key component of math classrooms. But it’s often hard for them to do. We will examine tools and activities that help students develop arguments. Looking primarily at fractions, we will explore how students can use diagrams, objects, and drawings to develop arguments and justify conclusions.
Nicora Placa
New York University, New York
GOLDEN GATE C1 (MARRIOTT)

253
Identifying and Growing Your Successful Secondary Math Coach
Coaches / Leaders / Teacher Educators Session
What does it take to be an inspiring and effective secondary math coach? What do you expect and need from a math coach? We will focus on identifying qualities of successful coaches, how to recognize those in current teachers, and how to nurture new coaches with high potential. Leave with the tools to find and retain your next outstanding math coach.
Donna Stumpp
Woot Math, Boulder, Colorado
307 (MOSCONE SOUTH)

254
General Interest Session
The Rosenthal Prize recognizes lessons that show math is a fun, interactive endeavor. Past awardees will share their winning lessons and the feedback of their students. Have your own low-prep, high-impact activity that inspires curiosity and creative thinking? Teach in grades 4–12? Learn from a Rosenthal Prize judge how to craft a great application.
Glen Whitney
President, National Museum of Mathematics, New York, New York
Brent Ferguson
The Lawrenceville School, New Jersey
Ralph Pantozzi
Kent Place School, Summit, New Jersey
2011 (MOSCONE WEST)

255
Is Seeing Believing?
10–12 Session
We often see amazing scenes in movies and ask ourselves is that really possible. Participants will receive class-ready modules with video links, modeling suggestions, and other materials required to successfully develop, analyze, and evaluate individual models in the classroom.
Gene Kramer
University of Cincinnati Blue Ash, Ohio
Charles E. Emenaker
University of Cincinnati Blue Ash, Ohio
3009 (MOSCONE WEST)

256
It Is What It Is . . . or Is It?
8–10 Session
Did you know algebra can be organized in two ways: a functions-based (FBA) or an equations-based approach. Did you know that FBA creates more entry points for all students to be successful in algebra? Join us to learn about this organizing principle, along with ideas to implement FBA using your existing available resources!
Sarah Stevens
Wichita Public Schools, USD 259, Kansas
Elizabeth Peyser
Wichita Public Schools, USD 259, Kansas
3007 (MOSCONE WEST)

257
Leadership Pedagogy for Closing the Opportunity Gap in Mathematics Education
Coaches / Leaders / Teacher Educators Session
President’s Series presentation
ALL leaders must focus on equity in mathematics education. This requires a paradigm shift to a leadership pedagogy, where excellence and equity are at the center of professional learning. This pedagogy includes the following knowledge, beliefs, and actions: mathematics content knowledge, equity, advocacy, partnerships, and outcomes focused.
Susie W. Hakansson
TODOS: Mathematics for ALL, Venice, California
134 (MOSCONE NORTH)
3:30 P.M.–4:30 P.M.

258
Lesson Study: A Tool to Develop Social Justice Goals
General Interest Session
Acknowledging social injustices is an important aspect of achieving equity and excellence. Through lesson study, teachers can deepen conceptions of mathematics as a means to teach and learn about social injustices. Negotiating mathematics goals and social justice goals and developing an implementation plan are important parts of the process.
Linda M. Fulmore
Mathematics Education Consultant, Cave Creek, Arizona

2009 (MOSCONE WEST)

259
The Big Idea in Beginning Algebra? It’s All about Variables!
6–8 Session
Join us and learn how to engage students in the shift from arithmetic to algebra! You will explore how to support students in beginning algebra by using real-world tasks. Learn how to assist students in this transition by deepening their understanding of expressions and equations by attending to the changing concept of variables.
Diana L. Moss
Appalachian State University, Boone, North Carolina
Teruni Lamberg
University of Nevada, Reno
David S. Moss
Washoe County School District, Reno, Nevada

3005 (MOSCONE WEST)

260
Using Categorization Tables to Help Students Make Conjectures about Mathematics
10–12 Session
Categorization tables help students organize information to make conjectures about relationships in mathematics. Examples of such tables from geometry, algebra, precalculus, and calculus will be shared. The presenters will also share experiences with other learning strategies from the language arts classroom as adapted to mathematics.
Tena L. Roepeke
Ohio Northern University, Ada, Ohio
Debra Gallagher
Bowling Green State University, Bowling Green, Ohio

3003 (MOSCONE WEST)

261
Using Lesson Study to Build Schoolwide Improvement of Mathematics Practices
General Interest Session
This network of educators from three districts uses school-based lesson study to build and spread enactment of the Common Core mathematical practices. Hear how we build buy-in, examine mathematical practices, and spread knowledge. Our panel includes educators from the districts along with lesson study researchers Akihiko Takahashi and Catherine Lewis.
Stephanie Ervin
San Francisco Unified School District, California
Courtney Ortega
Oakland Unified School District, California

303 (MOSCONE SOUTH)

262
Using Number Talks in Middle School
6–8 Session
Middle school Number Talks support the development of computational fluency by providing a powerful mental math classroom routine that supports students’ number sense and encourages productive academic discourse. We will analyze and discuss different number strings and show classroom Number Talks videos of student’s fractional reasoning.
Joseph Giera
School District of South Milwaukee, Wisconsin
Connie Laughlin
Eureka Math, Milwaukee, Wisconsin
Beth A. Schefelker
Milwaukee Public Schools, Wisconsin

2005 (MOSCONE WEST)
3:30 P.M.—4:30 P.M.

263 Using Statistics to Help Students Make Connections in Grades 6–8

6–8 Session

In this workshop, participants will engage in an experimental probability activity which acts as a simulation of a real-world event involving social justice. We will then compare the data collected with the theoretical outcome of the event, and we will end with an introduction to the Law of Large Numbers.

Kyndall Brown
California Mathematics Project, Los Angeles
Pamela A. Seda
Sea Educational Consulting, LLC, Atlanta, Georgia

2024 (MOSCON WEST)

264 What Do I Do with Those Cuisenaire Rods?

Pre-K–2 Session

Cuisenaire rods are manipulatives that provide great possibilities for developing mathematical ideas. They are proportional manipulatives constructed to show important relationships. Explore the opportunities these rods give in building students’ understanding of mathematics. Participants will leave with ideas that can be used back in their classrooms.

Sandra F. Ball
Surrey School District #36, Surrey, Canada

GOLDEN GATE C3 (MARRIOTT)

265 What the Heck Is Formative Assessment?

8–10 Session

Are you a secondary teacher who wants to learn more about how to effectively use formative assessment techniques? Come join us and we will discuss the formative assessment cycle and show you what it looks like in a classroom. You will leave with quick and easy tools to help inform your teaching and boost student learning.

Debi Mintz
Pleasanton Unified School District, California
Celine Liu
Alameda County Office of Education, Hayward, California

2007 (MOSCON WEST)

266 When Will We Use This? Getting the Context Right!

6–8 Session

CCSSM states that students should “use ratio and rate reasoning to solve real-world and mathematical problems.” We will share a series of tasks centered on authentic real-world contexts and criteria for their authenticity. Participants will develop the ability to both recognize inauthentic problem contexts and develop authentic contexts of their own.

S. Asli Ozgun-Koca
Wayne State University, Detroit, Michigan
Thomas G. Edwards
Wayne State University, Detroit, Michigan
Kenneth R. Chelst
Wayne State University, Detroit, Michigan

GOLDEN GATE A (MARRIOTT)

266.1 Strategies to Be Proactive and NOT Reactive with Challenging Students

6–8 Session

All classrooms have students who struggle with (dislike) mathematics. Learn proactive steps to help students be successfully engaged in learning mathematics and have a little fun at the same time. Participate with low-floor, high-ceiling math tasks and other strategies that can motivate and help turn struggling learners into productive learners.

Connie S. Schrock
Emporia State University, Emporia, Kansas

2018 (MOSCON)

266.2 AP and MyMathLab Options to Meet All Your Needs!

General Interest Exhibitor Workshop

Ready for College. Ready for Life. With an interactive eText, a comprehensive multimedia library and personalized study plans for every student, MyMathLab for School comes complete with resources to ensure students are successful in their mathematics course and adequately prepared for college, career, and life.

Pearson
Boston, Massachusetts

123 (MOSCON NORTH)
3:30 P.M.—4:30 P.M.

266.3  CW
BYOD: Mathspace—Why You’ll Never Grade Math Assignments Again. Seriously.
10–12 Exhibitor Workshop

Meet Mathspace. You’ve seen it all, right? Adaptive learning? Yep. Handwriting recognition? Hmm. Every math question graded line-by-line? Whoa, that’s new! Students can finally show their work, and get feedback at every step: all auto-graded for you. Bye-bye, multiple choice! BYOD (Bring Your Own Device) to try the award-winning Mathspace live, and ask about a free trial!

Mathspace
New York, New York

124 (MOSCONE NORTH)

266.4  CW
Questioning Strategies with Inquiry-Based Learning in Algebra
10–12 Exhibitor Workshop

Inquiry-based learning is only successful when students connect the exploration with the learning objective. Successful questioning strategies help students develop skills from these experiences. We will provide examples from Discovering Algebra of the effective use of questioning to make connections between explorations and learning objectives.

Kendall Hunt Publishing
Dubuque, Iowa

122 (MOSCONE NORTH)

266.5  CW
Read It, Write It, Solve It: Improving Content-Area Literacy
General Interest Exhibitor Workshop

Help students communicate their mathematical thinking and understanding with content-rich reading, writing, and problem-solving experiences. Participants will receive hands-on materials and participate in a drawing for free resources.

Teacher Created Materials
Huntington Beach, California

120 (MOSCONE NORTH)

266.6  CW
Using NBA Data to Engage Students
General Interest Exhibitor Workshop

Will Rajon Rondo tally more than 900 assists this season? Is there a formula that can be used to identify all-star players? The NBA season coincides with the school year, and current stats are always available from stats.nba.com. Powerful activities are possible when these stats are used for mathematical modeling. Come see how you can use NBA data to get middle and high school students excited about math.

Discovery Education
Silver Spring, Maryland

130 (MOSCONE NORTH)
A complete blended learning program with components that work together seamlessly.

Don’t miss our Exhibitor Sessions

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<td>Thursday, April 14, 8:00 – 9:00 am Room 130</td>
<td>Thursday, April 14, 9:30 – 10:30 am Room 130</td>
<td>Friday, April 15, 3:30 – 4:30 pm Room 125</td>
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Visit us at Booth 935 to enter for a chance to win a Chromebook®.
Professional resources from our expert authors

Visit us at booth 316 to see more.
A Numerical Reasoning Program from Marilyn Burns

Created by Marilyn Burns, Do The Math provides high-quality mathematics instruction in Grades 1-5+. Students build numerical reasoning and teachers receive comprehensive support.

Coming this summer, Do The Math offers both teachers and students an enhanced technology experience with interactive visual models, games, and tools to extend learning and practice.

Help Your Students Catch Up and Keep Up

Visit Booth #316 for a Free Gift & Demo.

hmhco.com/dothemath
Highlights
Iris M. Carl Equity Address (Presentation 364)
NCTM Business Meeting (Presentation 411)
NCTM President-Elect’s Address (Presentation 438)
New Teacher Celebration (Presentation 511.6)

Strands | Presentation Numbers
--- | ---
PCPG Building Capacity: Personal and Collective Professional Growth | 289, 363, 416
EQUITY Equity | 291, 292, 316, 364, 383, 395, 440, 442, 496, 510
HOT Hot Topics | 278, 511.7
E&A Instruction and Policies that Promote Equity and Access | 288, 358, 361, 400, 453
NCTM Committee | 466
NT New Teacher | 357.1, 476, 511.6
NGM Next Generation Mathematics for ALL | 274, 280, 403
P&TA Principles to Actions: Mathematics and Teaching Practices and Research | 309, 323, 351, 379, 441, 493
PPD Promoting Productive Dispositions about Mathematics | 270, 407, 506
TECH Technology | 467, 499

Get Social
Stay informed and get connected with attendees by using #NCTMannual on social media.

Conference App
www.nctm.org/confapp

Twitter
@NCTM

Instagram
@NCTM.math

Facebook
www.facebook.com/TeachersofMathematics

Registration Hours
7:00 a.m.–4:00 p.m.

Exhibit Hours
8:00 a.m.–5:00 p.m.

NCTM Central Hours
8:00 a.m.–5:00 p.m.

Fire Codes
We have made every attempt to provide adequate seating for participants at the conference, but for your safety and because of fire regulations, only those with seats will be allowed in meeting rooms. To comply with fire codes, we will have to ask persons sitting on the floor or standing to leave the room.
**8:00 A.M.–9:00 A.M.**

**267**  
**A Math Coach’s Playbook for a Successful First Year**  
**General Interest Session**  
Thinking about becoming a math coach? Come learn about the transition from classroom teacher to mathematics coach. Explore tools and strategies to help guide and support adult learning and increase student achievement. Three unique experiences will be shared to build school community relationships, create change, and foster professional growth.  
Kristen L. Mangus  
Howard County Public School System, Ellicott City, Maryland  
Susan A. Jensen  
Howard County Public School System, Ellicott City, Maryland  
Michele Glenn  
Howard County Public School System, Ellicott City, Maryland  

**268**  
**Algebra Nation: Harnessing the Power of the Online Collaborative Community**  
**8–10 Session**  
Algebra Nation is a blended e-learning system custom-designed for algebra students and teachers. Since its launch by the University of Florida in 2013, Algebra Nation has experienced tremendous growth and success. Algebra Nation has shown positive impacts on first-time and repeat test taker scores.  
Joy Bronston Schackow  
University of Florida, Gainesville  
Stephanie S. Cugini  
University of Florida, Gainesville  
Melody Pak  
University of Florida and Study Edge, Gainesville  

**269**  
**An Exciting, Effective, Enjoyable, Efficient, and Engaging Way to Educate**  
**10–12 Session**  
Having students work on one well-chosen problem, followed by a discussion of that problem enables students to learn content while they also learn how to think mathematically. This is more effective and efficient than show and practice. It is more fun for them and for the teacher. I will demonstrate how this approach works.  
John A. Benson  
Center for Elementary Mathematics and Science Education, University of Chicago, Illinois  

**270**  
**Effective Mathematics Teaching Practices: Purposeful Questions and Meaningful Discourse**  
**General Interest Session**  
This session will focus on two of the effective teaching practices identified in *Principles to Actions*: posing purposeful questions and facilitating meaningful mathematical discourse. Video and narrative examples of these practices will be provided and ways to get starting in working on these practices in one’s own classroom will be discussed.  
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 has edited numerous books or monographs, book chapters, and peer-reviewed articles, and she has authored or co-authored over 75 books, including *5 Practices for Orchestrating Productive Mathematics Discussion* (coauthored with Mary Kay Stein). She was a member of the writing team for *Principles to Actions: Ensuring Mathematical Success for All* and is the chair of an NCTM working group that is creating materials to support implementation of the effective teaching practices in *Principles to Actions*.  
Margaret Smith  
University of Pittsburgh, Pennsylvania
8:00 A.M.–9:00 A.M.

271 Essential Understanding of Geometry for English Language Learners
6–8 Session
Develop teaching strategies that support ELLs’ language development by means of well-planned interrelated social and analytic scaffolding. Simultaneously assisting in essential understanding of geometry through engagement in mathematical discourse focused on the key practices of argumentation, strategic usage of tools, and attention to precision.
José Francisco Sala García
Balearic Education Council, Ibiza, Spain

272 From Nonsense to Number Sense: Exploring the Number Core!
Pre-K–2 Session
Effectively sequencing how you teach numbers 1–5, 6–10, and then 10–20 MATTERS! Teaching number in the primary years is deceptively simple. After we peer into the classroom through video, walk away with strategies for teaching primary students to count, interpret, understand, and use numbers to problem-solve using developmentally appropriate models.
Lacy Endo-Peery
Eureka Math, Lead Curriculum Writer and PD specialist, Washington, D.C.
Kate Austin
Eureka Math, Washington, D.C.

273 Functions for ALL: Toward a Rigorous and Thorough Understanding
8–10 Session
Getting students to understand the concept of a function can be challenging. This session provides examples and activities that will move your students beyond “inputs” and “outputs” and “the vertical line test,” and empower them to represent, manipulate, and interpret functions in both real-world and purely mathematical situations.
Wendy L. DenBesten
Eureka Math, Washington, D.C.
Selena Oswalt
Eureka Math, Washington, D.C.

274 GAIMME, Mathematical Modeling for Middle School
General Interest Session
This talk will present the content and recommendations of the new SIAM/COMAP report, Guidelines for Assessment in Mathematical Modeling Education. It will contain many modeling examples and practical advice for teaching modeling at the middle school grades.
Laura Pahler-Cortez
K-8 School, Pomona, California

275 Guidance on a Rational and Teachable Algebra I Course
8–10 Session
The Common Core has done little to improve the 9–12 math curriculum especially algebra I, which seems mostly unchanged from decades past. This session will unveil a realistic algebra I scope and sequence compiled from a grassroots efforts to make significant changes to improve the algebra I curriculum.
Eric Milou
Rowan University, Glassboro, New Jersey

276 Explore Growing Patterns & Engage with Manipulatives with NCTM’s ARCs
3–5 Session
Be a part of NCTM’s effort to restructure Classroom Resource content available on nctm.org so that it best meets your needs. This workshop introduces the first component—newly developed Activities with Rigor and Coherence (ARCs). Participants will work through the mathematics in an exemplar ARC, led by a member of the ARC writing team. The ARCs are works in progress, so participants will be asked for feedback.
Patti Huberty
Clarke County School District; Athens, Georgia
Ann Holdren-Kong
NCTM; Reston, Virginia

3007 (MOSCONE WEST)
305 (MOSCONE SOUTH)
2005 (MOSCONE WEST)
3005 (MOSCONE WEST)
8:00 A.M.–9:00 A.M.

**277**
**Language Arts, Science, Art, and Math . . . Oh, My!**
Pre-K–2 Session
Participants will experience hands-on activities that will enhance and integrate mathematics from a children’s story. Activities will be initiated from familiar children’s books, and using manipulatives we will highlight number sense, measurement, and geometry.

Maria Diamantis
Southern Connecticut State University, New Haven
GOLDEN GATE C3 (MARRIOTT)

**278**
**LOCUS: A Formative Assessment and Professional Development Tool for Statistics**
6–8 Session
This session will share the freely available professional development materials that complement the suite of NSF-funded LOCUS assessments. Peer-reviewed items aligned with standards will be presented along with commentaries that are designed to help teachers understand changes in the way statistics will be assessed on high-stakes assessments.

Tim Jacobbe
University of Florida, Gainesville
Steve Foti
University of Florida, Gainesville
2011 (MOSCONWEST)

**279**
**Making Algebra Visible: From Pictorial to Abstract in Problem Solving**
6–8 Session
Students struggle with formulating algebraic equations for problem solving, both in the abstraction and in making sense of relationships between the known and unknown quantities. The Bar Model method has been known for problem solving in numbers and the four operations, but it is also an effective visual tool for basic algebraic problems.

Vei Li Soo
Balaklava High School, Australia
2001 (MOSCONWEST)

**280**
**Math in the Movies**
General Interest / All Audiences Session
Filmmaking has undergone a revolution brought on by advances in areas such as computer technology, geometry, and applied mathematics. Using numerous examples drawn from Pixar’s feature films, this talk will provide a behind-the-scenes look at the role that math has played in the revolution.

Tony DeRose
Pixar Animation Studios, Emeryville, California
3016 (MOSCONWEST)

**281**
**Math Talk: Mathematical Sense Making through Mental Math**
8–10 Session
Math Talks are a powerful classroom routine that uses mental math to support the development of mathematical reasoning while encouraging productive academic discourse. In this session, we will engage in Math Talks designed for the algebra and geometry classroom, and we will address how to successfully implement this rigorous protocol.

Connie J. Horgan
Math Solutions, Sausalito, California
Sheila Yates
Math Solutions, Sausalito, California
3003 (MOSCONWEST)

**282**
**Power of Collaboration & Co-teaching: A Department Model for Student Teaching**
Coaches / Leaders / Teacher Educators Session
What if student teachers are placed in a department rather than with a single cooperating teacher? This new model creates rich opportunities for co-teaching and collaboration. We can see the positive impact on our students and colleagues. Come hear about our learning and how it applies to all teachers.

Kemble Schnell
Inza Wood Middle School, Wilsonville, Oregon
Kasi C. Allen
Lewis & Clark College, Portland, Oregon
James D. Coombs
West Linn - Wilsonville School District, Oregon
2022 (MOSCONWEST)
8:00 A.M.—9:00 A.M.

282.1
What Instructional Coaches Need to Know about Teaching Mathematics
Coaches / Leaders / Teacher Educators Session

How do you coach a math teacher if you don’t have a background in teaching math? See what we have learned in our two-year PLC of coaches from several school districts. We will share resources and activities to show what good math instruction looks like and how coaches can help make it a reality.

Jeanne Simpson
Alabama Math, Science, and Technology Initiative (AMSTI); University of Alabama in Huntsville

2018 (MOSCON W EST)

283
The Common Core in Early Math and Developmental Appropriateness
Pre-K–2 Session

Different perspectives can be positive, unless they result from biased or limited perspectives. Unfortunately, this is what is too frequently happening with the Common Core State Standards. Here we use research evidence as a basis to evaluate three main criticisms of the Common Core.

Douglas H. Clements
University of Denver, Colorado
Julie Sarama
University of Denver, Colorado
Karen C. Fuson
Northwestern University (Emeritus), Fallbrook, California

GOLDEN GATE A (MARRIOTT)

284
Students and Teachers Navigate the Number Line Model for Fractions
3–5 Session

We will share findings on three iterations of work with third and fourth graders as they made sense of the number line. We examine the role of the number line model in extending and reinforcing key ideas of fractions as numbers.

Kathleen Cramer
University of Minnesota, Minneapolis
Sue Ahrendt
University of Wisconsin–River Falls
Terry R. Wyberg
University of Minnesota, St. Paul

NOB HILL C/D (MARRIOTT)

285
Supporting All Students in the Pursuit of Modeling
Higher Education Session
President’s Series presentation

Help your students become “doers” of mathematics by empowering them with a problem-solving process and a deep understanding of strategies. Come learn how to actively engage your students and equip them to handle problems arising in everyday life and society that makes mathematics more meaningful and relevant.

John Staley
Baltimore County Public Schools, Towson, Maryland
2020 (MOSCON W EST)

286
Teaching Practices in K–2: Let’s Make Our Teaching More Effective!
Pre-K–2 Session

Common instructional moves in K–2 often fall short of promoting deep learning of mathematics. We’ll unpack high leverage practices highlighted in Principles to Actions and discuss practical ways to infuse the ideas into classrooms. Learn how to make purposeful questioning, problem solving, and productive struggle a reality for your young learners!

Susie Katt
Lincoln Public Schools, Nebraska

YERBA BUENA 5/6 (MARRIOTT)

287
The Power of Quick Formative Assessments in Action
8–10 Session

Are you looking for ways to quickly gauge student learning and understanding of math content? Come and experience quick ways to check for understanding that you could use next week in math class. We will focus on relating them to daily lesson design and how teachers can use them to adjust instruction immediately based on student learning needs.

Kathleen A. Wilson
St. Paul Public Schools, Minnesota

YERBA BUENA 12/13 (MARRIOTT)

April 13–16, 2016 | San Francisco, CA
The Learning Mindset Movement and Its Implications for Addressing Opportunity Gaps

General Interest / All Audiences Session

Brief educational interventions derived from recent advances in social psychology and learning theory have been demonstrated to substantially increase students' productive persistence in tackling mathematics problems. I will describe highlights of the relevant theory, their implications for instruction and equity, and the need for ethical guidelines when using psychological interventions in education.

Uri Treisman
University of Texas; Austin

Walk the Talk: Math Professional Development Using Practice Standards

Coaches / Leaders / Teacher Educators Session

Teachers are expected to set up a collaborative classroom setting in which worthwhile tasks are presented and students engage in productive struggle. Shouldn’t we model this type of instruction in PD settings as well? Come learn how to help your teachers learn in an engaging, supportive environment that models classroom expectations.

Melinda Griffin
Massachusetts Department of Elementary and Secondary Education, Malden

What Do Students Say about Equity in the Mathematics Classroom?

8–10 Session

In this session, participants will explore strategies for empowering student voice as a catalyst for continuous improvement for a school or district mathematics program. Participants will hear how students describe their experiences in and around the mathematics classroom and regarding issues of equity and cultural proficiency.

Bill Barnes
Howard County Public School System, Ellicott City, Maryland
Jon Wray
Howard County Public Schools, Ellicott City, Maryland

Word Problems? Bring 'Em On! Access to Mathematics for ELLs

General Interest Session

Word problems can challenge students, especially ELLs. A student’s ability to interpret the language in word problems can present a significant obstacle to learning. This session will provide a model for and an effective and relevant framework for modifying linguistically complex tasks while preserving the mathematical content and cognitive demand.

Michael Gilbert
University of Massachusetts Boston
Fabian Torres-Ardila
University of Massachusetts Boston
Ana Solano-Campos
University of Massachusetts Boston
8:00 A.M.–9:00 A.M.

292.1 **HP Prime: A Breakthrough in Mathematics Education Technology!**
10–12 Exhibitor Workshop

Here’s your chance to get acquainted with HP Prime: the app-based, full-color graphing calculator with a multi-touch, gesture-driven user interface. You will receive a free copy of the virtual HP Prime for PC at the end of the session. Come experience the simplicity and power of HP Prime, pinch to zoom on a graph, a table of function values, and more.

HP Inc.
San Diego, California

292.2 **Math Cubed: The Rubik’s Cube**
General Interest Exhibitor Workshop

Students experience productive struggle while developing critical thinking, problem solving, and visualization skills when learning to solve the Rubik’s Cube. Discover how you can bring Rubik’s Cubes into your classrooms at little or no cost to support a variety of mathematical content areas as well as the mathematical practice standards.

You CAN Do the Rubik’s Cube
Danvers, Massachusetts

292.3 **Unleash the Power of Games-Based Learning with Mangahigh**
6–8 Exhibitor Workshop

Discover how Mangahigh ignites passion and engagement so that students learn to love math through an effective games-based environment that builds skills, increases academic achievement, and promotes collaboration through exciting competition. Educators will learn ways to differentiate and personalize instruction both in and out of the classroom as well as to maximize time and resources in a blended environment. We will offer ideas and strategies to motivate and raise the bar for all math learners in your class.

Mangahigh
London, United Kingdom

292.4 **Leveraging Adaptivity in Your Grades 3–5 Classroom**
3–5 Exhibitor Workshop

Personalized learning. Adaptive learning. Assessment-driven instruction. Whatever you call it, the question is how can you use technology-driven adaptivity in the classroom. Learn how adaptivity can be used to support student progress and save you time in a core classroom as we look at a new partnership between enVisionmath and Knewton to bring adaptivity to grades 3–5.

Pearson
Boston, Massachusetts

292.5 **Changing the Conversation: With Math I Can**
General Interest Exhibitor Workshop

“With Math I Can...” is a movement to eradicate the societal norm of saying “I’m not good at math” by arming students with growth mind-set strategies. Join us as we discuss how teachers can shift students’ mind-sets and provide purposeful practice so that all children master math and reach their full potential.

TenMarks, an Amazon Company
Burlingame, California

292.6 **Mathematics Practices? Interactive Mathematics Program’s (IMP) Got You Covered!**
10–12 Exhibitor Workshop

IMP embodies the CCSSM practices and excels at topic progression resulting in mastery after four years. We will examine this through trig ratios, starting with a complex unit problem from Year 4, and tracing the scaffolding in Years 1–3 that prepared students to answer it. Expect to solve problems, review student work, and highlight CCSSM practices!

It’s About Time
Santa Maria, California
292.7 Getting Started with Math Modeling
6–8 Exhibitor Workshop

Students need to engage in mathematical modeling on a regular basis. Should they do it every day, or is once a semester sufficient? How do you start small and help students succeed without reinventing the wheel? This session will share some modeling activities, provide strategies for using modeling in your classroom, and point you to some of the best modeling resources available online.

Discovery Education
Silver Spring, Maryland

122 (MOSCONE NORTH)

293 Accessing and Developing the Math Practices with At-Risk Students
8–10 Workshop

Developing the math practices in at-risk students, including students with learning disabilities, can be challenging. Experience activities used in a special education math class that helped transform student mindsets and that engaged them in challenging math tasks, creating a culture of positive problem solving in the classroom.

James L. Short
Ventura County Office of Education, Camarillo, California
Jennifer Silva
Moorpark High School, California
Vicki Vierra
California State University Channel Islands, Camarillo

2003 (MOSCONE WEST)

294 Algebraic Thinking for All Students
3–5 Workshop

This session focuses on hands-on and minds-on algebraic thinking activities that will transform real-world problems into situations that develop students’ abilities to generate, represent, and justify generalizations. Leave with classroom-ready activities and ideas to challenge the different levels of students in your classroom.

Carolyn L. White
Rice University School Mathematics Project, Houston, Texas
Susan Troutman
Rice University School Mathematics Project, Houston, Texas

3006 (MOSCONE WEST)

295 AMPing Up the Teaching of Mathematics
Coaches / Leaders / Teacher Educators Workshop

This presentation will provide an overview of the Arizona Mathematics Partnership (AMP) project, which is focused on providing professional development for middle school teachers. Funded by the NSF, AMP is led by community college mathematics faculty who support teachers’ transition to teaching for understanding and meaning. Come learn about AMP!

April D. Strom
Scottsdale Community College, Arizona

3018 (MOSCONE WEST)
8:00 A.M.–9:15 A.M.

296
Bridges That Don’t Fall Down
6–8 Workshop
Bridges is a hands-on, inquiry-based workshop that examines the geometric properties that give bridges stability and strength. Using low-cost materials and targeting middle school students’ involvement in the world around them, this workshop will give teachers a number of science, engineering, and mathematics connections with which they can engage students.

Mel Griffin
Walden University, Minneapolis, Minnesota
Monique C. Lynch
Walden University, Minneapolis, Minnesota

2006 (MOSCON WEST)

297
Copy, Change, Flip? Why Not to Invert and Multiply.
3–5 Workshop
Students are expected to understand how to divide fractions using various strategies. How do teachers do this without copy, change, flip? Participants will explore the progression of division from whole numbers to fractions while using a variety of tools and rigorous tasks to promote a deeper understanding of division of fractions.

Kendra J. Johnson
Swansfield Elementary, Howard County Public Schools, Columbia, Maryland
Connie Conroy
Howard County Public Schools, Ellicott City, Maryland
Kathleen Carter
Howard County Public School System, Ellicott City, Maryland

3022 (MOSCON WEST)

298
Discerning Geometric Patterns and Structure through Games
Pre-K–2 Workshop
Teachers may view games as opportunities for practice rather than promoting mathematical reasoning. In this session, participants will (a) engage in hands-on activities such as What’s My Rule, Attribute Trains, and Geometry Battleship and (b) discuss how games can be used to explore higher-order thinking with geometric patterns and structure.

Kelley E. Buchheister
University of South Carolina, Columbia

YERBA BUENA 14/15 (MARRIOTT)

299
Frogs, French Fries, and Faucets: Examining Proportions through Multiple Lenses
6–8 Workshop
Participants will go on a journey analyzing proportional relationships through the use of tape diagrams, tables, and graphs, all within a real-world context. We will move beyond the cross-multiplication algorithm as we explore alternative approaches to promoting multiplicative reasoning.

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

300
From Yellowstone to Yosemite: Investigating the National Parks through Measurement
6–8 Workshop
Have you ever wondered what proportion of Yellowstone is a super volcano? Come learn how to use your favorite parks as a means to develop notions of scale, compare length and area units, and develop proportional reasoning. We will share classroom-ready tasks as well as discuss students’ strategies and misconceptions.

Megan H. Wickstrom
Montana State University, Bozeman
Elizabeth W. Fulton
Montana State University, Bozeman
Jennifer Luebeck
Montana State University, Bozeman

3008 (MOSCON WEST)

2016 Regional Conferences
Phoenix • October 26–28
Philadelphia • October 31—November 2
8:00 A.M.–9:15 A.M.

301
Geometry and Fractions Progressions—Yes, You Can Do This!
Coaches / Leaders / Teacher Educators Workshop
Teacher candidates enter elementary mathematics methods with beliefs and procedural content knowledge. Many lack a conceptual lens. This session will focus on teaching problems conceptually within the 3–5 band. Participants will engage in discussions and practice of teaching geometry and fractions, and they will gain information, ideas, and strategies.
Nicolette Nalu
Alabama Math, Science, and Technology Initiative (AMSTI); University of Alabama, Tuscaloosa
Amanda Pendergrass
University of West Alabama, Livingston

302
Harmonizing Problem Solving and Place Value in PK–2
Pre-K–2 Workshop
From subitizing to multi-digit operations, place value provides a critical foundation for success in math. Learn how to orchestrate meaningful experiences that harmonize visual models, context problems, and place-value strategies to make math meaningful in the early years.
Kimberly A. Rimbey
Rodel Foundation of Arizona, Scottsdale
Peggy Akin
KP Mathematics, Phoenix, Arizona

303
I Know My “Just Right Number”! Do You?
Pre-K–2 Workshop
Help your K–2 students and your grades 3–4 struggling learners by finding their “Just Right Number” to develop number sense with conceptual understanding and fluency while using differentiated processes with engaging multiple context activities that takes the student from Concrete-Pictorial-Abstract.
Susan Hildebrand
Jenks Public Schools, Oklahoma

304
Increasing Student Engagement Calculus through PBL, Oral Assessments, and Writing
10–12 Workshop
We have designed a model for a calculus I course that blends PBL, oral assessments, and writing as a pedagogical strategy in order to deepen understanding and increase engagement and metacognitive skills. A framework for instruction, sample activities, student responses, data, and the potential to implement at the secondary level will be presented.
Mary E. Pilgrim
Colorado State University, Fort Collins
Jessica Gehrtz
Colorado State University, Fort Collins

305
Putting Probability into Practice and the Practices into Probability
10–12 Workshop
This session focuses on using contexts that students commonly encounter, such as TV game shows, to provoke student engagement in the Standards for Mathematical Practice. I will discuss how representations and technology can be leveraged as tools to increase student discourse and to design probabilistic simulations.
Rick A. Hudson
University of Southern Indiana, Evansville

306
Reaching and Teaching English Language Learners Using the SIOP® Model
8–10 Workshop
How can we support ELLs in our classroom while engaging all our students? Join us to find out! We’ll share 20+ research-based activities, developed in our years of implementing the SIOP model. By making your own Graffiti Wall, Quiz Without Questions, and more, you’ll discover fun ways to help all of your students experience mathematical success.
Lindsey L. Brewer
Huron School District 2-2, South Dakota
Lori A. Keleher
Huron School District 2-2, South Dakota
Focus on Success!
Check out our sessions:

What’s Your Math Problem!?!?
Rich Problem Solving to Support
Today’s Standards
Thursday, April 14th at 8:00–9:00AM, Room 120
Come learn how to evaluate and create rich tasks, as well
as how to support students as they develop their toolbox
of effective problem-solving strategies. Easy-to-use
resources to support the Standards for Mathematical
Practice will be shared. Participants will receive hands-on
materials and participate in a drawing for free resources.

Empower Your Instruction,
Engage Students, Make Math Fun:
Intervention That Does It All
Thursday, April 14th at 12:30–1:30PM, Room 120
Come learn how to empower your instruction through a rich,
engaging, and fun intervention model that provides effective
strategies for rigorous instruction. Participants will receive
hands-on materials and participate in a drawing for free resources.

Read It, Write It, Solve It:
Improving Content-Area Literacy
Thursday, April 14th at 3:30–4:30PM, Room 120
Help students communicate their mathematical thinking and
understanding with content-rich reading, writing, and
problem-solving experiences. Participants will receive hands-on
materials and participate in a drawing for free resources.

www.tcmpub.com/administrators • (800) 858-7339
307
Statistics and Probability in Middle and High Schools with Technology
8–10 Workshop
Statistics and probability is a significant shift for middle and high schools. Experience activities that you can do with students, both with and without technology, while learning about representations of univariate data, measures of spread and variability, scatterplots, regression, two-way tables, and how probability and statistics are related.

Andres Marti
San Francisco Unified School District, California
Alison Ellsworth
San Francisco Unified School District, California
Elizabeth DeCarli
San Francisco Unified School District, California

308
Tools for Young Mathematicians: Simple Yet Powerful Web-Based Technology
3–5 Workshop
How can technology for young learners foster the joy of doing mathematics? Web-based hands-on activities engage students in mathematical practices as they create and explore their own visual models, using dynamic mathematics tools tailored to the activity. Bring a laptop or tablet. Leave with free access to over a dozen Web Sketchpad activities.

Daniel Scher
KCP Technologies, New York, New York
Scott Steketee

309
Understanding Fraction Multiplication: It Counts!
3–5 Workshop
Fraction multiplication begins with skip counting by fractional amounts then gradually builds towards developing an understanding of the standard algorithm. Join us to explore a meaningful progression for teaching multiplication of fractions with meaning and leave with a great collection of activities.

Jennifer M. Bay-Williams
Board of Directors, National Council of Teachers of Mathematics; University of Louisville, Kentucky
Maggie B. McGatha
University of Louisville, Kentucky

310
Unpacking Algorithms: Leveraging Elementary Mathematics to Improve Secondary Algebra Instruction
10–12 Workshop
A challenge in teaching polynomial operations with understanding is helping students to leverage their understanding of whole number operations. The Common Core’s focus on alternative strategies for multiplication and division could provide a new resource to teachers. Participants will learn ways to leverage these ideas in high school classrooms.

Amber Willis
University of Michigan, Ann Arbor
Nicole Garcia
University of Michigan, Ann Arbor

311
Using Exit Ticket to Inform Instruction
General Interest Workshop
Ever wonder what to do with those exit tickets thrown at you on the way out the door? During this hour, you will learn to transform exit tickets from one more thing to grade to valuable instructional tools. Learn how to make immediate, quick, and necessary adjustments to the next day’s lessons to meet students’ needs.

Krysta Gibbs
Eureka Math, Washington, D.C.
Connie Laughlin
Eureka Math, Washington, D.C.
9:30 A.M.–10:30 A.M.

312  
Algebra: An Investigative, Historical-Cultural Approach  
8–10 Session  
Linking Common Core standards with investigative strategies that engage students, and with a focus on the historical development of algebra in Asia (and later in Europe), we present class-tested problems that intrigue students with their surprising solutions, along with ways that teachers can enliven their teaching and heighten student enthusiasm and success.  
Shlomo Libeskind  
University of Oregon, Eugene, Oregon  
3009 (MOSCONE WEST)

313  
How to Develop Math Curriculum Reform in Latin America (and Not Die in the Attempt)  
General Interest / All Audiences Session  
President’s Series presentation  
The most innovative—and so far successful—math curricular reform in Latin America is being carried out in Costa Rica. The implementation in 2013 of this internationally benchmarked curriculum, using cutting-edge resources, blended courses and, for the first time in the region, MOOCs for in-service teacher training. A model to follow?  
Angel Ruiz  
University of Costa Rica/Ministry of Public Education of Costa Rica; San José  
3016 (MOSCONE WEST)

314  
Effective Tier 2 Intervention for Multi-Digit Multiplication and Division  
3–5 Session  
Help students develop strategies for multi-digit multiplication and division, starting with models, including the array, that lead to clear, concise, and transparent algorithms. The activities and assessments we’ll share feature effective instructional practices for intervention and help students develop understanding and computational fluency.  
Allyn Fisher  
Math Learning Center, Salem, Oregon  
Martha Ruttle  
Math Learning Center, Salem, Oregon  
GOLDEN GATE C3 (MARRIOTT)

315  
Explorations with Rigid Motions in the Plane  
8–10 Session  
President’s Series presentation  
Explore how to engage your students in investigations that scaffold learning of rigid motions in the coordinate plane using manipulatives and handheld technology. In this session you will develop and use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure.  
Christine D. Thomas  
Georgia State University, Atlanta  
Umamaheswari Subramanian  
Atlanta Public Schools, Georgia  
3003 (MOSCONE WEST)

316  
Exploring Universal Design with Writing Prompts on Mathematics Exams  
General Interest Session  
Some students have correct conceptual understanding, but they still make frequent errors that lead to incorrect responses. By asking students to explain what they understand with a writing prompt on exams, I can better determine what students know. This method has been particularly effective in learning more about struggling and underperforming students.  
Angela Thompson  
Governors State University, University Park, Illinois  
2009 (MOSCONE WEST)
**317**  
**Fighting the Good Fight: Standing Up for Equity in Mathematics**  
*Coaches / Leaders / Teacher Educators Session*  
San Francisco has worked for two years to develop and implement a board policy that detracks math classes through the end of tenth grade. Through research from the field and attention to our data we have framed this as a social justice issue and an instructional opportunity. Hear the superintendent and curriculum leaders reflect on our experiences.  
*Lizzy Hull Barnes*  
San Francisco Unified School District, California  
*Richard Carranza*  
San Francisco Unified School District, California  
2020 (MOSCONEX West)

**318**  
**Going Google in the Math Classroom**  
*General Interest Session*  
Are you a Google Apps for Education school? Come learn how you can use Google Apps in your math classroom to add more collaboration between students, more creativity, and less paper. We will discuss Docs, Sheets, Forms, Drawing, Add-ons, and Chrome extensions. We will also see how Google Classroom can transform your classroom.  
*Kim Scarbrough*  
Sheridan Public Schools, Arkansas  
GOLDEN GATE A (MARRIOTT)

**319**  
**Hold My Calls: Introducing the Statistical Investigation Process with Activity**  
*8–10 Session*  
Statistical work is guided by the statistical investigation process. This session will introduce different models of that process and engage in an activity designed to introduce students to it. Key characteristics of statistical thinking will be identified through investigation, and issues related to teaching statistical thinking will be addressed.  
*Lisa Poling*  
Appalachian State University, Boone, North Carolina  
*Todd A. Abel*  
Appalachian State University, Boone, North Carolina  
2011 (MOSCONEX West)

**320**  
**Ignite! We’ll Enlighten You and We’ll Make It Quick**  
*General Interest Session*  
What makes mathematics educators passionate? Join us and find out! Our ten mathematics educators light up the room with fresh ideas in math teaching and learning. Each speaker gets five minutes to talk about whatever ignites their passion, using twenty slides that auto advance every fifteen seconds whether they’re ready or not. Featuring Peg Cagle, Michael Fenton, Annie Fetter, Matt Larson, Max Ray-Riek, Andrew Stadel, Lee Stiff, Marilyn Strutchens, Jennifer Wilson, Tracy Johnston Zager. Emcee’d by Brian Shay. Facilitated by Suzanne Alejandre and Annie Fetter from The Math Forum.  
*Suzanne Alejandre*  
The Math Forum, National Council of Teachers of Mathematics, Swarthmore, Pennsylvania  
*Annie Fetter*  
The Math Forum, National Council of Teachers of Mathematics; Swarthmore, Pennsylvania  
134 (MOSCONEX North)
9:30 A.M.—10:30 A.M.

321
Implementing CCSS Using the Student Achievement Partners’ Instructional Practice Guide
Coaches / Leaders / Teacher Educators Session
Find out how the AFT Innovation Fund Grant project in the Cincinnati Public Schools district (a project of the Cincinnati Federation of Teachers) was designed to build CCSSM knowledge and gauge implementation by supporting teachers focusing on the key shifts in math, through usage of the SAP Instructional Practice Guide (IPG) tool and peer teacher classroom visits.

Amy Guzi Parkinson
Cincinnati Public Schools, Ohio
Theresa Allen
Cincinnati Public Schools, Ohio
Gale Jorgensen
Hamilton County Educational Services, Cincinnati, Ohio

2024 (MOSCONE WEST)

322
Inquiry-Based First, Flipped Second
General Interest Session
Many teachers are interested in flipped learning but are not sure how to get started. Dr. Overmyer is one of the pioneers of flipped learning and will show how inquiry-based learning can transition to a flipped classroom model. This presentation will show pragmatic steps teachers can use to improve their mathematics teaching.

Jerry R. Overmyer
University of Northern Colorado, Greeley

322 (MOSCONE SOUTH)

323
Insights and Practical Suggestions for Making Coaching for More Effective
General Interest Session
It is increasingly clear that it is foolish to expect robust implementation of the vision of the Common Core without broad provision of effective coaching at all levels. We’ll take a look at the research and my personal experiences to propose a set of practices and policies that teachers should demand from their administrators and coaches.

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

323 (MOSCONE SOUTH)

Math I Learned from a First Grader
Pre-K–2 Session
We will explore selecting tasks that promote student reasoning and productive struggle to support the development of math understanding. Work samples showcasing strategies used by primary students to solve problems will be shared. Prepare to be amazed by what you can learn from a first grader!

Lori Price
St. Johns County Schools, St. Augustine, Florida

GOLDEN GATE C1 (MARRIOTT)

325
Media and Research Analysis for Statistics Students
10–12 Session
Strengthen your students’ understanding of study design, probability, and statistical inference by incorporating and even challenging the analysis of research reported by popular news outlets. We will explore examples of news reports and professional journal articles we use to teach students to apply what they learn in our classrooms.

Scott Galson
Walter Payton College Prep, Chicago Public Schools, Illinois
McKendry Marano
James River High School, Midlothian, Virginia

325 (MOSCONE WEST)

326
Moving Principles into Actions: Assessment and Professionalism
Coaches / Leaders / Teacher Educators Session
In Principles to Actions, NCTM sets forth five principles describing essential elements of effective school mathematics programs. This session focuses on specific actions that support the Assessment and Professionalism Principles through a set of professional learning resources designed to support teachers and other stakeholders.

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

326 (MOSCONE SOUTH)
327  
**New Resources for Supporting the Effective Teaching Practices: Elementary School**  
3–5 Session  
The session will focus on resources available in the Principles to Actions Teaching and Learning Toolkit, which was created to support teachers’ implementation of the Mathematics Teaching Practices. Participants will engage in activities at the elementary level that highlight different effective Mathematics Teaching Practices.  
Amy Hillen  
Kennesaw State University, Georgia  
DeAnn Huinker  
University of Wisconsin—Milwaukee  
Victoria Lynn Bill  
Institute for Learning, Learning Research and Development Center, University of Pittsburgh, Pennsylvania  
135 (MOSCONIE NORTH)

328  
**Secondary Strategies That Sustain Sense Making**  
8–10 Session  
Elementary math strategies like fact families, area models, tape diagrams, number lines, and manipulatives make math meaningful and fun. Why, then, do we use mnemonics, memorized algorithms, and tricks in secondary math instruction? In this session we will consider sense-making strategies that can and should be utilized in secondary mathematics.  
Victoria L. Miles  
Middleborough High School, Massachusetts  
Shephali K. Chokshi-Fox  
Webster Public Schools, Massachusetts  
2001 (MOSCONIE WEST)

329  
**Starting a Math Fight**  
8–10 Session  
The Standards for Mathematical Practice have given math teachers an opportunity to dig into the justification of mathematics in conjunction with “right answers.” We will explore free online resources to get students out of their chairs and into a structured mathematical discussion. Be prepared to move around and be a part of the math fight of the year!  
John L. Stevens  
Chaffey Joint Union High School District, Ontario, California  
3005 (MOSCONIE WEST)

331  
**Students Take Data for a Spin!**  
Pre-K–2 Session  
Explore tasks that shift from telling students how to read a graph to students telling each other. In the engaging tasks presented, students in K–2 reason and problem-solve their way to graph comprehension! In the game format, students “test” their strategies as they spin to win the game. The activities are easily modified to fit your students’ needs.  
Linda Gillette-Koyen  
Washoe County School District, Reno, Nevada  
NOB HILL C/D (MARRIOTT)

332  
**Tape Diagrams . . . NOT Just for Early Elementary Grades**  
3–5 Session  
Participants will examine the use of tape diagrams throughout CCSSM and solve questions from first grade through algebra. Participants will leave with knowledge of where tape diagrams apply in many types of mathematics. Some tape diagram solutions will be compared to traditional solutions to illuminate the usefulness of this tool.  
Jodelle S. W. Magner  
SUNY Buffalo State, Buffalo, New York  
Sue McMillen  
SUNY Buffalo State, Buffalo, New York  
YERBA BUENA 5/6 (MARRIOTT)

Visit NCTM.org for lessons, activities, and teacher resources!
9:30 A.M.–10:30 A.M.

333
Tasks for Effective Mathematics Instruction
6–8 Session
Want to find out how to identify and develop appropriate mathematical tasks to promote reasoning and problem solving across different strands? Want to provide opportunities to motivate student learning and help students build mathematical knowledge? Come to this session to find out how to select and create such tasks to develop student thinking!

DesLey V. Plaisance
Nicholls State University, Thibodaux, Louisiana
2007 (MOSCONE WEST)

334
Trajectories of Fractions Quantities: Students with Learning Disabilities and Difficulties
Research Session
Come and learn about the key developmental understandings evidenced by 45 elementary school children with learning disabilities and difficulties in the area of fractions. We share a trajectory of children’s development along with tasks teachers can use to uncover what children conceive of fraction quantities.

Jessica Hunt
University of Texas, Austin
303 (MOSCONE SOUTH)

335
Using Financial Applications to Build Algebra 2 Competence and Confidence
10–12 Session
Financial knowledge is an important part of college and career readiness. This session will examine selected algebra 2 and precalculus topics that can be used to model financial situations (data analysis, regression, logarithms, functions, systems, piecewise functions, linear programming, and more). A 20+ page handout will be distributed.

Richard J. Sgroi
Bedford Central Schools, Bedford, New York
2005 (MOSCONE WEST)

336
Explore Area Concepts & Contribute to the Development of NCTM’s ARCs
6–8 Session
Be a part of NCTM’s effort to restructure Classroom Resource content available on nctm.org so that it best meets your needs. This workshop introduces the storyboard for a set of Activities with Rigor and Coherence (ARCs). Attendees will discuss the mathematics and pedagogy of an evolving ARC and participate in the co-creation of a storyboard for a potential future ARC. The ARCs are works in progress, so participants will be asked for feedback.

Ann Holdren-Kong
NCTM; Reston, Virginia
Toby Levenson
Games for Kids; Oakland, California
Sarah DeLeeuw
NCTM; Reston, Virginia

2018 (MOSCONE WEST)

337
Using the Computerized Algebra Program ALEKS for Intermediate Courses
Higher Education Session
Implementing a computerized algebra program in intermediate courses with integrated content instruction is challenging. In this session, experience in using ALEKS in math 95 and 96 will be shared. Topics will include why to use ALEKS, how to set up courses, feedback from instructors and students, overall pros and cons, and suggestions for applications.

Lina DeVaul
University of Nevada, Las Vegas
Micah Stohlmann
University of Nevada, Las Vegas
Amy Adkins
University of Nevada, Las Vegas

2022 (MOSCONE WEST)
9:30 A.M.–10:30 A.M.

338
What Is Academic Rigor in the Primary Classroom?
Pre-K–2 Session
The subject of rigor brings up lots of questions that need to be examined. What makes a task rigorous? Is harder always better? How do we know when struggling is productive and when it is harmful? We will look at what we need to consider to provide rigorous, yet appropriate, tasks for young children.

Kathy Richardson
Math Perspectives Teacher Development Center, Bellingham, Washington

YERBA BUENA 7 (MARRIOTT)

339
What’s the Difference? Two Important Ways to Think About Subtraction
Pre-K–2 Session
Do your students think about subtraction as takeaway, or as distance? We will discuss both conceptual models of subtraction and how each of them can help students to compute efficiently and with understanding. We will view video clips of students solving problems and discuss ways to help them develop essential understandings of subtraction.

Zachary Champagne
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Florida State University, Tallahassee
Robert Schoen
Florida State University, Tallahassee
Amanda Tazaz
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Florida State University, Tallahassee

YERBA BUENA 12/13 (MARRIOTT)
9:30 A.M.–10:30 A.M.

339.1   CW
Formative Assessment and Hands-On Instruction for RTI Success!
General Interest Exhibitor Workshop
Moving with Math Pre-K–12 Solutions integrate the essential elements of RTI: screening, decision making, explicit instruction, and progress monitoring. Using true manipulatives within the CRA method, participants will engage in hands-on activities for the weakest math objectives. Teachers and administrators love the ease of use and the improved results.
Math Teachers Press
Minneapolis, Minnesota
120 (MOSCONEx NORTH)

339.2   CW
Six Essential Expectations for Effective Mathematics Instruction
General Interest Exhibitor Workshop
What should we look for in effective mathematics instruction? How do we support teachers to increase student achievement? Explore six essential coach and administrator expectations for effective mathematics instruction through the use of engaging tasks and classroom videos. See firsthand how these six expectations connect with classroom success.
Houghton Mifflin Harcourt
Boston, Massachusetts
121 (MOSCONEx NORTH)

339.3   CW
A Look at enVisionMath2.0 K–8—Now for Middle School!
6–8 Exhibitor Workshop
Pearson’s rigorous new curriculum supports the habits of mathematical thinkers and learners through carefully differentiated instructional tools and personalized practice. Find out how optimal content organization, problem-based learning, visual learning, and smart assessments work together to support learning—and teaching.
Pearson
Boston, Massachusetts
124 (MOSCONEx NORTH)

339.4   CW
Statistics—A Great Fourth-Year Math Opportunity
10–12 Exhibitor Workshop
Teaching an on-level statistics course? Thinking about it? Come find out about a uniquely-designed textbook, written for high-school students by high-school teachers. During this session, we will also feature some newly developed statistical applets that can be used to analyze data and perform both traditional and simulation-based inference.
Bedford, Freeman, and Worth Publishers
New York, New York
125 (MOSCONEx NORTH)

339.5   CW
Engage Every Student with Personalized Education
General Interest Exhibitor Workshop
Looking for an effective and easy-to-use way to ensure all students receive quality education? Front Row provides personalized math and ELA programs for K–grade 8, including innovative, real-world inquiry-based lessons, math fact practice, and more. Learn how to use Front Row in your classroom to become an even more effective teacher.
Front Row Education
San Francisco, California
130 (MOSCONEx NORTH)

339.6   CW
A Balancing Act: Providing Grade-Level and Foundational Skills Practice
General Interest Exhibitor Workshop
Do you struggle with providing effective math practice for grade-level standards and foundational skill development? The new Accelerated Math 2.0 and STAR Math help you find this balance in your classroom! Learn how teachers get the help they need to advance students from kindergarten through high school and better prepare them for college and career.
Renaissance Learning
Wisconsin Rapids, Wisconsin
123 (MOSCONEx NORTH)
9:30 A.M.—10:30 A.M.

**339.7**  
**Getting Started with Math Modeling**  
10–12 Exhibitor Workshop  
Students need to engage in mathematical modeling on a regular basis. Should they do it every day, or is once a semester sufficient? How do you start small and help students succeed without reinventing the wheel? This session will share some modeling activities, provide strategies for using modeling in your classroom, and point you to some of the best modeling resources available online.

*Discovery Education*  
Silver Spring, Maryland  

**122 (MOSCONNE NORTH)**

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9:45 A.M.—11:00 A.M.

**340**  
**Assessment, Groups, Monitoring, Restructuring, Differentiation—Winning Mathematical Modeling Combo**  
10–12 Workshop  
Using timely assessment to create and later restructure collaborative groups for math modeling sessions facilitates the mathematical practices. Come work on a modeling problem in collaborative groups formed in this manner during the session. As you work, we’ll discuss how assessment aided the depth of the mathematical discussions and experience.

*Allan E. Bellman*  
University of Mississippi, Oxford  

**3018 (MOSCONNE WEST)**

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**341**  
**Bringing the Coherence of CCSSM to life in PLCs**  
Coaches / Leaders / Teacher Educators Workshop  
Coherence is one of the least understood concepts related to Common Core math. This hands-on session will help coaches capitalize on the learning progressions found in the standards to strengthen instruction. The interactive session will also explain how to connect and build on grade level standards to support student success in mathematics.

*Barbara Beske*  
Student Achievement Partners, New York, New York  

**3006 (MOSCONNE WEST)**

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**342**  
**Can I Get This Furniture Upstairs into My Bedroom?**  
8–10 Workshop  
Participants will grapple with real-world math problems that require students to ask thought-provoking questions to provide the data to solve a real-world mathematical problem. For example: When purchasing a new bed or bureau how would you determine if you can get it up the stairs and into a second-floor bedroom? Can our friend Pythagoras help?

*Eileen M. Cyr*  
Springfield College, Massachusetts  
*Kelli A. Nielsen*  
Balliet Middle School, Springfield Public Schools, Massachusetts  

**2016 (MOSCONNE WEST)**

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**343**  
**Creating a Puppy: A Transformational Geometry Activity**  
6–8 Workshop  
Participants will use the “list” and “stat plot” features on the TI-84 to graph a puppy. By experimenting with changes in the $x$ and $y$ values participants will discover and develop rules to create translations, reflections, rotations, and dilations.

*Fred Decovsky*  
Teachers Teaching with Technology, Millburn, New Jersey  

**3004 (MOSCONNE WEST)**

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**344**  
**Developing Number Sense in K–Grade 2 with Math Games**  
Pre-K–2 Workshop  
K–grade 2 teachers will play a variety of math games. These games are designed to help children develop a sense of whole numbers and represent and use them in flexible ways. Teachers will receive a packet of twenty games for developing number and operation sense, place value, basic facts, and whole number comparison and computation.

*Nancy L. Smith*  
Emporia State University, Kansas  
*Marvin E. Harrell*  
Emporia State University, Kansas  
*Tiffany Hill*  
Emporia State University, Kansas  

**306 (MOSCONNE SOUTH)**
Check out NCTM Central at the exhibit hall entryway. Explore all the NCTM resources you need to meet your mathematics teaching challenges—all in one place:

**Bookstore**
- Examine the newest books and get 25% off all book and product purchases

**The Math Forum**
- Explore *Problems of the Week*, *Dr. Math*, and other educational resources.

**Member Services**
- Pick up free journal samples
- Join NCTM or renew your membership and get a free conference T-shirt

**Classroom Resources**
- Take home classroom-ready activities
- Try out online math strategy games
- Enter the prize drawing

**Mathematics Education Trust**
- Learn about grants and awards for mathematics educators and students

**Networking Lounge**
- Learn about writing and reviewing articles for the journals
- Catch up on e-mail and social media updates
- Download the Conference App for alerts

Visit NCTM Central in San Francisco—Get What You Need from Your NCTM Membership

**INSPIRING TEACHERS. ENGAGING STUDENTS. BUILDING THE FUTURE.**
9:45 A.M.–11:00 A.M.

345
Embracing Frustration: Allowing Students to Persevere as Problem Solvers
3–5 Workshop

In an engaging classroom simulation, learn how to guide students as they engage in high-cognitive demand activities, communicate strategic thinking, critique problem-solving strategies, and use tools and multiple strategies to solve rich problems. Learn how formative embedded assessment and providing meaningful feedback moves learning forward.

Elizabeth Anne Cape
Teaching Integrated Math and Science Project, University of Illinois at Chicago

Jennifer Mundt Leimberer
University of Illinois at Chicago

302 (MOSCONE SOUTH)

346
Get Teachers Talking about Standards and Thinking Vertically
Coaches / Leaders / Teacher Educators Workshop

This hands-on workshop will engage attendees in interactive sorts that can help coaches and leaders get teachers thinking and discussing the Common Core State Standards at and beyond their grade level. Join us as we examine both the practice and content standards in a fun environment. Participants will receive materials and resources.

Lindsey Sawyer
Needham Public School, Massachusetts

Judith Wojtczak
Needham Public School, Massachusetts

347
Learning from Students’ Productive Struggle
Coaches / Leaders / Teacher Educators Workshop

“Ensure that students are engaged in a productive struggle with mathematics rather than on the receiving end of a lecture” (Shannon 2011). Tools, including clue cards and the Q-Pyramid (Texas & Jones 2014) as well as lessons learned from their use in classrooms will be shared to support teachers as they support student learning.

Leslie A. Texas
Texas & Jones Consulting, Nashville, Tennessee

Tammy L. Jones
Texas & Jones Consulting, Nashville, Tennessee

GOLDEN GATE C2 (MARRIOTT)

348
Making Connections between Proportional Reasoning and Algebraic Thinking
6–8 Workshop

Understanding multiplicative relationships and reasoning proportionally is essential to student success in algebra. Participants will engage in hands-on activities designed to develop proportionality at concrete levels and make explicit connections to algebraic thinking. TI-Nspire™ technology will be used to explore and develop these connections.

Gloria Beswick
Teachers Teaching with Technology, Louisville, Kentucky

2008 (MOSCONE WEST)

349
Negotiating Models for Teaching Fractions: Which Ones Work for Students?
3–5 Workshop

Research indicates that extended time with models can build students’ conceptual understanding of rational number. Choosing the correct models and appropriately sequencing them is important to support young children’s initial fraction learning. We will identify effective models for instruction and consider ways and rationale for sequencing them.

Debra Monson
University of St. Thomas, St. Paul, Minnesota

Kathleen Cramer
University of Minnesota, Minneapolis

Karen Colum
Minnesota State University, Mankato

YERBA BUENA 3/4 (MARRIOTT)
9:45 A.M.–11:00 A.M.

350
Perplexing Platonics: What Relationships Can We Find and Prove?
8–10 Workshop
Come construct regular polyhedra, also known as the Platonic solids. Use your models to discover two special relationships related to the characteristics of these solids. Employ mathematical reasoning to develop a proof of the relationships. Classroom-ready materials will be available.

Teri Willard
Central Washington University, Ellensburg
Janet M. Shiver
Central Washington University, Ellensburg
2006 (MOSCONE WEST)

351
Principles to Actions: Fluency, Understanding, and Evidence of Thinking
General Interest Workshop
Students who are fluent in mathematics choose flexibly among methods and strategies to solve problems, understand and explain their approaches, and produce answers efficiently. This interactive session focuses on actions teachers and students can do to build procedural fluency from conceptual knowledge. Examples of student thinking are included.

Ruth Harbin Miles
Board of Directors, National Council of Teachers of Mathematics; Mary Baldwin College, Staunton, Virginia
Linda M. Gojak
Past President, National Council of Teachers of Mathematics; John Carroll University, University Heights, Ohio
3022 (MOSCONE WEST)

352
Regressions and Statistics Demystified
8–10 Workshop
Come learn how to explore regressions and statistics. We’ll compare how new tools (including the Desmos Graphing Calculator) make it possible to explore best-fit lines, residuals, and statistical measures faster, more easily, and more intuitively than ever before. We’ll apply these skills to some fun real-world problems.

Jason W. Merrill
Desmos, Inc, Worcester, Massachusetts
Eli Luberoff
Desmos, Inc., San Francisco, California
2004 (MOSCONE WEST)

353
Transformational Geometry—Immediate Interactive Investigations—Awesome Engaging Activities
8–10 Workshop
Students discover the geometry in fifteen seconds! Get hands-on experience and Play-Investigate-Explore. Discover geometric properties. Using a handheld, iPad, or computer software, students will become engaged quickly and deeply. Get a free complete unit of materials for grades 8–10 and see how to implement. Compass, reasoning, technology, and pedagogy.

Tom Reardon
Youngstown State University, Ohio
2002 (MOSCONE WEST)

354
Understanding Measurement through Children’s Literature and Classroom Investigations
Pre-K–2 Workshop
Research shows students are performing below proficient on measurement concepts. By incorporating children’s literature, utilizing manipulatives, and exploring classroom surroundings, engaging instruction can help all students develop a deeper understanding of measurement. Join this interactive session to learn how to create masters of measurement!

Kristin E. Harbour
University of Louisville, Kentucky
304 (MOSCONE SOUTH)
355
**Using Representations to Explore Mathematics of Multi-Digit Addition and Subtraction**

Pre-K–2 Workshop

This interactive session will engage participants with various tools for thinking, such as number lines, story contexts, drawings, and cubes to explore the mathematical ideas that underlie common strategies for addition and subtraction calculations. The focus is on maintaining conceptual understanding while moving to procedural fluency.

**Virginia Bastable**
Mount Holyoke College, South Hadley, Massachusetts

GOLDEN GATE B (MARRIOTT)

356
**Using Technology to Teach Congruence and Similarity through Geometric Transformations**

6–8 Workshop

One of the big shifts introduced in the Common Core State Standards for Mathematics is a transformations-based approach to similarity and congruence in geometry. Learn how to bring these topics to life in your classroom with digital math tools and tasks that use students’ intuitions to promote and build a deep conceptual understanding.

**Blake Whitley**
Amplify, Durham, North Carolina

**William G. McGowan**
Amplify, Brooklyn, New York

2003 (MOSCONE WEST)

357
**Write for Mathematics Teacher—Write Now!**

10–12 Workshop

Do you have an idea to share? Put your ideas on paper! Department editors from NCTM’s *Mathematics Teacher* and former members of the editorial panel will help participants start writing an outline or rough draft of an article. Editors from “Mathematical Lens,” “The Back Page,” and “Calendar” will share writing tips. Don’t delay—write today!

**Margaret E. Coffey**
Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

**Roger P. Day**
Illinois State University, Normal

**Ron Lancaster**
University of Toronto, Canada

3010 (MOSCONE WEST)

357.1
**Number Choice: Building Children’s Mathematical Understanding**

Pre-K–2 Workshop

We will explore how to make use of number choice to build on children’s mathematical thinking. More specifically, we will define and identify aspects of number choice, convey how to use number choice to differentiate instruction, and consider how to use number choice to respond to children’s mathematical thinking.

**Tonia Land**
Drake University, Des Moines, Iowa

**Corey Drake**
Michigan State University, East Lansing, Michigan

**Molly B. Sweeney**
Heartland Area Education Agency 11, Johnston, Iowa

MOSCONNE WEST)

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**NCTM Central**, located in the Exhibit Hall, has activities, lessons, sample journals, and more—stop by!
11:00 A.M.–12:00 P.M.

358 E&A
Access to Mathematics: A Story of Possibilities
General Interest Session
This session is an interactive journey of the presenter’s life’s experiences that led to her access to mathematics and subsequently to a career in mathematics education. She will share her early experiences as a poor, Black girl living in a southern rural community and the factors that presented her with opportunities for success in mathematics.
Thomasenia Lott Adams
University of Florida, Gainesville
2024 (MOSCONE WEST)

359
App-Smashing: Students Products That Engage and Promote Learning
10–12 Session
In this session, participants will learn how to use various apps to showcase student learning. We will use Edmodo, Desmos, Haiku Deck, ThinkLink, and Nearpod to create products that showcase what they have learned. We will also cover how to have students share their products with the class and the teacher.
Wendy E. Bartlett
Parkland Magnet High School, Winston-Salem, North Carolina
2001 (MOSCONE WEST)

360
Challenging (Non-Routine) Problems That Develop Persistence and Creativity
6–8 Session
We will explore the use of challenging/non-routine problems that engage students and help them become better problem solvers. The problems to be presented align with middle school content and Common Core practice standards. Participants will receive several problems that require productive struggle and creativity. Student work will be shared.
Hoyun Cho
Capital University, Columbus, Ohio
Gary Lawrence Mustard Seed School, Hoboken, New Jersey
2005 (MOSCONE WEST)

361 E&A
Common Core and Equity: Focusing on Mathematical Practices
General Interest Session
This talk describes research-based recommendations for equitable mathematics instruction aligned with the Common Core focusing on mathematical practices. I first summarize research on effective and equitable mathematics teaching and then use examples to illustrate how instruction can focus on student participation in mathematical practices.
Judit N. Moschkovich
University of California, Santa Cruz
305 (MOSCONE SOUTH)

362
Developing a Growth Mindset
3–5 Session
Do you have students who give up when learning becomes hard? Or do you have students who get their work done just to get it done but without the quality or reflection you desire? This session will provide structures and resources teachers can use to engage students in learning that motivates them to work hard and achieve at high levels.
Jennifer Throndsen
Utah State Office of Education, Salt Lake City
YERBA BUENA 12/13 (MARRIOTT)

363 PGP
Digging into Depth of Knowledge
6–8 Session
Learn how to use rigorous Open Middle math problems at multiple depth of knowledge (DOK) levels with your students. The problems begin with the same task and end with the same answer, yet they allow for multiple solving methods. Participants will complete math tasks, watch videos of students solving them, and leave with access to hundreds of free problems.
Robert B. Kaplinsky
Downey Unified School District, California
301 (MOSCONE SOUTH)
**General Interest Session**

Divergent policies, practices, and programs have targeted traditionally underserved students to support their learning of mathematics. Examples include Title I funding, charter schools, school accountability strategies, early childhood education, high school mathematics graduation requirements, mathematics curriculum standards, teacher certification guidelines, and STEM specialty schools. I will argue that the predominant approach to educational reform is analogous to triage in medicine. The effects of triage policy in education have been anemic. Its failure is reinforcing segregation and other social disparities. I contend that there is a need to develop a different approach to education and youth development that takes an intergenerational perspective on education achievement, attainment, and student development in our communities experiencing the hardships of poverty and segregation. Recommendations for intergeneration policy tools and practices will be discussed.

**William F. Tate IV** is the Edward Mallinckrodt Distinguished University Professor in Arts & Sciences at Washington University in St. Louis, where he currently serves as the Dean of the Graduate School of Arts & Sciences. His research has focused on the social determinants of mathematics performance, and he co-edited the NCTM book *Disrupting Tradition: Research and Practice Pathways in Mathematics Education*, which captures his interest in connecting researchers, policy makers, and practitioners to improve opportunities to learn in mathematics education.

*William F Tate IV*
Washington University in St. Louis, Missouri

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**365**

**Explore, Prove, and Apply—Generating and Using the FTC**

10–12 Session

Participants will consider an inquiry-based approach to teaching this central topic in calculus: first generating the intuitive conceptual sense through targeted exploration, then defining and proving, and finally tapping into a rich mix of contexts and writing exercises.

**Brent Ferguson**
The Lawrenceville School, New Jersey

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**366**

**Exploring Regrouping across Multiple Contexts**

3–5 Session

This presentation engages participants in solving different types of regrouping problems and exploring conceptual connections among them. Working with expanded forms and emphasizing regrouping in multiple contexts may support students’ understanding of addition and subtraction involving mixed numbers.

**Erin R. Moss**
Millersville University, Pennsylvania

**Cynthia E. Taylor**
Millersville University, Pennsylvania

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**367**

**Facilitating Algebraic Thinking Development with Appropriate Tools and Technology**

8–10 Session

Join us as we explore specific tasks that effectively (and not so effectively) utilize technology to develop algebraic thinking. What are the essential elements to consider for effective use of technology and other tools to develop algebraic thinking in the middle grades? Let’s talk about it!

**Trena Wilkerson**
Board of Directors, National Council of Teachers of Mathematics; Baylor University, Waco, Texas

**Ryann Shelton**
Waco Independent School District, Texas

**Alexa Samuel**
Baylor University, Waco, Texas
11:00 A.M.–12:00 P.M.

368
Fumbling toward Inquiry: Starting Strong in Problem-Based Learning
8–10 Session

Attaining the lofty goals of a problem-based classroom can be challenging for teacher and student alike: they may not be prepared for that paradigm shift or know where to turn for resources. This session will aid in preparing a classroom for inquiry by identifying initial tasks, protocols, goals, and resources to scaffold success.

Geoff M. Krall
New Tech Network, Napa, California

3007 (MOSCON WEST)

369
Kids Can Do It! Expanding Early Problem-Solving Opportunities
Pre-K–2 Session

Come and see the varied and amazing ways that first- and second-grade children solve word problems involving multiplication, division, and complex multi-step structures. Presenters and participants will (1) analyze video of students, (2) explore how such problems relate to CCSSM, and (3) discuss implications for early grades classrooms.

Wendy Bray
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Florida State University, Tallahassee
Charity Bauduin
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Florida State University, Tallahassee
Amanda Tazaz
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Florida State University, Tallahassee

GOLDEN GATE C1 (MARRIOTT)

370
Letting Teachers Drive: A Powerful Approach to “Live” Coaching
Coaches / Leaders / Teacher Educators Session

A math teacher, her coach, and a researcher bring their perspectives to this session, in which participants consider, through narrative and video, the role of teacher agency in making it possible for coaches and teachers to collaborate in the rich and risky practice of “live” coaching, in which a coach supports a teacher to learn while she teaches.

Evra M. Baldinger
University of California, Berkeley
Tina Weiting Hu
MLK Middle School, San Francisco, California

2022 (MOSCON WEST)

371
Leveraging the SMPs through Reciprocal Teaching
3–5 Session

Reading strategies in math are not uncommon, but what can be done in addition to close reading strategies? Reciprocal teaching can serve as an additional support to increase student thinking in the math classroom. Learn how to create student-led discussion groups that seamlessly embed the SMPs into the four strategies common to reciprocal teaching.

Elizabeth E. Pruitt
St. Lucie County Schools, Fort Pierce, Florida
Jason Bragg
St. Lucie Public Schools, Fort Pierce, Florida
Christina M. Worley
St. Lucie Public Schools, Fort Pierce, Florida

GOLDEN GATE C1 (MARRIOTT)

372
Making Sense of Logarithms
10–12 Session

Logarithms were incredibly useful and popular for centuries! But many students hate them and they do not know why we have them. We can help make sense of logarithms if we explored why they were invented, how they were used in the past, and why they remain relevant today.

Michael Manganello
Downingtown Area School District, Pennsylvania
David R. Miller
West Chester University, Pennsylvania

2011 (MOSCON WEST)
11:00 A.M.–12:00 P.M.

373
Making the Math Practices Come Alive in the Classroom
6–8 Session
Explore how specific teacher actions and purposeful planning can engage students with the Standards for Mathematical Practice. We will watch videos and identify teacher moves that promote student discourse or deepen student understanding of math content. We will also look at student work and plan purposeful feedback to students that can push conceptual understanding.

Ronnie Ernandes
Aspire Public Schools, Huntington Park, California
Geneva Europa
Aspire Public Schools, Oakland, California
Jennifer Marchy
Aspire Public Schools, Memphis, Tennessee

3005 (MOSCONE WEST)

374
Moving beyond Balanced Scales—Contextualizing the Concept of Equality
6-8 Session
What is an equal sign? How would you explain it to a young mathematician? In this session, participants will unpack the concept of equality through math tasks with real-life contexts and routines. Participants will walk away with student-friendly conceptual language to discuss equality, as well as kinesthetic learning activities.

Lincoln Campbell
Ascend Learning, Brooklyn, New York

2018 (MOSCONE WEST)

376
Moving from Multiplicative Comparison Problems to Solving Ratio Problems
6–8 Session
The study of ratios and proportional relationships in grades 6–7 extends students’ work in multiplicative comparisons from earlier grades. The selected problems and related student work will highlight the increasingly formal 6–8 solution methods arising from understanding multiplicative thinking and ratios.

Connie Laughlin
Eureka Math, Milwaukee, Wisconsin
Krysta Gibbs
Eureka Math, Aurora, Colorado

3012 (MOSCONE WEST)

377
Moving Principles into Actions: Curriculum and Technology
Coaches / Leaders / Teacher Educators Session
In Principles to Actions, NCTM sets forth five principles describing essential elements of effective school mathematics programs. This session focuses on specific actions that support the Curriculum and Tools and Technology Principles through a set of professional learning resources designed to support teachers and other stakeholders.

W. Gary Martin
Auburn University, Alabama
Bradley M. Bearden
Dadeville High School, Alabama

134 (MOSCONE NORTH)

Be a part of a new learning experience, Innov8 Conference, November 16–18 in St. Louis!

Take advantage of all that the school journals have to offer. Spend 20 minutes with the editors and learn how to access and use the extra online materials, turn your experiences into the written word, or contribute to the peer-review process to keep the journals relevant publications.

This year, you’ll also have the opportunity to ask any of the journal editors a question, float an idea, or allay any fears about getting that manuscript started toward publication. Don’t pass up this annual event. Check out the series of mini-sessions listed below. Each one is packed with information, tips, and hints to help you excel.

ALL SESSIONS WILL BE HELD AT NCTM CENTRAL IN THE EXHIBIT HALL.

GET INVOLVED, SHARE YOUR EXPERTISE. Engage with your professional community and influence journal content.

Presented by Tara Slesar, *MT* editor

Thursday, April 14 • 11:00−11:30 a.m.
Friday, April 15 • 12:30−1:00 p.m.
Saturday, April 16 • 10:00−10:30 a.m.

GET PUBLISHED, SHAPE YOUR IDEAS. Discover how simple it is to turn your experiences into articles and avoid writing pitfalls.

Presented by Beth Skipper, *TCM* editor

Thursday, April 14 • 11:30−11:50 a.m.
Friday, April 15 • 1:00−1:20 p.m.
Saturday, April 16 • 10:30−10:50 a.m.

Don’t Miss These!
11:00 A.M.–12:00 P.M.

378 Practices Promoting Student Learning and Productive Persistence in Developmental Mathematics

Higher Education Session

This session presents practices supporting deep learning, motivation, and persistence in developmental mathematics based on two research-based frameworks: the Learning Opportunities (i.e., productive struggle, deliberate practice, and explicit connections) and Productive Persistence (i.e., growth mindset, social belonging, and learning strategies).

Ann Edwards
Carnegie Foundation for the Advancement of Teaching, Stanford, California
Rachel Beattie
Carnegie Foundation for the Advancement of Teaching, Stanford, California

379 Promoting Productive Struggle

10–12 Session

What does productive struggle look like? How can we encourage students to be engaged when success doesn’t happen instantly? We will work a geometry task, look at a video case based on it, and then examine key steps that were used to keep students on task, discussing, and moving forward with their learning.

Fred Dillon
Ideeastream, Cleveland, Ohio

380 Reken-What?

Pre-K–2 Session

We will explore the use of a rekenrek as an interactive tool to teach counting and cardinality, place value, and addition and subtraction. Learn how this visual model can help bridge the gap between concrete and abstract thinking. The use of this tool can be extended to grades 3–5 to support work with multiplication and division.

Beth Barnes
Eureka Math, Washington, D.C.
Saffron VanGilder
Eureka Math, Washington, D.C.

381 The Beautiful Connection between Polynomials and Probability

10–12 Session

We will engage in a series of tasks to explore how polynomials can be used to represent probability models and vice versa. Work classroom-tested tasks about the Binomial theorem, polynomial multiplication, and combinations. Probability rules will be discovered all over again and finally make sense!

Brian Shay
San Dieguito Union High School District, San Diego, California

382 The Question G.E.M.s: Unlock Your Treasure through Purposeful Planning

Pre-K–2 Session

Questions are valuable components of the mathematics classroom. This presentation will provide a brief overview that highlights characteristics of the four types of questions as described in Principles to Actions (NCTM 2014). Participants will engage in ways to unlock the treasures of questioning through the use of a purposeful planning tool.

Lakesia L. Dupree
University of South Florida, Tampa
Sarah van Ingen
University of South Florida, Tampa

383 Using Art to Develop Girls’ Measurement Skills

General Interest Session

Girls, especially girls from low-income families, display weaker measurement knowledge than boys. Geometric measurement—such as linear measurement, area, perimeter, volume, surface area, and angle measurement—is integral to STEM performance. This session will provide instructional ideas for helping girls (and boys!) develop measurement skill through art.

Tia L. Flores
Coral Academy of Science, Reno, Nevada
Lynda R. Wiest
University of Nevada, Reno
11:00 A.M.–12:00 P.M.

384
Using Authentic Performance Tasks Effectively in the Mathematics Classroom
3–5 Session

How does Authentic Performance Assessment fit into the math classroom? How can we make performance tasks with rigorous connections to standards? Do we have time to do performance tasks with everything else we must teach? Come see examples and learn an effective implementation process that is working in districts all across the country.

Aimee Corrigan
HMH Education Services, Denver, Colorado
Pam Palmer
Houghton Mifflin Harcourt, The Leadership and Learning Center, Englewood, Colorado

385
What’s Puzzling You?
General Interest Session
President’s Series presentation

Do you find yourself with nothing to do and wishing you knew how to solve puzzles online or in the newspaper? Find out some helpful hints for solving Ken Ken, Sudoku, and other brain-enhancing puzzles. Apps for smartphones and tablets will be discussed. Also, if time permits, we will discuss how these puzzles can be used in the mathematics classroom.

Jane D. Tanner
President, American Mathematical Association of Two-Year Colleges, Memphis, Tennessee

385.1 Embracing Principles to Actions
General Interest Exhibitor Workshop

Wondering how to incorporate NCTM’s Principles to Actions in your school? Let CPM show you! For over 25 years CPM has provided rich mathematics curricula that is student centered and problem based, encouraging thinking, persevering, and sense making. Experience the excitement that students do when exploring CPM’s curriculum. Receive free access to the curriculum.

CPM Educational Program
Elk Grove, California

385.2 How LearnBop’s Step-by-Step Approach Helps Personalize K–12 Math Instruction
General Interest Exhibitor Workshop

Everyone knows one-on-one tutoring can be incredibly impactful for student learning. But how can we provide one-on-one attention for all students in mathematics? Attend this workshop to see how LearnBop’s step-by-step system simulates the impact of one-on-one tutoring and helps teachers personalize math instruction for every single student.

LearnBop
New York, New York

385.3 Transforming Teaching and Learning with MathXL for School
General Interest Exhibitor Workshop

Through online personalized learning, MathXL® for School allows middle and high school teachers to focus on the important aspects of teaching, while students receive an individualized learning experience with immediate feedback, interactive learning aids, and lots of practice. Come preview this exciting, mobile-compatible math technology.

Pearson
Boston, Massachusetts

385.4 Promoting Success on the AP Exam with The Practice of Statistics 10–12 Exhibitor Workshop

The AP Statistics exam is a month away. How can you use The Practice of Statistics to help students succeed on the AP exam? In this session, authors Daren Starnes and Josh Tabor will discuss specific exam-preparation resources from TPS 5e, including exam tips and common errors, flash cards, FRAPPYs, and the Strive for a 5 Guide. Samples provided.

Bedford, Freeman, and Worth Publishers
New York, New York

11:00 A.M.–12:00 P.M.

384
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3–5 Session

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Aimee Corrigan
HMH Education Services, Denver, Colorado
Pam Palmer
Houghton Mifflin Harcourt, The Leadership and Learning Center, Englewood, Colorado

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New York, New York

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Bedford, Freeman, and Worth Publishers
New York, New York
11:00 A.M.–12:00 P.M.

385.5 **EW**
**Rediscovering Geometry and Proof: Lessons Learned from CanFigureIt™ Classroom Pilots**
10–12 Exhibitor Workshop
Proving shouldn’t be a struggle to list statements and reasons. We’ll explore multiple strategies that empower students to independently solve proof problems, and we will share insights from pilot teachers who have used CanFigureIt Geometry in their classes to support students’ individual needs. Bring a laptop for a hands-on experience and a free trial!
CanFigureIt
New York, New York

130 (MOSCON NORTHE)

385.6 **EW**
**Mathletics by 3P Learning**
3–5 Exhibitor Workshop
Meet the Mathletics team and learn how our supplemental online math resource is helping American students achieve better results. Targeted, adaptive, and engaging K–12 content—designed to meet the requirements of the Common Core and state-based curricula, with reporting and assessments to match. Plus fun and engaging math challenges students love!
3P Learning
New York, New York

121 (MOSCON NORTHE)

385.7 **EW**
**Creating an Environment for Student-Centered Instruction**
10–12 Exhibitor Workshop
When students are the center of instruction, they are active, engaged, and noisy. Passionate discussion replaces passive absorption. Time passes quickly, and though students will be mentally fatigued, they will want to keep exploring and won’t want to leave. Sound too good to be true? Come experience an inquiry-based classroom, and see examples of teacher moves and classroom activities that will make your students the center of attention.
Discovery Education
Silver Spring, Maryland

122 (MOSCON NORTHE)

11:30 A.M.–12:00 P.M.

386
**Anticipation Guide for Teaching Limits in Calculus: Promoting Conceptual Understanding**
Higher Education Burst
Unique misperceptions of limits are a rationale for promoting more accurate conceptual understanding. As part of a Literacy Toolkit on Limits, a written “Anticipation Guide” collaborative group activity helps teachers assess initial misperceptions of limits and graphs, get feedback, develop a concise lesson plan, and assess post-lesson understanding.
Margaret Smolinka Adams
Northern State University, Aberdeen, South Dakota

310 (MOSCON SOUTH)

387
**Avoiding Middle Grades Rules That Expire!**
6–8 Burst
We engage participants in a discussion of common rules and vocabulary shared by teachers that middle grades students tend to overgeneralize such as tricks and tips that do not promote conceptual understanding, rules that “expire” later in students’ mathematics careers, and vocabulary that isn’t precise. CCSSM “expiration dates” will be shared!
Sarah B. Bush
Bellarmine University, Louisville, Kentucky
Karen S. Karp
Johns Hopkins University, Baltimore, Maryland
Barbara J. Dougherty
University of Missouri, Columbia

2008 (MOSCON WEST)
11:30 A.M.–12:00 P.M.

388  
Planning Tool: Developing the Language of Math for English Learners  
Coaches / Leaders / Teacher Educators Burst  
Presenter will share a planning tool designed to bridge the gap between language and math content for English learners. The tool includes guiding questions to determine linguistic demands of mathematical concepts and integration of language-based supports (sensory, graphic, interactive, and verbal) to provide access to content and improve discourse.  
Galina Jmourko  
Prince George's County Public Schools, Adelphi, Maryland  
GOLDEN GATE C2 (MARRIOTT)

389  
Smarter Balanced: Mapping Items Back to Instruction  
3–5 Burst  
The phrase “teaching to the test” conjures up the image of students sitting in desks organized neatly in rows filling out endless worksheets. It’s time to change that image. Participants examine Smarter Balanced test questions and discuss how they support the goal of deeper learning and how they signal a critical shift away from rote skills practice.  
Shelbi Cole  
Smarter Balanced Assessment Consortium, Olympia, Washington  
Judy Hickman  
Smarter Balanced at UCLA, Los Angeles, California  
3022 (MOSCONE WEST)

390  
Three Phases of Constructing Viable Arguments  
8–10 Burst  
Learn strategies and resources for teaching your algebra and geometry students how to ask effective questions, engage in dialogues (using academic language to build, challenge, and negotiate relevant ideas, and justifying conclusions), and produce output that communicates their reasoning using Google Docs and tutorial creation tools.  
Noirin Foy  
Los Altos School District, Los Altos, California  
Shelley Carranza  
Mountain View Los Altos School District, California  
2002 (MOSCONE WEST)

12:30 P.M.–1:30 P.M.

391  
Writing as Communication in the Mathematics Classroom  
10–12 Burst  
Writing in mathematics class is not just a mandate—it is necessary for facilitating deeper understanding. Including writing is hard in the traditional classroom, but adding GeoGebra and student-centered communication makes it second nature. Learn how it strengthens language and deepens understanding through “talking” in Google Docs.  
Eileen B. Mooney  
Miss Porter’s School, Farmington, Connecticut  
GOLDEN GATE B (MARRIOTT)

392  
A Deep Dive into Fraction Operations  
6–8 Session  
“I'm going to dress up as a fraction for Halloween because I can't think of anything scarier” —a sixth grader. This session will delve into multiple procedures for operations on fractions and, more importantly, why these procedures work. We will also discuss how to help students who are struggling and how to problematize exercises for students who are not.  
Avery Pickford  
The Nueva School, Hillsborough, California  
3012 (MOSCONE WEST)

394  
Building Number Sense through Engaging Activities  
6–8 Session  
The development of number sense is crucial to success in upper mathematics. This presentation will show teachers how they can foster rich number sense using simple and powerful strategies. A ready-for-Monday handout will be available.  
Brad S. Fulton  
Mistletoe STEM Institute, Redding, California  
2001 (MOSCONE WEST)
12:30 P.M.–1:30 P.M.

395 EQUITY
CCSSM—Please INVITE Me into Your Math Lesson
General Interest Session
Too often students struggle to find a point of entry into the lesson. There is no frame of reference and no relevance for the students. Participants will look at math topics, and determine “WHAT IT IS.” We will then select various social orders to connect to the lives of the children and create invitations for the students’ entry into the lesson.
Kwame Anthony Scott
Benjamin Banneker-Djehuti Ma’athematics, LTD, Chicago, Illinois
2009 (MOSCONE WEST)

396 “Clap Like Me”: Early Math Learning (Birth to Five)
Pre-K–2 Session
The core of early math learning begins at home by making numeracy a natural part of everyday. Experience California Math Council’s “PD in Your Pocket” as a companion to Early Learning, Math at Home. Receive copies of the booklets in English and Spanish and begin sharing with families, your children and grandchildren.
Vicki Vierra
California State University Channel Islands, Camarillo
Rebecca Lewis
Shasta County Office of Education, Redding, California
3009 (MOSCONE WEST)

397 Cultivating Real-World Problem Solvers through Game-Based Instruction
6–8 Session
How can educators tap into the allure of gaming while cultivating 21st-century problem solvers? We’ll show you how to do it! Join PBS alongside an outstanding California educator to learn how play and gaming are being used to develop critical skills like design thinking, empathy, and creative problem solving.
John Sessler
PBS, Arlington, Virginia
Cheryl Morris
Del Mar Middle School, San Rafael, California
3007 (MOSCONE WEST)

398 Develop Fraction Number Sense and Promote Reasoning
3–5 Session
Do your students have strong number sense about fractions? Can they reason about fractions? We will share student videos and student work, and we will engage in classroom-tested activities using manipulative materials to improve students’ conceptual understanding and promote reasoning about comparing fractions on the number line.
Nadine Bezuk
Board of Directors, National Council of Teachers of Mathematics; San Diego State University, California
Steve Klass
Encinitas Union School District, California
399 Digital Tools and Three-Act Tasks: Marriages Made in the Cloud
3–5 Session
Bring your iPad and your inquisitive mind. What do you notice? What do you wonder? And how can you use free online tools to solve free online problems? This session features rich math tasks with video anchors and online virtual manipulatives. Themes will include: inquiry, rich discourse, perseverance, and authentic connections for grades 3–5.
Arjan Khalsa
Conceptua Math, Petaluma, California
Graham Fletcher
Griffin-Spalding County Schools, Georgia
400 E&A
Diversity as an Asset in Mathematics Education
General Interest Session
We will discuss various meanings of the notion of diversity (e.g., different ways to solve a problem but also linguistic and cultural diversity) from a resource point of view. The focus is on how to build on the diversity present in our classrooms to enhance the mathematics learning opportunities for all of us (teachers, students, and parents).
Marta Civil
University of Arizona, Tucson
2024 (MOSCONE WEST)
12:30 P.M.–1:30 P.M.

402
From Skepticism to Success: Shifting to Student-Centered Learning
Pre-K–2 Session
Does teaching math scare you? Do you attend PD and think, “That’s great, but my students are not at that level”? You are not alone. Come get inspired by one second-grade classroom teacher’s journey from presenter to facilitator. Bring your fears, questions, hopes, and dreams, and together we will dispel the myth of teaching math.
Cheryl Fricchione
Rodeph Sholom School, New York, New York
Lauren Bogosian
Stevens Cooperative School, Jersey City, New Jersey

YERBA BUENA 7 (MARRIOTT)

403
GAIMME—Mathematical Modeling for High School
General Interest Session
This talk will present the content and recommendations of the new SIAM/COMAP report, Guidelines for Assessment in Mathematical Modeling Education. It will contain many modeling examples and practical advice for teaching modeling in high school grades.
Landy Godbold
Westminster Schools, Atlanta, Georgia

305 (MOSCON SOUTH)

404
Helping Our Students Look for and Make Use of Structure
Coaches / Leaders / Teacher Educators Session
The practice of looking for and applying structure in mathematics (MP.7) is often underutilized and may not be well understood. We will explore tasks and examine student work looking for and making use of structure to promote deeper understanding, flexibility, and efficiency. Taking time to work “slow to fast” on tasks that progress across grade levels.
Kathryn Ernie
University of Wisconsin–River Falls
Erick B. Hofacker
University of Wisconsin–River Falls
Sherrie Serros
University of Wisconsin–Eau Claire

2020 (MOSCON WEST)

405
Making Sense of Expressions and Equations: A Technology-Leveraged Approach
6–8 Session
President’s Series presentation
A carefully developed learning progression for basic algebraic concepts can bring coherence to the story of algebra. In the context of well-chosen tasks, we will consider how to use the practices for effective instruction described in Principles to Actions to move beyond procedures and algorithms and teach for learning as outlined in CCSSM.
Gail Burrill
Former President, National Council of Teachers of Mathematics; Michigan State University, East Lansing

3016 (MOSCON WEST)

Download the mobile conference app to view sessions, create a schedule, network with attendees, and much more! Search “NCTM Annual Meeting” in the App Store and Google Play.
Creating Communities and Cultivating Change

It’s never too early to plan ahead for the leading math education event of the year. Network with thousands of your peers and fellow math education professionals to exchange ideas, engage with innovation in the field and discover new learning practices that will drive student success.

The latest teaching trends and topics will include:

- **Access and Equity:** Teaching Mathematics with an Equity Stance
- **Assessment:** A Tool for Purposeful Planning and Instruction
- **Building Conceptual and Procedural Understanding**
- **Professionalism:** Learning Together as Teachers
- **Teaching, Learning, and Curriculum:** Best Practices for Engaging Students in Productive Struggle
- **The “M” in STEM/STEAM**
- **Tools and Technology:** Using Technology to Effectively Teach and Learn Mathematics

Registration will open **Nov. 2016**

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- MATH TEACHER EDUCATORS
- NEW AND PROSPECTIVE TEACHERS
- MATH COACHES AND SPECIALISTS
- MATH RESEARCHERS
- SCHOOL AND DISTRICT ADMINISTRATORS

Learn more at [nctm.org/annual](http://nctm.org/annual) and follow us on Facebook, Twitter, LinkedIn, YouTube, and Instagram #NCTMannual
**12:30 P.M.–1:30 P.M.**

### 406
**Making Sense of Fraction Division with Remainders**

**3–5 Session**

This presentation will focus on the results of our fraction study. Our study highlights the role of student-led learning in a discourse-rich environment designed to encourage productive struggle leading to deepening conceptual understanding of fraction division with remainders.

**Laura Tapp**  
University of Central Florida, Orlando  
**Rebecca Gault**  
University of Central Florida, Orlando  
**Juli K. Dixon**  
University of Central Florida, Orlando

GOLDEN GATE C3 (MARRIOTT)

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### 407  
**Mathematical Mindsets: How to Inspire All Students with Open Math**

**General Interest Session**

This session will share the latest brain science on ways to inspire all students to higher levels of math. We will consider together ways to open math tasks making them creative and engaging as well as other teaching ideas that will inspire students in new and interesting ways.

**Jo Boaler** is a professor of mathematics education at Stanford University and co-founder of www.youcubed.org. Her former roles have included being the Marie Curie Professor of Mathematics Education for England, a mathematics teacher in London comprehensive schools, and a lecturer and researcher at King’s College, London. She is the author of eight books, including *What’s Math Got To Do With It?* (2015) and *Mathematical Mindsets* (2016).

**Jo Boaler**  
Stanford University / youcubed, California

134 (MOSCONE NORTH)

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### 408
**Modeling with Mathematics: Mathematizing Student Experiences in the Primary Grades**

**Pre-K–2 Session**

What does is mean to model in mathematics in the primary grades? How do students mathematize the world when their own mathematical knowledge is just developing? In this session, we will explore this mathematical practice through a variety of primary tasks and classroom routines. We will then analyze videos of K–2 students engaged in this work.

**Michael Flynn**  
Mount Holyoke College, South Hadley, Massachusetts

GOLDEN GATE C1 (MARRIOTT)

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### 409
**Music and Math: An Interdisciplinary Approach to Transformations of Functions**

**10–12 Session**

A math and a music teacher teamed up to create this rich project that connects music and geometric transformations. Students love using music composition tools and Noteflight to create their own melodies and then represent their melodies mathematically using data, regression and transformations of functions. No prior musical experience necessary.

**Maria L. Hernandez**  
North Carolina School of Science and Mathematics, Durham  
**Philip Riggs**  
North Carolina School of Science and Mathematics, Durham

2007 (MOSCONE WEST)

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### 410
**My Journey from Worksheets to Rich Tasks**

**8–10 Session**

Lecture. Practice. Homework. Wash, rinse, repeat. For years I was stuck in this uninspiring cycle. I knew there was more, but I had trouble letting go of my example-centric approach. In this session I’ll share what I’ve learned in my ongoing escape from monotony, from the big picture of “Why” to the nuts-and-bolts details of “What” and “How.”

**Michael J. Fenton**  
Fresno Christian Schools, California

3003 (MOSCONE WEST)
12:30 P.M.–1:30 P.M.

**411**

**NCTM Business Meeting**

*General Interest Session*

Join NCTM leadership for an overview of recent activities and strategic priorities for the coming year.

*DIANE J. BRIARS*

President, National Council of Teachers of Mathematics, Reston, Virginia

**307 (MOSCON South)**

**413**

**Teaching Problem Solving Using Cognitively Guided Instruction to ELL Students**

*Pre-K–2 Session*

CGI embeds self-regulated strategies in structured routines by enabling students to monitor, evaluate, and reflect. Participants will learn how to incorporate cognitive strategy instruction for improving the learning and performance of math problem solving and reasoning skills by facilitating information processing through visual representations.

*ANGELA MICHELLE SENCHBAUGH*

Valley Park School District, Missouri

*JOSEPH SENCHBAUGH*

Webster University, St. Louis, Missouri

*JENNIFER BOND*

Ferguson-Florissant School District, St. Louis, Missouri

**YERBA BUENA 12/13 (MARRIOTT)**

**414**

**Teach Your Students to Think Like Mathematicians**

*6–8 Session*

This session answers the question, “How can we help students develop mathematical practices?” Participants will learn how instructional routines can be used to develop habits of mathematical thinking described in the math practice standards. Participants will experience these routines and learn strategies to keep focus on the math practices.

*GRACE KELERMANIK*

Boston Plan for Excellence, Massachusetts

**2022 (MOSCON WEST)**

**415**

**The Development of Multiplicative Thinking**

*3–5 Session*

Children’s progression from additive to multiplicative thinking is a critical aspect of mathematical development in the middle grades. We will explore this learning trajectory as we engage in multiplicative problem solving, reflect on videos of children solving multiplicative problems in a variety of ways, and discuss current research.

*SARAH LORD*

University of Wisconsin–Madison

*SARA R. CUTLER*

SEAMS Consulting, Madison, Wisconsin

**YERBA BUENA 10/11 (MARRIOTT)**

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Create your personal schedule using the online conference planner by visiting NCTM.org/planner
**12:30 P.M.–1:30 P.M.**

416  
**The Relational Work of Math Teaching: Why Good Colleagues Matter**  
**General Interest Session**

Getting students to share their mathematical thinking requires a particular kind of classroom environment. How do we build classrooms that not just allow but also invite students’ curiosity? In this talk I focus on classroom practices that support students’ risk taking and how colleagues can contribute to this endeavor.

*Ilana S. Horn*  
Vanderbilt University, Nashville, Tennessee

**301 (MOSCON South)**

417  
**The Rewards and Challenges of Standards-Based Grading**  
**10–12 Session**

Implementing a standards-based grading system within a school culture based on points accumulation presents significant challenges. Yet there are a variety of rewards for making it happen. In this presentation, we discuss our own successes and failures when we committed to putting SBG into practice.

*Matthew Grinwis*  
Downingtown Area School District, Pennsylvania

*Michael Manganello*  
Downingtown Area School District, Pennsylvania

**3005 (MOSCONE West)**

418  
**Twisted Math Questions: Combining Assessment and Instruction through Engaging Investigations**  
**General Interest Session**

Save classroom time. Deeply assess student conceptual understanding by combining assessment and instruction through novel, engaging investigations that precisely locate and illuminate student misconceptions. Experience some of these Twisted Math Questions and then learn to create your own to address the concepts your students are learning.

*Michael J. Bosse*  
Appalachian State University, Boone, North Carolina

*Kathleen Lynch-Davis*  
Appalachian State University, Boone, North Carolina

**303 (MOSCON South)**

419  
**Using an Interdisciplinary Linear Functions Portfolio to Measure Student Growth**  
**8–10 Session**

Our portfolio sequence is designed to provide formative and summative student assessment while also measuring student growth. Students are engaged in rigorous, authentic data analysis tasks as they build their understanding of linear functions through a series of interdisciplinary portfolio pieces. Handouts provided.

*Joe Scichilone*  
Cape Cod Lighthouse Charter School, Harwich, Massachusetts

*Elizabeth Novak*  
Cape Cod Lighthouse Charter School, Harwich, Massachusetts

*Andrew Novak*  
Cape Cod Lighthouse Charter School, Harwich, Massachusetts

**2005 (MOSCONE West)**

419.1  
**IXL: Changing the Way Students Learn in All Subjects, All Grades!**  
**General Interest Exhibitor Workshop**

Come learn how IXL’s immersive learning experience is changing the way students and teachers approach core subjects at all grade levels! Aligned with the Common Core State Standards, IXL engages students with adaptive, interactive skills that help build foundational fluency and critical thinking in every subject. IXL Analytics provides teachers with insight into student and classroom performance, empowering them to drive instruction and take actions to help students excel.

*IXL Learning*  
San Mateo, California

**120 (MOSCONE North)**

419.2  
**Discovering Big Ideas about Fractions: Moving from Memorization to Understanding**  
**3–5 Exhibitor Workshop**

Walk away with a wealth of practical classroom tools while discovering ways to enhance your students’ understanding of fraction concepts for grades 3–5. Learn new approaches for solving problems, modeling thinking, constructing arguments, and developing rules. Explore questions to ask, tasks to select, materials to use, and connections to make.

*Houghton Mifflin Harcourt*  
Boston, Massachusetts

**121 (MOSCONE North)**
419.3
Form and Function in Digital Learning: Designing for Coherent Trajectories, Social Engagement, and Personal Growth in Mathematics

General Interest Exhibitor Workshop
Learn about digital innovations in mathematics curricular resources and the designs that undergird new learning technologies. Discuss how education technologies and blended learning models may or may not create new ways for students to engage with mathematics content and practices. The presenters will explore pedagogical opportunities, technological challenges, and classroom realities as they provide design insights about task construction, continuous assessment, virtual manipulatives, and the differences between designing for collaboration and personalization.

DreamBox Learning
Bellevue, Washington

122 (MOSCONE NORTH)

419.4
Teaching Math via Problem Solving—Focus on the Process and the Method

3–5 Exhibitor Workshop
Mathematical problem solving is central to learning math effectively. In this workshop, participants will experience how to teach mathematics via problem solving through the systematic development of problem sets, and by focusing on both aspects of problem solving—the method and the process (based on Polya’s framework of the problem-solving process)

Scholastic
New York, New York

123 (MOSCONE NORTH)

419.5
Using Technology to Support Observational Assessments in K–5

General Interest Exhibitor Workshop
Observation assessments are a critical element for monitoring student progress. Learn how technology can be used to support capturing, tagging, and using observational assessments.

Pearson
Boston, Massachusetts

124 (MOSCONE NORTH)

419.6
Rate of Change . . . It’s Not Rocket Science

6–8 Exhibitor Workshop
As NASA gears up for space missions, their teams think about every aspect from launch to return. TI teamed up with NASA to create a lesson that explores slope through a real problem solved by rocket propulsion experts. Learn how this and other free resources can help engage your students in STEM.

Texas Instruments
Dallas, Texas

125 (MOSCONE NORTH)

419.7
 Finally! A Coaching Framework That’s Actually about the Math

Coaches / Leaders / Teacher Educators Exhibitor Workshop
Looking to improve feedback for math teachers? Experience the power of the MQI in focusing discussions of math instruction and guiding teachers’ growth. The Mathematical Quality of Instruction (MQI) is a Common Core–aligned, math-specific rubric from Harvard University. Learn how our MQI video-based, virtual coaching helps teachers improve.

MQI Coaching
Cambridge, Massachusetts

130 (MOSCONE NORTH)

1:00 P.M.–2:15 P.M.

420
Addition and Subtraction: What’s the Difference?

Pre-K–2 Workshop
Are you finding students have strategies for addition but lack the ability to subtract? Teachers will learn to connect addition and subtraction through use of various tools and strategies to develop student understanding and fluency with subtraction.

Shelah Feldstein
Tulare County Office of Education, Visalia, California

YERBA BUENA 14/15 (MARRIOTT)
1:00 P.M.—2:15 P.M.

421  
**A Division Mission: Developing a Deep Understanding**  
3–5 Workshop

Join us to explore division models with manipulatives and technology. A true understanding of division will help students understand many math topics down the road. We will start with whole numbers and learn how the division models carry into work with fractions and decimals. We will also discuss how to interpret remainders in applications.

**Barbara Boschmans**  
Northern Arizona University, Flagstaff, Arizona  
**Brian P. Beaudrie**  
Northern Arizona University, Flagstaff, Arizona

306 (MOSCONE SOUTH)

422  
**Base-Eight Explorations to Build Understanding of Place-Value Struggles**  
Pre-K–2 Workshop

Take a journey back to learning a number system for the first time. During this session, we will learn base eight and consider effective ways to assist students as they make sense of numbers and place value in base ten. We will use several tools and explorations. Learn how to use effective strategies and provide meaningful experiences for students.

**Lisa Ann Brooks**  
University of Central Florida, Orlando

3008 (MOSCONE WEST)

423  
**Building a Conceptual Understanding: Solving Systems of Linear Equations**  
8–10 Workshop

With the right approach, all students can be successful in understanding, solving, and applying systems of equations. In this session, we will build conceptual understanding of a system of equations, and we will highlight multiple representations and a variety of solving strategies that go beyond elimination and substitution.

**Sheila Yates**  
Math Solutions, Sausalito, California  
**Connie J. Horgan**  
Math Solutions, Sausalito, California

2003 (MOSCONE WEST)

424  
**Calculus for Social Justice**  
10–12 Workshop

As research in mathematics education pushes forward, what we know about “good teaching” tends to get lost in the upper levels. Calculus often falls prey to these symptoms. Come and see how working in a unique and highly diverse urban environment, I have found ways to adapt the curriculum to engage students by teaching with and for social justice.

**Joseph Bolz**  
George Washington High School and University of Denver, Colorado

3018 (MOSCONE WEST)

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1:00 P.M.–2:15 P.M.

425
Complex Numbers in GeoGebra; Algebra, Geometry, and Matrices
10–12 Workshop
Learn to concretely illustrate the geometry of complex numbers using GeoGebra, and describe the insights that complex numbers give regarding similarity, congruence, and transformations in geometry. Presenters will share premade files to illustrate these ideas in the classroom. Bring your device with GeoGebra to follow the activities.

Roberto C. Soto
California State University Fullerton, Fullerton, California
Armando M. Martinez-Cruz
California State University Fullerton, Fullerton, California

2002 (MOSCON WEST)

426
Don’t Be Negative about Negative Rational Numbers
6–8 Workshop
Join us in this active workshop to play engaging online and hands-on games and riddles to enhance CCSS concepts. We will use models such as number lines, Cartesian coordinates, and cards to solve and pose various problems involving equivalence, order, and distance concepts as well as all operations with both positive and negative rational numbers.

Linda Jensen Sheffield
Northern Kentucky University, Highland Heights
Katherine Gavin
University of Connecticut, Storrs

3010 (MOSCON WEST)

427
Exploring Rigor and Coherence with Technology-Based Tasks
6–8 Workshop
In this hands-on session, explore iPad apps, videos, and websites to create real-life math tasks to engage all students. We will provide ready-to-use math tasks, an interactive task template with differentiated questioning, intervention strategies, and a scoring rubric. Videos and data will support evidence of NCTM’s eight Mathematics Teaching Practices.

Melissa G. Haun
Loudon County Schools, Tennessee
Patrick Bethel
Loudon County Schools, Tennessee

3022 (MOSCON WEST)

428
Lost in Translation: Getting through to Students
3–5 Workshop
Do you ever feel like you’re saying one thing and your students are hearing something completely different? In this session, participants will actively explore ten common areas of miscommunication including area, fractions, geometry, measurement, and traditional algorithms. Methods to bridge these common communication gaps will also be presented.

Jason Libberton
Idaho Regional Mathematics Center, Idaho State University, Pocatello
Angie Godfrey
Idaho Regional Mathematics Center, Idaho State University, Pocatello

GOLDEN GATE C2 (MARRIOTT)

429
Mathematics + Financial Literacy = INVESTigations
8–10 Workshop
We will share a set of high school activities that address both goals for mathematics (CCSSM) and financial literacy (Jump$tart Standards). See how algebra, functions, statistics, and modeling standards can support students in building a stronger understanding of saving, investing, credit, debt, and more.

Susan A. Peters
University of Louisville, Kentucky
Sherri L. Martinie
Kansas State University, Manhattan

3011 (MOSCON WEST)

Visit the NCTM Bookstore and save 25% off the list price of all publications and specialty items!
1:00 P.M.–2:15 P.M.

430
Primary Students in Powerful Mathematical Discussions ... For Real?
Pre-K–2 Workshop
Do you, or somebody you know, think that powerful mathematics discussions are only for the big kids? Setting productive dispositions towards mathematics is our job at the pre-K–2 level! Come analyze a powerful instructional model that uses student representations and discourse to drive some seriously intense conversations... even with our little kids.
Jamie L. Duncan
Lake Elsinore Unified School District, California
Ryan Dent
Lake Elsinore Unified School District, California
Kristian Quiocho
Lake Elsinore Unified School District, California

310 (MOSCONIE SOUTH)

431
Promoting Effective Math Instruction for Young Children through Counting Collections
Pre-K–2 Workshop
This workshop focuses on an instructional activity called counting collections and its application in pre-K–2 classrooms. Counting is essential for children to develop number sense. We will share strategies for engaging students in counting collections, and we will discuss young children’s mathematical thinking and number sense progressions.
Kathy Liu Sun
Santa Clara University, California
Kim Bambao
San Mateo County Office of Education, Redwood City, California

3004 (MOSCONIE WEST)

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1:00 P.M.–2:15 P.M.

**432**  
Recursion through Manipulatives and Pictures  
10–12 Workshop  
Participants will investigate several interesting problems that can be solved with recursion. Tower of Hanoi, Zookeeper’s Puzzle, Jump & Slide, and Sierpinski’s Triangle are some of the problems. Graphing calculators will be used as a tool to further investigation.  
Raymond Siegrist  
SUNY Oneonta, New York  
2006 (MOSCONE WEST)

**433**  
Supporting Preservice Elementary Teachers to Use and Connect Representations  
Coaches / Leaders / Teacher Educators Workshop  
Participants will investigate strategies for supporting preservice teachers to use and connect representations, a key teaching practice in Principles to Actions. Through learning to connect representations, preservice teachers will be better prepared to help students develop a deeper understanding of concepts and engage in mathematical practices.  
Sarah Kate Selling  
University of Michigan, Ann Arbor  
Michaela Krug O’Neill  
University of Michigan, Ann Arbor  
Meghan Shaughnessy  
University of Michigan, Ann Arbor  
YERBA BUENA 3/4 (MARRIOTT)

**434**  
Transforming High School Geometry beyond the Traditional Classroom  
8–10 Workshop  
What does “same size, same shape” mean? To truly make sense of congruence, according to the Common Core State Standards, we must take a closer look at transformations of the plane via rigid motions. In this session you will understand the need for change and how it connects to applications such as perpendicularity and equations of circles.  
Beau J. Bailey  
Eureka Math, Washington, D.C.  
Stefanie Hassan  
Eureka Math, Washington, D.C.  
2008 (MOSCONE WEST)

**435**  
Unpacking Division: Understanding the Structure  
3–5 Workshop  
Participants will use a variety of manipulatives to model division, as we unpack partitive and measurement meanings of the operation with whole numbers and then extend these meanings to division of fractions. We will write and share contextual problems, and we will examine alternative algorithms and methods of representing remainders.  
Mary Pat Sjostrom  
Winthrop University, Rock Hill, South Carolina  
3006 (MOSCONE WEST)

**436**  
Volume Formulas . . . Are They All Right?  
6–8 Workshop  
Discover new research-based, classroom-ready tasks designed to enhance your volume measurement instruction. We will share video of nonroutine tasks that elicit students’ thinking about the volume formula of right and non-right rectangular prisms. Come work through some tasks and contribute to a discussion on the formulas V = lwh and V = Bh.  
Pamela S. Beck  
Illinois State University, Normal  
Theodore J. Rupnow  
Illinois State University, Normal  
Jeffrey E. Barrett  
Illinois State University, Normal  
2016 (MOSCONE WEST)
1:00 P.M.–2:15 P.M.

437
What’s Your Image? Transformations in the Coordinate Plane
6–8 Workshop
Come and explore strategies to engage students in generalizing the pattern of sets of ordered pairs under various transformations. After exploring the image of a geometric figure, each participant will create a picture and its image under a variety of transformations. Transformations may include translations, reflections, and rotations.
Margaret A. Bambrick
Volusia County Schools, Orange City, Florida
Ruth Casey
Teachers Teaching with Technology, Frankfort, Kentucky

437.1
Engaging Students in Productive Struggle through “Meaty Tasks”
6–8 Workshop
We will explore the practical applications of how to increase the cognitive rigor of math tasks and foster critical thinking. This session is specifically designed to provide a framework to create problems with varied entry points and solution strategies. Classroom examples and videos will be shared.
Pamela Quirk
Muskego-Norway School District, Wisconsin
Kimberly Crosby
Muskego-Norway School District, Wisconsin

437.2
First Split into Tens and Ones: DMI for K–8 Teachers
3–5 Workshop
An updated edition of Developing Mathematical Ideas (DMI) professional learning materials is now being published by NCTM. Learn about the first module, Building a System of Tens, by analyzing video of students’ strategies for calculating with multi-digit numbers and discussing how students’ approaches relate to the CCSSM Standards for Mathematical Practice.
Deborah E. Schifter
Education Development Center, Inc; Waltham, Massachusetts
Susan Jo Russell
TERC; Cambridge, Massachusetts
Virginia Bastable
Mount Holyoke College; South Hadley, Massachusetts

2:00 P.M.–3:00 P.M.

438
A Brief History of Math Education: Lessons for Today
General Interest Session
The issues and arguments concerning what and how to teach mathematics today are as old as the United States. If we are to make progress improving mathematics learning we must stop recycling the same old debates. Lessons from the past will be examined as we work to improve learning and constructively engage parents and the public today.
Matthew Larson
is a frequent speaker before mathematics education audiences and he has authored or co-authored several books, including a series on professional learning communities and the Common Core. He is the author of NCTM’s Administrator’s Guide: Interpreting the Common Core State Standards to Improve Mathematics Education, and he was on the writing team of Principles to Actions: Ensuring Mathematical Success for All. His two-year term as NCTM president begins at the conclusion of the NCTM Annual Meeting & Exposition in San Francisco.
Matthew Larson
President-Elect, National Council of Teachers of Mathematics; Lincoln Public Schools, Nebraska

439
A Race to the Finish: Linear Functions in Action
6–8 Session
How do we take students beyond procedures and surface level understanding of linear functions? Will you be the speed walker, lunger, or push-up runner in a dash to the finish? Join us for a CCSSM-aligned, classroom-ready lesson bringing linear functions to life by investigating the meaning of slope, intercepts, and equations in a real-life context.
Janna Canzone
University of California, Irvine
Karajean Hyde
University of California, Irvine
Sarah M. Galasso
University of California, Irvine
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Next Generation Mathematics for ALL
Principles to Actions: Mathematics and Teaching Practices and Research
Promoting Productive Dispositions about Mathematics
Technology

2:00 P.M.–3:00 P.M.

440 **EQUITY**
**Attracting Girls to STEM by Integrating Social Studies and Mathematics**

General Interest / All Audiences Session

This session will share fascinating research and innovative strategies that support the integrating of social studies and mathematics to spark girls’ interest in STEM fields. Participants will have the opportunity to explore the research, engage in some suggested strategies, and receive teaching resources.

Jill M. Drake
University of West Georgia, Carrollton
Janet Strickland
University of West Georgia, Carrollton

2011 (MOSCONE WEST)

441 **P&A**
**Building Fluency, Understanding, and Evidence of Thinking through Number Talks**

General Interest Session

How can we build conceptual understanding and fluency? We will look at the role of Number Talks as a change agent for shifting student and teacher mathematical beliefs and understandings from teaching and learning by telling to teaching and learning by using purposeful problems and intentional discourse.

Sherry D. Parrish
Parrish and Associates, Incorporated, Birmingham, Alabama

3016 (MOSCONE WEST)

442 **EQUITY**
**Building STEAM: Encouraging Grades 3–5 Girls’ Interest in Mathematics and Science**

3–5 Session

This session will focus on the integration of mathematics, literacy, and arts activities that will support the development of visual spatial abilities in grades 3–5 students. These activities will be presented and organized around the contributions of women mathematicians throughout history.

Judy A. Werner
Slippery Rock University, Pennsylvania
Suzanne Rose
Slippery Rock University, Pennsylvania

GOLDEN GATE C3 (MARRIOTT)

443
**Challenges and Successes in Implementing Culturally Relevant Activities for ELLs**

General Interest Session

Culturally relevant pedagogy is centered on the view that cultural identities and experiences are the foundations for all other experiences and behaviors. We will present several examples of culturally relevant mathematical activities, and we will discuss bilingual teachers’ attitudes and teaching strategies toward these new curriculum activities.

Olga M. Kosheleva
University of Texas at El Paso
Julian Viera
University of Texas at El Paso
Ruby L. Lynch-Arroyo
University of Texas at El Paso

307 (MOSCONE SOUTH)

444
**Challenges in Teaching and Assessing Statistics: Going beyond Computational Fluency**

10–12 Session

For many teachers, statistics is new and uncomfortable territory. The task of developing and assessing students’ computational fluency in statistics is relatively easy compared with the challenge of developing and assessing their statistical reasoning. Learn four ways to go beyond the mechanics to enrich the teaching and learning of statistics.

Stephen J. Miller
Winchester Thurston School, Pittsburgh, Pennsylvania

2009 (MOSCONE WEST)
2:00 P.M.–3:00 P.M.

445
**Common Core Statistics and AP Statistics—Together But Not Scrambled**

10–12 Session

The statistics standards in CCSSM provide an exciting and challenging opportunity with the potential to have an impact on subsequent statistics courses. The statistical standards in CCSSM and the topics in AP Statistics courses will be explored and compared, and the impact of CCSSM on students’ development of statistical thinking will be discussed.

Luis Saldivia  
ETS, Princeton, New Jersey  
Paul Rodriguez  
Troy High School, Fullerton, California

3012 (MOSCONE WEST)

446
**Developing Mathematics Teacher Leaders: Supporting District-Wide Learning and Systemic Change**

Coaches / Leaders / Teacher Educators Session

In this session you will learn about a university school partnership focused on developing leaders who support teachers’ CCSSM implementation. We will describe (a) the elements of our PD model, (b) what leaders are learning by engaging in the professional learning, and (c) what project leadership is learning by collaborating in this partnership.

Nicole R. Rigelman  
Portland State University, Oregon  
Amy McQueen  
David Douglas School District, Portland, Oregon  
Karen Prigodich  
Centennial School District, Portland, Oregon

2024 (MOSCONE WEST)

447
**Using Technology Strategically to Build Understanding of Crucial Math Concepts**

3–5 Session

Appropriate uses of technology can help students develop conceptual understanding of ideas such as multiples, fractions, and area by generating data and examining patterns. We’ll discuss what it looks like to use technology to develop conceptual understanding by presenting situations that let students “notice and wonder,” sense-make, and explore.

Annie Fetter  
The Math Forum, National Council of Teachers of Mathematics, Swarthmore, Pennsylvania

301 (MOSCONE SOUTH)

448
**Excel in Elementary Mathematics**

3–5 Session

This session focuses on using Microsoft Excel to reinforce students’ basic mathematics knowledge. Participants will be guided through the creation of projects such as creating an expanded form generator, shopping spree calculator, and a net income spreadsheet.

Andrew Bonaparte  
Let’s TEACH, Arlington, Texas

GOLDEN GATE A (MARRIOTT)

449
**Flipping Out in AP Calculus and Geometry Using Technology**

10–12 Session

Why flip? How can I use technology to provide for student collaboration and formative assessments? See how “flipping” allows for more student opportunities to problem-solve, reason, and model. Create a student-centered environment where mathematical discourse, constructing viable arguments, and critiquing other students’ reasoning are the norm.

Joanne M. Ryan  
The Buckley School, Sherman Oaks, California  
Juan S. de la Cruz  
The Buckley School, Sherman Oaks, California

2005 (MOSCONE WEST)
2:00 P.M.–3:00 P.M.

**450 Get Function-Minded: Using Tasks to Jump Start Relationship Thinking**

8–10 Session
Help students build function understanding and employ the mathematical practices with a series of tasks that naturally introduce students to functions. Conjecture and explore a series of tasks addressing the definition of a function, understanding quadratic tables, and more while learning from each other's reasoning. Leave with adaptable tasks.

Liem Tran
Math for America Los Angeles, California
Carl M. Oliver
City As School High School, New York, New York

2001 (MOSCON WEST)

**451 Inclusive Middle Level Math Instruction**

6–8 Session
Help empower both Special Ed. and Math Ed. teachers in an inclusive setting by modeling hands-on activities for varying ability levels, creating a culture of positive co-teaching, discussing the importance of reference models and common language, providing engaging and motivating strategies for students, and sharing best practices for programming.

Erin K. Barry
Hatboro-Horsham School District, Pennsylvania
Christine Jenkins
Hatboro-Horsham School District, Pennsylvania

3003 (MOSCON WEST)

**452 Math Meeting: Rethinking the Warm-Up**

Pre-K–2 Session
Is your math warm-up working for you? Do you ever wonder how to continue to address previously taught standards as you move to new ones? Come and explore a variety of quick activities that will engage students in fun practice of previously instructed Common Core State Standards! We will discuss the benefits, organization, and routines of a Math Meeting.

Jennifer L. Davis
Wicomico County Public Schools, Salisbury, Maryland

305 (MOSCON SOUTH)

**453 Moving Principles into Actions: Access and Equity**

Coaches / Leaders / Teacher Educators Session
In *Principles to Actions*, NCTM sets forth a vision to support the goal of ensuring the mathematical success of all students. This session introduces professional learning resources designed to support teachers and other stakeholders as they strive to achieve the vision outlined in the Access and Equity Principle.

Robert Q. Berry
University of Virginia, Charlottesville
Marilyn E. Strutchens
Board of Directors, National Council of Teachers of Mathematics; Auburn University, Alabama

134 (MOSCON NORTH)

**454 Seeing Is Believing: Using Video Reflection Techniques to Strengthen Instruction**

Coaches / Leaders / Teacher Educators Session
With little to no cost, a teacher can use their own actions to strengthen their teaching practices through video-based reflection. Attendees will experience the video reflection process utilizing templates designed for the math classroom that capture standard-based practices important to effective instruction.

Norma Boakes
Stockton University, Galloway, New Jersey

2022 (MOSCON WEST)

**455 South Los Angeles Math (SLAM) Project: Best Practices Learned**

Research Session
SLAM’s goal is to learn the best practices for decreasing the college math remediation rates of underrepresented students. In this project, high school teachers and college professors co-teach college-level math concurrent-enrollment courses to at-risk students on high school campuses during the regular school day.

Lynn Cevallos
College Bridge, Los Angeles, California
Kristin Webster
California State University, Los Angeles
Pedro Cevallos
College Bridge, Los Angeles, California

303 (MOSCON SOUTH)
STEM Gives Meaning to Mathematics

3–5 Session

Engineering instruction in K–5 can translate into lasting success in mathematics. Learn how to plan and teach an integrated engineering curriculum that (a) applies measurement and data collection concepts and (b) develops students’ ability to communicate, collaborate, and persevere when solving high complexity math problems.

Lukas Hefty
Douglas L. Jamerson, Jr. Elementary School, St. Petersburg, Florida

3009 (MOSCON WEST)

Strengthening Multiplicative Reasoning with Prime Numbers

3–5 Session

Prime numbers can strengthen students’ multiplicative reasoning by serving as the link between multiplication and division. Come explore classroom tasks that help students develop this relationship and provide a more structured way of computing with numbers. Strategies for enacting these tasks with students will also be discussed.

Matt B. Roscoe
University of Montana, Missoula

YERBA BUENA 12/13 (MARRIOTT)

Technology and Intellectual Need

8–10 Session

Every notation, word, and technique solved a problem for someone somewhere. In this session, we’ll explore how to use technology to put students a position of “intellectual need.” In doing so, we’ll see how to transform some of the most frustrating and tedious tasks—e.g., memorizing mathematical vocabulary lists—into some of the most interesting.

Eli Luberoff
Desmos, Inc., San Francisco, California

3005 (MOSCON WEST)

The Equals Sign . . . It Is More Complicated Than We Think!

Pre-K–2 Session

Early experiences with equations are foundational to developing algebraic thinking. Five years after the release of the Common Core, including a standard addressing the equal sign, many students have misconceptions about the equal sign. Come and see how over 800 first and second graders interpreted different relational statements involving the equal sign.

Charity Bauduin
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Florida State University, Tallahassee

Zachary Champagne
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Florida State University, Tallahassee

Wendy Bray
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Florida State University, Tallahassee

YERBA BUENA 10/11 (MARRIOTT)

The Tension between Productive Struggle and Telling

3–5 Session

We know that productive struggle and effective questioning are elements of the effective teaching of mathematics, but when is it appropriate to tell? In this session we’ll consider this question, look at some tips for answering it, and use transcripts of math discussions to fine tune our process of choosing when, what, why, and how we tell.

Douglas Z. Hill
Pinellas County Schools, Largo, Florida

NOB HILL C/D (MARRIOTT)

Think outside the Plane

10–12 Session

Come find out how a beach ball, some yarn, and a crochet hook can blow your students’ minds and make them rethink their preconceived notions of Euclidean geometry. Get your students to think outside the plane by looking at spherical and hyperbolic geometries.

Kristine K. Dahlquist
Hawaii Preparatory Academy, Kamuela, Hawaii

3007 (MOSCON WEST)
2:00 P.M.–3:00 P.M.

462
Use a Clinical Teaching Model in an Elementary Math Method Course

Higher Education Session

How can teacher candidates effectively learn to differentiate teaching strategies from your math method course? How can teacher candidates really implement math methods to the real elementary students in front of you during your course teaching time? Come to discuss how my teacher candidates learn math methods through a clinical teaching model.

Hsuehi Martin Lo
Saint Cloud State University, Minnesota

2020 (MOSCONE WEST)

463
Using Multiple Representations to Build Conceptual Understandings of Fractions

3–5 Session

In this interactive session we will examine the importance of understanding the meaning of the operations, effectively translating symbols using conceptual language, drawing good pictures, and connecting to symbolic representations to building fraction concepts. A formative assessment and examples for immediate classroom use will be given.

Sandy Atkins
Creating AHAs, St. Petersburg, Florida

YERBA BUENA 7 (MARRIOTT)

464
Using Tape Diagrams to Foster Algebraic Thinking and Problem Solving

Pre-K–2 Session

See how tape diagrams can be used to foster algebraic thinking to help young children solve addition and subtraction problems involving unknowns in all positions. Video footage of a lesson study cycle on teaching through problem solving and students sharing and discussing multiple solution methods will be shared.

William Jackson
Harlem Village Academies, New York, New York

Makoto Yoshida
Harlem Village Academies, New York, New York

GOLDEN GATE C1 (MARRIOTT)

465
Using the 5 Practices in the Early Childhood Classroom

Pre-K–2 Session

How do the 5 Practices unfold in a kindergarten classroom? How do teachers and students use the 5 practices, and how do they support the young learner? How might you use them in your setting? A video case study from an urban high-needs school will drive this discussion-based, interactive session about these issues.

Elizabeth Hughes
University of Northern Iowa, Cedar Falls, Iowa

Megan E. Balong
University of Northern Iowa, Cedar Falls, Iowa

Michelle Vanwinkle
Dr. Walter Cunningham School for Excellence, Waterloo, Iowa

YERBA BUENA 5/6 (MARRIOTT)

465.1
STEM Investigations for the Math Classroom

10–12 Exhibitor Workshop

Why should students only be doing hands-on learning for STEM in their science classes? Learn how to bring inquiry-based learning into your classroom using investigations that allow students to draw upon math reasoning and skills to solve problems in STEM.

Texas Instruments
Dallas, Texas

120 (MOSCONE NORTH)

465.2
Practical Ideas for Breathing Life into 6 and 7 RP Standards

6–8 Exhibitor Workshop

It can easily be argued that the grades 6 and 7 Ratios and Proportional Relationships standards are both the most important and most difficult to teach of all the CCSSM standards. This session will look at why that is, and it will present a range of classroom activities that support these critical pieces of the curriculum.

Houghton Mifflin Harcourt
Boston, Massachusetts

121 (MOSCONE NORTH)
2:00 P.M.–3:00 P.M.

465.3   Bridges Intervention
General Interest Exhibitor Workshop
Learn about Bridges Intervention, offering targeted, high-quality instruction matched to student needs. Tier 2 and 3 students in K–5 work with models that spur thinking and understanding—starting with manipulatives, moving to two-dimensional representations, and then to mental images. The program is organized by content, and progress monitoring is key.
Math Learning Center
Salem, Oregon

122 (MOSCONE NORTH)

465.4   It’s Here: the NEW Investigations 3 K–5
3–5 Exhibitor Workshop
Intrigue students by creating a learning environment of high expectations. Guide students as they actively explore mathematical ideas to develop understanding and fluency. Create a New Learning Culture. Focus on mathematical problem solving, learner-centered activities, and guided inquiry. Welcome to Investigations 3 in Number, Data, and Space.
Pearson
Boston, Massachusetts

124 (MOSCONE NORTH)

465.5   Purposeful Technology: Moving beyond Buzzwords to Transform Learning
General Interest Exhibitor Workshop
In this workshop, Dr. Christine Gouveia, Vice President, Applied Learning Sciences for McGraw-Hill Education, discusses how to move digital learning from a buzzword to an effective tool that helps each student reach his full potential. Purposeful technology helps you provide the right tool, at the right time, to maximize success for every student.
McGraw-Hill Education
Columbus, Ohio

125 (MOSCONE NORTH)

465.6   Financial Algebra: Real World, Real Math, Real Interest
10–12 Exhibitor Workshop
Learn how to implement the course Advanced Algebra With Financial Applications using Financial Algebra (Cengage 2014). With an algebra 1 prerequisite, advanced algebra topics are taught in the contexts of investing, credit, banking, automobiles, mortgages, employment, taxes, budgets, and retirement. Copies of Financial Algebra will be distributed.
National Geographic Learning | Cengage Learning
Bedford, New York

130 (MOSCONE NORTH)

465.7   Engage Media-Savvy Students with Songs, Videos, Games, and Rewards
General Interest Exhibitor Workshop
Teachers are turning to a new collection of musical, high-interest lessons called Math Upgrade to engage today’s media-savvy students. Find out how teachers use games and rewards to bring below-proficient students in K–grade 8 up to grade level. Join us for math, music, and fun!
Learning Upgrade
San Diego, California

123 (MOSCONE NORTH)

2:45 P.M.–4:00 P.M.

466   Building Mathematics Learning Communities Using NCTM Professional Development Guides
Coaches / Leaders / Teacher Educators Workshop
NCTM provides free online professional development guides for many of its print resources. In this session, participants will explore the PD guide for NCTM’s landmark publication Principles to Actions: Ensuring Mathematical Success for All. Presenters will model ways to use PD guides to support professional learning in your school.
Chonda L. Long
National Council of Teachers of Mathematics, Reston, Virginia

3022 (MOSCONE WEST)
2:45 P.M.—4:00 P.M.

467  **TECH**
**Coding to Enrich All Math Courses**
8–10 Workshop

Devices captivate students—too often, math does not. In any course, coding can reach hard-to-reach students, enrich math content, and empower all students to apply new learning with purpose. Coding is the future—let coding bring relevance to students’ mathematical experiences in the present. Bring a graphing calculator; no experience needed.

Jason Slowbe  
Temecula Valley Unified School District, California

3006 (MOSCONE WEST)

468  **Create New Packaging with Proportionality: Teaching and Extending Dilations**
6–8 Workshop

Your help is needed to solve the packaging problems for several companies! Hands-on activities will range from maximizing soda can packaging to shrinking cereal boxes using proportional thinking, algebraic reasoning, and numerical analysis. Take four rich problem-solving activities, as described in *Principles to Actions*, back to your classroom.

Rachelle Rogers  
Baylor University, Waco, Texas  
John Choins  
Midway Independent School District, Waco, Texas

3008 (MOSCONE WEST)

469  **Engaging Students in Mathematics through Forced Perspective Photography**
8–10 Workshop

Everyone loves pictures that create a forced perspective, but have you ever considered the mathematics involved in creating these images? Join us for this hands-on session where you will learn various ways to challenge your students with real math related to forced perspective photography.

Stephanie M. Haga  
Fulton County Schools, Atlanta, Georgia  
Susan G. Baker  
Fulton County Schools, Atlanta, Georgia

3018 (MOSCONE WEST)

470  **Experiencing the Engineering Design Process through a Math Lens**
10–12 Workshop

The emphasis on turning your math classroom into a STEM one can seem daunting. How can we bring in engineering authentically? Experience the engineering design process through a math lens and learn how to transform meaningful tasks, such as Barbie Bungee and Catapult Launchers, into challenges worthy of an engineering design team.

Heather Kohn  
Marlborough Public Schools, Massachusetts

2008 (MOSCONE WEST)

471  **Explore Variability and Inference with Student-Generated Data**
6–8 Workshop

Let your students become the data with engaging activities for generating class-wide data sets. We’ll look at effective prompts teachers can use to help students understand variability and introduce inference through sampling activities. Go “Globe Trotting,” analyze student “Signatures,” and experience the “Mystery Ticket Bag.”

Robert Lochel  
Hatboro-Horsham School District, Pennsylvania

2002 (MOSCONE WEST)

472  **It’s All about That Base: Creatively Connecting Fractions and Decimals**
3–5 Workshop

Go beyond base-ten blocks to make deep connections between fractions and decimals using stories, pictures, and even dancing. Learn how to sequence these activities to highlight the key role that the powers of 10 play in fraction-decimal equivalence. Activities will focus on deepening participants’ understanding and may be adapted for classroom use.

Christy Pettis  
University of Minnesota, Twin Cities, Minnesota  
Pamela J. Richards  
Leadership and Learning Center, Denver, Colorado  
Bethann Wiley  
University of Minnesota, St. Paul

3004 (MOSCONE WEST)
2:45 P.M.–4:00 P.M.

473  
Let’s Clarify Math Modeling in PK–2  
Pre-K–2 Workshop

What is math modeling (as noted in mathematical practice MP.4), and how is that different from modeling mathematics? Participants will engage in classroom-ready tasks, including designing a playground, to contrast the two. Throughout, participants will be introduced to the modeling process and how rich modeling tasks can address PK–2 content along with other mathematical practices.

Mike Long  
Howard Community College, Columbia, Maryland  
3010 (MOSCON WEST)

474  
Making Sense of Essential Statistics for the Next Generation  
10–12 Workshop

Participants will engage in meaningful statistics activities using the software Core Math Tools. Participants will collect, graph, and analyze data using a best fit lines and sum of squared errors. We will also explore accessible ways to determine whether differences between groups may be considered statistically significant.

Karen L. Fonkert  
Charleston Southern University, South Carolina  
3011 (MOSCON WEST)

475  
Moving From Geometric Transformations to Escher Tessellations  
6–8 Workshop

Participants will review the transformations: translation, reflection, and rotation. You will learn four particular forms of these transformations that M. C. Escher used in his tessellations through hands-on activities. These four forms of transformations will be used to make an irregular shape that tessellates to create your “Escher” art!

Betty B. Long  
Appalachian State University, Boone, North Carolina  
Deborah A. Crocker  
Appalachian State University, Boone, North Carolina  
2006 (MOSCON WEST)

476  
Playful Mathematics and Teacher Direction: Promoting Equitable Learning in Pre-K–2  
Pre-K–2 Workshop

How do children learn about counting and number in pre-K–2? How can teachers support that learning in equitable ways? See and examine how learning develops through play coupled with teacher-directed activities/interactions to support their thinking through a selection of classroom videos and hands-on materials.

Anita A. Wager  
University of Wisconsin - Madison, Madison, Wisconsin  
Mary Q. Foote  
Queens College–CUNY, New York, New York  
302 (MOSCON SOUTH)

477  
Powerful Math Models to Develop Conceptual Understanding and Procedural Fluency  
3–5 Workshop

Together we will explore two powerful math models (number lines and arrays) that can be used across a wide range of grades supporting students’ mathematical development in number sense, operations, and algebraic reasoning. Participants will analyze how these models might be used for representing student thinking and/or developing student thinking.

Ruth Teszeri  
Halton District School Board, Burlington, Canada  
Terri Blackwell  
Halton District School Board, Burlington, Canada  
310 (MOSCON SOUTH)

478  
Quid Pro CODE: I Tell You Things, You Tell Kids  
Coaches / Leaders / Teacher Educators Workshop

You hear a lot about programming and coding, but you don’t know anything about it. Let’s fix that! Participants will start coding in Python right away in this workshop to learn the basics of any language. Throughout, we’ll talk about how your new knowledge can connect with cool mathematical activities at any grade level. (Gobs of resources, too!)

Josh D. Fisher  
Think Through Math, Pittsburgh, Pennsylvania  
GOLDEN GATE C2 (MARRIOTT)
Nurture a Strong Sense of Number in Younger Students

Now more than ever, students need to establish a solid foundation for success in mathematics, and it starts in the early grades. Focus on understanding number, representations, relationships, and number systems; the meanings of operations and relationships among those operations; and reasonable estimation and fluent computation during this interactive and hands-on event.

Sessions are geared toward specific grade levels, providing a tailored experience and the opportunity to take home tools and strategies to help your students—

• understand place-value structure;
• develop understanding of fractions;
• gain number sense through an understanding of addition, subtraction, multiplication, and division; and
• develop fluency with basic number combinations for addition, subtraction, multiplication, and division.

Learn more at nctm.org/institutes and follow us on Facebook, Twitter, LinkedIn, YouTube, Pinterest, and #NCTMinstitutes.
2:45 P.M.–4:00 P.M.

479
**Simple and Rich STEM Activities Using Painless Video Analysis**

*8–10 Workshop*

For STEM initiatives to be successful, we need to be teaching more science in our math classrooms, and more math in our science classrooms. Come and participate in rich hands-on experiments that use the camera in your pocket and free software to perform powerful mathematical video analysis.

*Raphael C. Carlson*
Christ’s Household of Faith School, St. Paul, Minnesota

*Mike J. Reiners*
Christ’s Household of Faith School, St. Paul, Minnesota

2004 (MOSCON WEST)

480
**#SlowMath: Looking for Meaning before the Procedure**

*10–12 Workshop*

How might we leverage technology to build procedural fluency from conceptual understanding while teaching our students to ask better questions? What if we encourage sketch noting to show connections? Come experience right triangle trig and equations of circles through the lens of the Slow Math Movement.

*Jennifer C. Wilson*
Northwest Rankin High School, Flowood, Mississippi

*Jill L. Gough*
Trinity School, Atlanta, Georgia

2003 (MOSCON WEST)

481
**Spatial Reasoning with Attribute Blocks**

*Pre-K–2 Workshop*

During this session, teachers will engage in a set of geometry activities that will support students’ development of spatial reasoning skills. These activities are sequenced through Van Hiele’s phases of learning, which support students as they progress through the Van Hiele levels of geometric thought.

*Tashana D. Howse*
Daytona State College, Daytona Beach, Florida

*Mark E. Howse*
Florida A&M University, Tallahassee, Florida

2016 (MOSCON WEST)

482
**VENNturing into Math and ELA to Deepen Understanding**

*Pre-K–2 Workshop*

Venn diagrams are often used in ELA to compare and contrast and in math to sort, creating a potential for confusion. Participants will engage in math activities for K–2 using Venn diagrams. Examples in ELA and other subject areas will be highlighted. Participants will learn ways to craft activities in both subjects to avoid potential confusion.

*Dovie Kimmins*
Middle Tennessee State University, Murfreesboro

*Jeremy J. Winters*
Middle Tennessee State University, Murfreesboro

*Cindy Cliche*
McFadden School of Excellence, Murfreesboro, Tennessee

YERBA BUENA 3/4 (MARRIOTT)

483
**Well Played: Unleashing the Power of Games and Puzzles**

*3–5 Workshop*

Would you like to increase students’ conceptual understanding, fluency, and perseverance, while they have fun and develop productive dispositions about mathematics? As we explore games and puzzles, experience how question, assessment, and management strategies can transform the use of games and puzzles in your classroom. Come play and solve!

*Linda Dacey*
Lesley University, Cambridge, Massachusetts

*Jayne Lynch*
Cambridge Public Schools, Massachusetts

GOLDEN GATE B (MARRIOTT)
2:45 P.M.–4:00 P.M.

484
What’s in Your Tool Kit? Numeracy Tools You Can’t Live Without!
Pre-K–2 Workshop
“What the heck is a Rekenrek?” “What’s the fame of a five- or ten-frame? “What’s the math with a number path?” This session will revisit WHAT the five best math tools are, HOW they impact young brains through problem solving, MODEL moves to increase math talk, and PROVIDE purposeful ways to plan with tools so they can make a good lesson GREAT!
Toni Osterbuhr
Wichita Public Schools, Kansas
Debbie M. Thompson
Wichita Public Schools, Kansas

306 (MOSCON South)

3:30 P.M.–4:30 P.M.

485
All Included in Math: Discourse Strategies for Teachers
Pre-K–2 Session
How can you get your students to have meaningful math discussions? What does that mean and how can you make it work in your classroom? Project AIM (all included in math) has modified literacy strategies to benefit the mathematics classroom. Experience these strategies and then take them back to your own classroom to see the benefits!
Sidney Fox
North Carolina State University, Raleigh

GOLDEN GATE C1 (MARriott)

486
Assessing the Core: Tools for Clarity
General Interest Session
How well did a student critique another’s reasoning? How precise do students need to be? How do we know? This session will focus on how to clearly define expectations for the quality and rigor of students’ mathematical practices, and how to apply them in tools and strategies for assessment and feedback on mathematical discourse and written work.
Kyle Moyer
Summit Public Schools, Redwood City, California

YERBA BUENA 7 (MARRIOTT)
3:30 P.M.–4:30 P.M.

489  
**Community College Mathematics Acceleration: Pathways and Practices for Success**

Higher Education Session

This session describes community colleges’ accelerated pathways through developmental mathematics that attend to students’ opportunities to learn significant mathematics and develop productive dispositions. Program successes (e.g., increased access and reduced achievement gaps), curriculum development, and teaching innovations will be discussed.

Mara Landers  
Los Medanos College, Pittsburg, California

Ann Edwards  
Carnegie Foundation for the Advancement of Teaching, Stanford, California

Julie Von Bergen  
Los Medanos College, Pittsburg, California

2022 (MOSCONE WEST)

490  
**Developing Problems That Evoke (and Assess) the SMPs**

8–10 Session

Not all mathematics problems are the same. Some are built to really stretch students’ (and teachers’) minds. What makes these different from others? In this session, we will look at examples of problems that are truly built to elicit use of the Standards for Mathematical Practice (SMPs) and explore the characteristics that make them so.

Matt McLeod  
Education Development Center (EDC), Chicago, Illinois

Mary Wedow  
Education Development Center (EDC), Chicago, Illinois

2011 (MOSCONE WEST)

491  
**Dynamic Geometry: A Mathematical Playground**

10–12 Session

Find out about using dynamic geometry to get your students building virtual machines. See student-engineered trains, oil derricks, and Rube Goldberg machines. Leave with concrete building blocks to get started. Before they know it, they’ll be writing parametric equations, using circular trig and modeling motion. They might even discover calculus.

Margaret C. Patterson  
American International School of Johannesburg, South Africa

2001 (MOSCONE WEST)

492  
**Even Fractions Are Better with Chocolate!**

6–8 Session

Touch the chocolate, draw the chocolate, think the chocolate—and eat it too? This is the research-based CRA approach to teaching, one that has proven to be very successful with struggling learners. Experience lessons that use manipulatives, like chocolate bars, and the CRA approach to develop student understanding of fraction concepts in CCSSM.

Amy L. Johnson  
Math Teachers Press, Inc., Minneapolis, Minnesota

Caryl K. Pierson  
Math Teachers Press, Inc., Minneapolis, Minnesota

3016 (MOSCONE WEST)

493  
**Giving Students Voice: Eliciting and Using Evidence of Student Thinking**

General Interest Session

Eliciting and using evidence of student thinking means giving students reason and voice. In the conscious act of listening to student thinking, we create space for students to make conjectures, form and critique arguments, and make mathematical connections. Even better, we promote a classroom culture of student reasoning and mathematical autonomy.

Dana C. Cox  
Miami University, Oxford, Ohio

Judith Meicenheimer  
Talawanda School District, Oxford, Ohio

Danette Hickey  
Talawanda School District, Oxford, Ohio

YERBA BUENA 12/13 (MARRIOTT)
3:30 P.M.–4:30 P.M.

**494**

How Deep Is Deep Enough in a Coach-Teacher Conversation?
Coaches / Leaders / Teacher Educators Session
Coach-teacher planning conversations that are deep and specific with respect to a discussion of content, pedagogy, and student thinking increase the likelihood that a teacher will engage students in discussion of mathematical reasoning. A video case will be analyzed, data shared, and characteristics named.

Victoria Lynn Bill
Learning Research and Development Center, University of Pittsburgh, Pennsylvania

2020 (MOSCONE WEST)

**495**

Incorporating Whole Class Discussions in the Honors Algebra II/Precalculus Classroom
10–12 Session
Participants will explore whole class discussions (WCD) to foster perseverance in problem solving. Presenters will provide video examples and lesson templates used in honors algebra II and precalc. In WCD, students must construct arguments, communicate, and critique reasoning. During the session, attendees will participate as students in a WCD.

Brenda M. Colwell
Blue Valley North High School, Overland Park, Kansas
Jean E. Reynolds
Blue Valley North High School, Overland Park, Kansas

3003 (MOSCONE WEST)

**496**

**EQUITY**

Inspiring Every Child
General Interest Session
Join me as I share an inspirational talk about my experience with my students that provided a springboard for them to believe in themselves and in their capacity to be successful as doers of mathematics. You will cry, laugh, and leave inspired to meet your own teaching challenges!

Kathryn L. Dillard
Borenson and Associates, Allentown, Pennsylvania

2007 (MOSCONE WEST)

**497**

Integrated STEM and Model-Eliciting Activities: Making Math More Engaging
6–8 Session
This presentation will provide participants with a general description of how Model-Eliciting Activities (MEA) can be used to implement modeling in the classroom and connect to the other STEM disciplines. Participants will take part in a MEA and see firsthand how MEAs can be used in the classroom to motivate and engage students to learn math.

Cathrine Maiorca
University of Nevada, Las Vegas
Micah Stohlmann
University of Nevada, Las Vegas

2005 (MOSCONE WEST)

**498**

It Makes Sense: Using Number Lines in K–2
Pre–K–2 Session
Students use tools to justify their answers. Students learn about decomposition and parts of the whole. More, less, the same, how many more, and how many less are all ideas that can be developed within the student’s brain using this visual tool.

Ann Carlyle
University of California, Santa Barbara, Santa Barbara, California

NOB HILL C/D (MARRIOTT)
### 499
**Preparing Students for Their Futures: What Technology Leaders Value in Prospective Employees**  
*General Interest / All Audiences Session*

A panel of technology industry leaders will discuss the skills and dispositions employers value most when hiring. The technology industry moves rapidly, skills once highly valued can be obsolete just months later. Leaders in the field will participate in a panel discussion and answer your questions regarding how today’s students can thrive in this quickly evolving industry.

- **Jim Ryan**  
  STEM Executive Director, San Francisco Unified School District
- **Doris Tong**  
  Global Head of Campus Recruiting
- **Gloria Kimbwala**  
  Campus Program Specialist
- **Mark Petrovic**  
  Sr MTS, Architect, Xoom, A Paypal Company
- **Nikki Lasley**  
  Senior Program Manager, Salesforce.org

**YERBA BUENA 5/6 (MARRIOTT)**

### 500
**Making Multiplication Facts Meaningful and Their Practice Interesting**  
*3–5 Session*

Participants will work in groups to find and then describe patterns in the multiplication table. They will work to explain why the patterns occur. Other activities will require challenging thinking but give practice with facts. These activities are appropriate for diverse student populations.

- **Diane Resek**  
  San Francisco State University, California

**YERBA BUENA 10/11 (MARRIOTT)**

### 501
**Making Sense of Mathematics for Teaching: Learning through Content**  
*3–5 Session*

Teachers are asked to create environments where students engage in understanding mathematics with depth. Explore ways to plan and implement high cognitive demand tasks using fraction multiplication. The structure of studying the content offered can be applied to all learning progressions. Supports for coaching will also be included.

- **Edward C. Nolan**  
  Montgomery County Public Schools, Rockville, Maryland
- **Juli K. Dixon**  
  University of Central Florida, Orlando
- **Thomasenia Lott Adams**  
  University of Florida, Gainesville

**YERBA BUENA 5/6 (MARRIOTT)**

### 503
**New Resources for Supporting the Effective Teaching Practices: High School**  
*Coaches / Leaders / Teacher Educators Session*

The session will present resources available in the Principles to Actions: Teaching and Learning Toolkit at the high school level, created to support implementation of the Effective Mathematics Teaching Practices. Participants in the session will engage in activities highlighting different Effective Mathematics Teaching Practices.

- **Melissa D. Boston**  
  Duquesne University, Pittsburgh, Pennsylvania
- **Stephen W. Miller**  
  University of Pittsburgh, Pennsylvania
- **Fred Dillon**  
  Ideastream, Cleveland, Ohio

**135 (MOSCON NORTH)**
3:30 P.M.—4:30 P.M.

504
New Resources for Supporting the Effective Teaching Practices: Middle School
Coaches / Leaders / Teacher Educators Session
The session will present resources available in the Principles to Actions: Teaching and Learning Toolkit at the middle school level, created to support implementation of the Effective Mathematics Teaching Practices. Participants in the session will engage in activities highlighting different Effective Mathematics Teaching Practices.

Margaret Smith
University of Pittsburgh, Pennsylvania
Michael D. Steele
University of Wisconsin–Milwaukee

134 (MOSCONE NORTH)

506  PPD
Productive Struggle: The Difference Between Experienced and Inexperienced Problem Solvers
General Interest Session
Our classrooms are full of problem solvers—some experienced and some inexperienced. This session will look at relevant research about productive struggle, discuss the role of productive struggle in becoming an experienced problem solver, and explore some practical ideas for fostering and promoting productive struggle in problem solving.

Cynthia (Cindy) G. Bryant
LearnBop, New York, NY,

301 (MOSCONE SOUTH)

507
Reflect on Your Practice: National Board Certification in Mathematics
Coaches / Leaders / Teacher Educators Session
Learn about the process of National Board Certification, and join us in a lively discussion about the ways you personally make the National Board Math Standards come alive in your classroom. Come discuss questions like, “What does it look like when teachers are committed to students and their learning?” and get practical tips on certification.

S. Leigh Nataro
Moravian Academy, Bethlehem, Pennsylvania

307 (MOSCONE SOUTH)

508
Teaching Middle School Math through Real-World Applications
6–8 Session
Do people with small feet pay too much for shoes? Are parking tickets fair? In this presentation, we’ll explore lessons in which students apply mathematics to think critically about the world. Math is a powerful tool, and math class can be a place for the most interesting and important conversations.

Karim Ani
Mathalicious, Austin, Texas

3007 (MOSCONE WEST)
3:30 P.M.–4:30 P.M.

509  
**The Power of the Cartesian Plane to Solve Proportions**  
6–8 Session  
This session will examine models that link graphing ratios to solving linear systems of equalities and inequalities. We will examine how to solve direct variation problems using the Cartesian coordinate graph and complement that model with bar models.  
Anne M. Collins  
Lesley University, Cambridge, Massachusetts  
3005 (MOSCONE WEST)

510  
**Equity**  
**Working with English Language Learners in the Mathematics Classroom**  
General Interest Session  
We will look at myths about ELLs, participate in discussion about their needs, and become familiar with resources for ELLs in mathematics. The focus will be on math-specific ways to help ELLs, including discourse in the mathematics classroom to help develop mathematical thinking and, at the same time, develop proficiency in English.  
Linda A. Arnold  
Monmouth University, West Long Branch, New Jersey  
305 (MOSCONE SOUTH)

511  
**Working with Linear Equations: A Different Approach**  
8–10 Session  
What do you do when your students cannot solve routine problems using the standard algorithms or formulas? These students may need alternative methods for completing these types of problems. The participants will be led through some processes for working with linear equations that do not rely on the standard formulas or solution processes.  
Clifton Wingard  
Delta State University, Cleveland, Mississippi  
Micah Hickman  
Mandeville High School, Mandeville, Louisiana  
3009 (MOSCONE WEST)

511.1  
**BYOD: Mathspace—Why You’ll Never Grade Math Assignments Again. Seriously.**  
6–8 Exhibitor Workshop  
Meet Mathspace. You’ve seen it all, right? Adaptive learning? Yea. Handwriting recognition? Hmm. Every math question graded line-by-line? Whoa, that’s new! Students can finally show their work, and get feedback at every step: all auto-graded for you. Bye-bye, multiple choice! BYOD (Bring Your Own Device) to try the award-winning Mathspace live, and ask about a free trial!  
Mathspace  
New York, New York  
122 (MOSCONE NORTH)

511.2  
**Moving Math Vocabulary to Excellence with Dinah Zike’s Notebooking Central!**  
General Interest Exhibitor Workshop  
Learn how to make rich connections between math vocabulary, classroom and personal experiences, and math content. Get on the cutting edge of interactive notebooks with new, brain-friendly materials from Dinah Zike’s Notebooking Central! Session includes research, examples, and exclusive templates to make math vocabulary interactive.  
Dinah.com  
San Antonio, Texas  
123 (MOSCONE NORTH)

511.3  
**Implementing Blended Learning: Best Practices for the K–8 Math Classroom**  
General Interest Exhibitor Workshop  
This workshop focuses on best-practice strategies to support the implementation of personalized instruction. In this interactive session, attendees will discuss tools, systems, and curriculum used to support a blended learning classroom. Participants are encouraged to draw on their experiences, both challenges and successes, to frame the conversation.  
Curriculum Associates  
North Billerica, Massachusetts  
125 (MOSCONE NORTH)
3:30 P.M.–4:30 P.M.

**511.4 EW**
**Using Japanese Problem-Based Teaching Methods to Develop Conceptual Understanding**

General Interest Exhibitor Workshop

The Japanese approach of teaching through problem solving promotes deep conceptual understanding of mathematics, especially in conjunction with lesson study. Japanese textbooks are designed to enhance this type of teaching. See how Sansu Math™, based on Japanese materials, can help teachers and students learn math in powerful ways.

Koyo Publishing
Tualatin, Oregon

120 (MOSCON North)

4:15 P.M.–5:00 P.M.

**511.6 NT**
**New Teacher Celebration**

General Interest / All Audiences Session

Come celebrate the progress and possibilities as new teachers, those still in training, and seasoned leaders work together in a fun and interesting challenge! Learn a little, laugh a lot and meet great folks. We’ll have refreshments, too. Come when you can and join in!

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

GOLDEN GATE B (MARRIOTT)

5:00 P.M.–6:30 P.M.

**511.7 HOT**
**ShadowCon 2016**

General Interest / All Audiences Session

While the impact of many conference sessions ends when a participant leaves the room, ShadowCon aims for a more enduring conference experience. The live event will span six speakers, including Gail Burrill, Brian Bushart, Graham Fletcher, Rochelle Gutierrez, Robert Kaplinsky, and Kaneka Turner. We will connect the event to the global community of math educators by way of a live tweeter (#shadowcon16), and each talk will include a provocative call to action and be posted online following the live event. The event is organized and hosted by Dan Meyer, Mike Flynn, and Zachary Champagne.

YERBA BUENA 7 (MARRIOTT)

Don’t miss the **Closing Keynote** on Saturday afternoon with featured speaker **Hill Harper**, Actor, Author, and Philanthropist.
Engage Your Students in Learning

As a teacher, supervisor, or math coach of high school mathematics, you need the best strategies to prepare your students for success. At NCTM’s Interactive Institute Engaging Students in Learning Mathematical Practices for High School Teachers, you will receive hands-on learning tailored for specific areas of focus.

- **Address the most pressing issues** facing high school mathematics education during keynote presentations from innovators in the field.
- **Collaborate and share ideas, strategies, and solutions** during topic-specific breakout sessions
- **Enhance your understanding** of how to effectively address the eight Mathematics Teaching Practices from Principles to Actions, college- and career-ready standards, the common core mathematical practices, and more.

Learn more at [nctm.org/institutes](http://nctm.org/institutes) and follow us on [NCTM](https://twitter.com/NCTM) #NCTMinstitutes
Engaging the Struggling Learner


Bring your team and engage in a hands-on, interactive, and new learning experience for mathematics education.

With a focus on “Engaging the Struggling Learner,” become part of a team environment and navigate your experience through three different pathways:

- Response to Intervention (RtI)
- Supporting productive struggle
- Motivating the struggling learner

nctm.org/innov8  #NCTMinnov8
Looking for a new way to approach challenging topics? Is it time to update your tried-and-true classroom activities? As an NCTM member, hundreds of research-based, peer-reviewed, and grade-band specific mathematics education resources are at your fingertips.

Find the tools you need and collaborate with your peers when you take full advantage of your NCTM connection.

### Member-Only Resources
*visit nctm.org*
- Lesson plans
- Student activities
- Assessment tools

### NCTM Publications
*shop nctm.org/store*
- Professional development resources
- Mathematics education research insights and applications
- Classroom activities and strategies

### NCTM Events & Conferences
*see all events at nctm.org/conferences*
- Collaborative knowledge and resource sharing
- Focused professional development
- Practical applications of strategies and tools
**Highlights**
Closing Keynote (Presentation 601)

**Strands**

<table>
<thead>
<tr>
<th>Strands</th>
<th>Presentation Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PCPG</strong> Building Capacity: Personal and Collective Professional Growth</td>
<td>515, 518</td>
</tr>
<tr>
<td><strong>EQUITY</strong> Equity</td>
<td>516, 524, 532, 537, 546, 549, 572, 578, 593</td>
</tr>
<tr>
<td><strong>HOT</strong> Hot Topics</td>
<td>548</td>
</tr>
<tr>
<td><strong>PtA</strong> Principles to Actions: Mathematics and Teaching Practices and Research</td>
<td>560, 583, 590</td>
</tr>
<tr>
<td><strong>PPD</strong> Promoting Productive Dispositions about Mathematics</td>
<td>520, 522</td>
</tr>
</tbody>
</table>

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  @NCTM.math
- **Facebook**
  www.facebook.com/TeachersofMathematics

**Registration Hours**
7:00 a.m.–10:00 a.m.

**Exhibit Hours**
8:00 a.m.–Noon

**NCTM Central Hours**
8:00 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.
512  
3–5 Students as Problem Solvers  
3–5 Session  
What is the role of problem solving in grades 3–5 mathematics? What are essential elements of rich tasks in the 3–5 classroom? In this session, you will explore several robust problem-solving tasks across multiple CCSSM content domains and practice standards. We will examine student work samples to investigate common strategies and misconceptions.  
Jennifer Kosiak  
University of Wisconsin-La Crosse  
Kim A. Markworth  
Western Washington University, Bellingham  
Jenni K. McCool  
University of Wisconsin-La Crosse  
305 (MOSCONE SOUTH)

513  
10 Classroom Ideas That Use Writing to Promote Deeper Understanding  
Higher Education Session  
We use writing activities with our students to develop new knowledge, to diagnose misunderstandings, to foster higher-order thinking, and to prompt self-reflection. Examples of our tasks and our students’ work will provide ideas you can use in your classroom.  
Susan Gay  
University of Kansas, Lawrence  
Ingrid Peterson  
University of Kansas, Lawrence  
301 (MOSCONE SOUTH)

514  
From Blueprints to Reality: Building Curriculum for the Common Core  
6-8 Session  
The Illustrative Mathematics blueprints project aims to describe a high-level curricular structure for K–grade 12. We are beginning to flesh that out into lesson plans and assessments, which will be freely available as open education resources. In this talk we will describe progress on the middle school curriculum, and we will discuss the challenges and promise of open education resource curriculum.  
William McCallum  
University of Arizona/Illustrative Mathematics; Tucson, Arizona  
2007 (MOSCONE WEST)

515  
Building Communities of Mathematicians  
General Interest Session  
How do you build a community of mathematicians in a classroom? How do you do this throughout a school? This session explores how elementary teachers and coaches use problem solving, number-sense routines, and play to help build communities in which everyone identifies as a mathematician and engages in mathematics as a joyful and purposeful practice.  
Kassia J. Omohundro Wedekind  
Fairfax County Public Schools, Falls Church, Virginia  
301 (MOSCONE SOUTH)

516  
Conceptual Mathematics: Engaging the ELL Student  
6–8 Session  
All students need opportunities to build language skills as they develop conceptual understanding. In this session, we will share a data analysis lesson that combines conceptual learning of measures of center (mean, median, mode, range) with multiple strategies for supporting language development and creating equitable learning environments.  
Jen L. Hendrickson  
Marana Unified School District, Marana, Arizona  
Deborah Parslow  
Tucson Unified School District, Arizona  
Paul Seidler  
Tucson Unified School District, Arizona  
2009 (MOSCONE WEST)
8:00 A.M.–9:00 A.M.

517  
**Designing Assessment Structures That Work**
Coaches / Leaders / Teacher Educators Session
Many assessments focus on data collection, not sense making to inform instruction. Our project, Accessing Algebra Through Inquiry, marries innovative technology with high-quality, useful visualizations; teachers collect data on students’ performance that immediately supports planning. Our tools make summative assessments as informative as possible.

Erik Laby  
New Visions for Public Schools, New York, New York

David C. Wees  
New Visions for Public Schools, New York, New York

3005 (MOSCONE WEST)

518  
**Forget What You Know; Listen to What They Know**
General Interest Session
Students know a lot more than the average textbook gives them credit for knowing. We’ll look at several activities designed from the perspective that students can notice significant features of mathematical objects. Examples span the K–12 curriculum.

Christopher Danielson  
Normandale Community College, Bloomington, Minnesota

3016 (MOSCONE WEST)

519  
**Higher DOK Tasks That Will Get Your Students Talking**
8–10 Session
Participants will be challenged with higher level Depth of Knowledge (DOK) problems that will require them to construct viable arguments and critique the reasoning of others (SMP.3). These nontraditional problems will require students to demonstrate their conceptual understanding. Learn how to find and make these types of challenging tasks.

Nanette Johnson  
Downey Unified School District, California

2005 (MOSCONE WEST)

520  
**How Do They Relate? Teaching Students to Make Mathematical Connections**
General Interest Session
Many students see math content as a series of discrete topics, rather than a landscape of interconnected concepts. We’ll analyze transcripts, problems, and student work from different classes to develop powerful strategies to teach relational thinking. Attendees who stay for part II will contextualize and apply ideas further in grade-level bands.

Tracy Johnston Zager  
Stenhouse Publishers, Portland, Maine

3003 (MOSCONE WEST)

521  
**Mathematics Teaching Practices: A Framework for Working with Future Teachers**
Coaches / Leaders / Teacher Educators Session
The eight Mathematics Teaching Practices outlined in *Principles to Actions* provide a potential framework for working with preservice teachers. A framework and rubrics (developed based on current research) used in mathematics methods courses and in the supervision of student teachers at the middle and secondary levels will be examined and shared.

Mary Lou Metz  
Indiana University of Pennsylvania

Nina Girard  
University of Pittsburgh at Johnstown, Pennsylvania

2020 (MOSCONE WEST)

522  
**Promote Productive Mathematical Dispositions: Play the Believing Game**
General Interest Session
Students are motivated when their teachers play the believing game. Their understanding is honored and respected, and they develop positive dispositions towards mathematics. Join me as I model and show video of how to play. We will also discuss and role-play methods that enhance opportunities to play the believing game.

Shelly Harkness  
University of Cincinnati, Ohio

3001 (MOSCONE WEST)
8:00 A.M.–9:00 A.M.

523  Re-Discovering Geometry
10–12 Session
As geometry teachers, we may find it easy to reveal the magic and wonder to our students without giving them a chance to investigate and truly own the material. Today, I will walk you through a process I used to break down known conceptions and misconceptions, and used those to re-discover Geometry, creating a course all students felt they owned.

Joseph Bolz
George Washington High School and University of Denver, Colorado

2011 (MOSCON WEST)

524  Supporting ELLs to Have Success with the CMP
6–8 Session
Supporting students to engage in the Connected Mathematics Program (CMP) and experience success demands much of teachers. In this session, I share my work as a sixth-grade teacher to engage low-income students and ELLs through mathematical discourse to learn challenging mathematical content. Videos of students doing mathematics will be shared.

Richard S. Kitchen
University of Denver, Colorado

134/135 (MOSCON NORTH)

525  The All-New Mathematics of Game Shows
10–12 Session
How are game shows built? How can games be designed to be compelling, fun to play, and fun to watch? Game shows lead to interesting problems in probability and statistics but also in modeling. We’ll look at problems contestants face, but we’ll focus on problems designers face when building games. Stop in for some math, some fun, and invaluable prizes!

Bowen Kerins
Education Development Center, Inc., Waltham, Massachusetts
David Hammett
Oakwood School, North Hollywood, California

2024 (MOSCON WEST)

526  Using Data to Flexibly Group Students
Pre-K–2 Session
This session shares strategies to flexibly group students into and out of support and enrichment based on data. Data-based decisions that inform dynamic groups allow for all students’ needs to be met during mathematics instruction. Examples of assessments, activities, and other resources will be provided along with data on student performance.

Elizabeth Jacobbe
P.K. Yonge Developmental Research School, Gainesville, Florida
Tim Jacobbe
University of Florida, Gainesville

303 (MOSCON SOUTH)

527  Viewing Fractions Flexibly to Develop Strategies for Operating on Fractions
3–5 Session
Explore ways to help students view fractions as quantities themselves, as iterations of unit fractions, and in other equivalent ways. Learn how using these representations in word problems aids students in developing strategies for adding and subtracting fractions. Research results that have been put into practice will guide our explorations.

Nancy K. Mack
Grand Valley State University, Allendale, Michigan

307 (MOSCON SOUTH)

528  Why Isn’t “Same Shape, Different Size” Good Enough?
6–8 Session
“Same shape, different size” provided students an easy way to identify shapes as similar or not, but it’s insufficient. Who knew that four simple words could mislead students and derail them from achieving true understanding of the concept of similarity? Let’s examine similarity for what it really is and leave those four words in the past!

Stafanie Hassan
Eureka Math, Washington, D.C.
Beau J. Bailey
Eureka Math, Washington, D.C.

2001 (MOSCON WEST)
8:00 A.M.–9:15 A.M.

529  
**Algebra 1: From Perspiration to Perseverance**

8–10 Workshop  
Don’t sweat teaching Reasoning with Equations/Inequalities or Interpreting Functions. This workshop will share engaging algebra 1 hands-on strategies and tools instrumental to increasing your students’ depth of understanding and perseverance. Upon completion, participants will be able to move students from “Don’t Get It” to “Done Got It.”

Dee Ann Wilson  
Lake County Schools, Tavares, Florida

2008 (MOSCONE WEST)

530  
**Conceptual Understanding vs. Procedural Fluency: A Balancing Act**

3–5 Workshop  
Conceptual understanding and procedural fluency are both critical to students’ mathematical success. In this session, participants will explore methods for developing conceptual understanding along with ideas for encouraging procedural fluency. Some methods to be discussed include Number Talks, 3-Act tasks, problem solving, and fluency stations.

Leandra Cleveland  
Bentonville Public Schools, Bentonville, Arkansas

3006 (MOSCONE WEST)

531  
**Demonstrating the Relevance of Mathematics through Modeling Using Technology**

10–12 Workshop  
Engage and empower students while demonstrating the relevance of mathematics through tasks that involve concepts covered in algebra and precalculus. Take part in an interactive workshop where technology-enhanced modeling tasks and multiple approaches will be explored. Pique the interest of your students while delving deeper in meaningful mathematics.

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

3010 (MOSCONE WEST)

532  
**Equity and Access: Growing Math Identities of English Learners through Discourse**

Pre-K–2 Workshop  
Dual-language kindergarten and first-grade classrooms used GOPro head cameras to capture students’ discourse, interactions, and engagement in learning math. In this session, we will explore strategic uses of math tasks, questioning, and math practices and the ways that students are accountable to themselves and each other to support math language learning in their community.

Cathy Kinzer  
New Mexico State University, Las Cruces  
Kathryn Million  
Las Cruces Public Schools, New Mexico  
Kathryn B. Chval  
University of Missouri, Columbia

302 (MOSCONE SOUTH)

533  
**Fostering Algebraic Reasoning through Problem Solving and Discussion**

3–5 Workshop  
Young children can do sophisticated math, even algebra, given the right tools and supports. In this session, grades 3–5 teachers use manipulatives and discussion to explore tasks that promote algebraic reasoning. We discuss students’ typical approaches, common misconceptions, and teaching strategies that address Common Core mathematical practices.

Allyson Hallman-Thrasher  
Ohio University, Athens  
Derek J. Sturgill  
Ohio University, Athens

306 (MOSCONE SOUTH)
8:00 A.M.–9:15 A.M.

534
How Research Can Impact Curricular Decisions in a K–12 Classroom
Coaches / Leaders / Teacher Educators Workshop
“. . . one sees what one is ready to see”—Ernst von Glasersfeld. Making curricular decisions based on what you notice in a child’s approach is only effective if you know what you are looking for. Research findings can help a teacher know what to notice. Using video, we will discuss how even a minimum of reading can help us hone our skills of noticing.
Lori M. Hamada
AIMS Center for Math and Science Education, Fresno Pacific University, California
Elizabeth Gamino
AIMS Center for Math and Science Education, Fresno Pacific University, California

535
Interactive Transformations: Sense Making with Visual Tools
8–10 Workshop
Transformations are more than a “before and after” image. There’s lots to learn in the middle. Get quick tips on how to effectively use common classroom tools, including those that don’t have batteries. Get students to play and make connections with concepts at a deeper level. Explore area with rigid congruence, circles with similarity, and more.
Jedidiah W. Butler
Paloma Valley High, Perris Union High School District, Menifee, California

536
Measurement Activities for CCSSM
3–5 Workshop
Over the past eight years our research team has designed and tested hundreds of tasks with students from grades 2–5. In this session we will lead a discussion around samples of these tasks along with student work. Each task has been mapped to CCSSM, providing a resource for teachers working to implement CCSSM into their classrooms.
Craig J. Cullen
Illinois State University, Normal
Jeffrey E. Barrett
Illinois State University, Normal
David B. Klanderman
Trinity Christian College, Palos Heights, Illinois

537
Old to New, How Diverse Are You?
8–10 Workshop
This session consist of hands-on, student-centered activities and strategies that are geared toward diversity and equity in the mathematics classroom. Participants will leave with many free resources that can be readily implemented in the classroom.
Michelle Edwards
Little Rock School District, Arkansas
Karen Rivers
University of Arkansas at Little Rock

538
Once upon a Time
6–8 Workshop
Discover how to use literature as a springboard for the study of mathematical concepts. Join us for hands-on exploration motivated and enhanced through literature. See how to use books, poems, and excerpts to introduce, teach, and extend concepts such as the mean, outliers, probability, functions, polyhedron, and much more.
Janet M. Shiver
Central Washington University, Ellensburg
Teri Willard
Central Washington University, Ellensburg
Bridging the Gap
Between Function and Affordability

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- Pre-Algebra
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- Calculus
- College Algebra
- Chemistry
- Physics
- Engineering

Speak to our authorized representative at Booth #1119

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539
PLC Roundtable: Implementing Principles to Actions in Your PLC
Coaches / Leaders / Teacher Educators Workshop
Participants will engage in a live professional learning community. This community will collaboratively discuss ways to incorporate principles and practices from Principles to Actions. The PLC process, ideas, and activities will connect directly with classroom practices. Colleagues/teams are encouraged to come to this session together.
Delise Andrews
Lincoln Public Schools, Nebraska
Beth McCord Kobett
Stevenson University, Baltimore, Maryland
3004 (MOSCONE WEST)

540
Pythagoras in Asia, at Home, and on the Move!
6–8 Workshop
The Pythagorean theorem is so fundamental to mathematics at all levels, yet its richness can be overlooked as just a simple formula. It serves as a major entry point to area and transformations in the Common Core middle grades as compelling hands-on origami proofs, extensions, and applications will be covered using inexpensive classroom materials.
David K. Masunaga
Iolani School, Honolulu, Hawaii
2002 (MOSCONE WEST)

541
Reasoning with Radians
10–12 Workshop
The days of memorizing formulas and positions on the unit circle are over. Through this session, participants will be engaged in the conceptualization of what radians are and their relationship to the unit circle. Participants will create unit circles by reasoning about the relationship between the circumference and common fractions.
Efia I. Mentuhotep
University of Mississippi, Oxford
2004 (MOSCONE WEST)

542
Ten-Frame Cards Develop Fluency for Addition and Subtraction in K–2
Pre-K–2 Workshop
Participants learn how the five- and ten-based structure of ten-frames is used to deepen students’ understanding and fluency with addition and subtraction. This hands-on interactive session will draw from classroom and student examples to illustrate a methodical process of formative assessment, strategic instruction, and student practice.
Makoto Yoshida
Harlem Village Academies, New York, New York
William Jackson
Harlem Village Academies, New York, New York
Mary N. Leer
VERA: Leer Educational Consulting, LLC, Lancaster, Pennsylvania
304 (MOSCONE SOUTH)

544
The Power of the Number Line: Understanding Fractions as Numbers
3–5 Workshop
Why do we have students place fractional values on the number line? What do they gain from this? With well-developed prior understandings, students can use the number line as a bridge between whole and rational numbers. Participants will explore a progression of classroom tasks that build connections between linear measurement and numbers.
Ryan Casey
Orchard Gardens K–8 Pilot School, Boston Public Schools, Massachusetts
3011 (MOSCONE WEST)
8:00 A.M.–9:15 A.M.

545
The Quest for $1,000,000: Sequences and the Mathematics of Finance
10–12 Workshop
Are you looking for modeling applications to meet the Common Core State Standards? Participate in activities that lead students to understand and use the geometric series formula to develop financial formulas to model household finances. Work within a budget to buy a car, pay off debt, buy a house, and save $1,000,000 in assets by age 40.

Chris Black
Lead Writer Algebra II Eureka Math; Central Washington University, Ellensburg
Scott Baldridge
Lead Writer and Lead Mathematician Eureka Math; Louisiana State University, Baton Rouge, Louisiana

9:30 A.M.–10:30 A.M.

546
A Discourse Framework That Promote Equity and Access in Mathematics
General Interest / All Audiences Session
This presentation forwards a framework for how to foster empowering mathematical discourse that promotes minority and female students’ engagement in mathematics. The author draws on experiential and critical learning theories to inform discourse strategies that create viable learning environments that promote access and equity for all.

Roni Ellington
Morgan State University, Baltimore, Maryland

Help NCTM Help Teachers

NCTM’s Mathematics Education Trust (MET) channels the generosity of contributors through the creation and funding of grants, awards, honors, and other projects that support the improvement of mathematics teaching and learning.

MET provides funds to support classroom teachers in the areas of improving classroom practices and increasing mathematical knowledge; offers funding opportunities for prospective teachers and NCTM’s Affiliates; and recognizes the lifetime achievement of leaders in mathematics education.

If you are a teacher, prospective teacher, or school administrator and would like more information about MET grants, scholarships, and awards, please:

- Visit our Web site, www.nctm.org/met
- Call us at (703) 620-9840, ext. 2112
- E-mail us at exec@nctm.org

Please help us help teachers! Send your tax-deductible gift to MET, c/o NCTM, 1906 Association Drive, Reston, VA 20191-1502. Your gift, no matter its size, will help us reach our goal of providing a high-quality mathematics learning experience for all students.

The Mathematics Education Trust was established in 1976 by the National Council of Teachers of Mathematics (NCTM).
9:30 A.M.–10:30 A.M.

**547**
**A Standard Framework for Tablet Applications in Mathematics Education**

Higher Education Session

Due to the large number of tablet and smartphone applications, choosing appropriate apps for teaching a certain concept may be frustrating. A framework for choosing pedagogical mathematical apps will be introduced, and a list of apps for teaching college algebra will be named.

**Razieh Shahriari**
University of Arkansas, Fayetteville

**Ryan V. Thomas**
University of Arkansas, Fayetteville

2011 (MOSCONE WEST)

**548**
**Beyond Relevance & Real World: Stronger Strategies for Student Engagement**

General Interest Session

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

**Dan Meyer**
taught high school math to students who didn’t like high school math. He has advocated for better math instruction on CNN, Good Morning America, Everyday With Rachael Ray, and TED.com. He earned his doctorate from Stanford University in math education and is the Chief Academic Officer at Desmos where he explores the future of math textbooks. He speaks internationally and was named one of Tech & Learning’s 30 Leaders of the Future.

**Dan Meyer**
Desmos, San Francisco, California

134/135 (MOSCONE NORTH)

**549**
**Bringing Back Student Engagement with FAME! (Fun, Authentic, Motivating, Engaging)**

8–10 Session

Are your students disengaged in your math classrooms? If so, you will want to attend our FAME (Fun, Authentic, Motivating, and Engaging) session. Participants will experience activities that have been proven to engage algebra 1 and/or algebra 2 students and can easily be implemented in the classroom.

**Aminah R. Eddings**
Little Rock School District, Arkansas

**Tonjuna Iverson**
Little Rock School District, Arkansas

305 (MOSCONE SOUTH)

**550**
**Fluency in CCSSM: Connecting Instruction and Assessment**

Pre-K–2 Session

Engage in productive discussion of CCSSM fluencies, tasks, instructional moves, and assessments to support student learning. Explore the work of Smarter Balanced Assessment Consortium (SBAC) and Illustrative Mathematics and learn about resources available in the SBAC digital library.

**Jody Guarino**
Orange County Department of Education, Costa Mesa, California

**Cathery Yeh**
University of California, Irvine

3009 (MOSCONE WEST)

**551**
**Google Docs and Desmos in the Secondary Math Class**

8–10 Session

This session will highlight a set of activities implemented using Google Docs in secondary math classes. We will incorporate Desmos to support student understanding, and we will demonstrate how to embed hyperlinks, screenshots, and other images in a Google Doc math activity. Methods for distributing and collecting student work will also be presented.

**Shelley Carranza**
Mountain View Los Altos School District, California

**Noirin Foy**
Los Altos School District, Los Altos, California

2007 (MOSCONE WEST)
9:30 A.M.–10:30 A.M.

552
How New Textbooks Are Aligned to CCSSM Geometry Concepts through Transformations

6–8 Session
In this session, we share results of our work that examined how new middle grades textbooks are organizing and presenting transformational geometry concepts aligned to CCSSM. We explore what happens when there is a mismatch and how to identify a mismatch between the mathematical content presented in the books and what CCSSM teachers are held accountable to teach.

Lisa A. Kasmer
Grand Valley State University, Allendale, Michigan
Dawn Teuscher
Brigham Young University, Provo, Utah
Shannon Dingman
University of Arkansas, Fayetteville

2020 (MOSCONE WEST)

553
In Pursuit of Representing the Reasoning and Modeling Practices

10–12 Session
The reasoning and modeling practices are highlighted targets of the assessments developed for CCSSM. In this presentation, we will discuss advances in the development of computer-based machine-scored and human-scored tasks with a focus on the improvement of the representation of the skills and abilities associated with these practices.

Michelle Worthington
ETS, Princeton, New Jersey
Luis Saldivia
ETS, Princeton, New Jersey

3016 (MOSCONE WEST)

554
Interpreting the NCTM Communication Process Standard: Promoting Deep Mathematics Learning

3–5 Session
“Students should be able to communicate their mathematical thinking coherently and clearly.” How can this be interpreted? We constantly make decisions on the continuum between algorithms and memorization at one extreme and depth and understanding on the other. Different interpretations result in different classroom practice and student achievement.

Matthew D. Reames
University of Virginia, Charlottesville

303 (MOSCONE SOUTH)

555
Learning to Teach: A Novice Teachers Study as TEDS-M Follow-Up

General Interest Session
This session presents an international research study that explores the challenges novice teachers of mathematics encounter in their first five years of teaching in the current high stakes environments, and it discusses challenges in developing valid methods to evaluate novice teachers’ work and to produce evidence-based professional development.

Maria Teresa Tatto
Michigan State University, East Lansing
Kiril Bankov
University of Sofia, Bulgaria
Michael Rodriguez
University of Minnesota, Minneapolis
Wendy M. Smith
University of Nebraska–Lincoln
Mark Reckase
Michigan State University, East Lansing

2022 (MOSCONE WEST)

Relax and mingle with other attendees, and take advantage of free Wi-Fi in the Networking Lounge, located inside NCTM Central in the Exhibit Hall.
Check out NCTM Central at the exhibit hall entryway. Explore all the NCTM resources you need to meet your mathematics teaching challenges—all in one place:

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- Try out online math strategy games
- Enter the prize drawing

**Mathematics Education Trust**
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**556**

**Impacting Outcomes for Struggling Students with Research-Based Practices**

*General Interest / All Audiences Session*

National Title I Distinguished Schools in Washington State have experienced tremendous success in implementing research-based best practices for struggling students. The presenters will share the schools’ strategies to impact student outcomes and the supporting research published in the state’s Menu of Best Practices and Strategies for Mathematics.

Amy Vaughn  
National Title I Association (NASTID); State of Washington Office of Superintendent of Public Instruction, Olympia, Washington

Anne Gayman  
Evergreen Heights Elementary, Auburn, Washington

Gayle Pauley  
State of Washington Office of Superintendent of Public Instruction, Olympia, Washington

**3007 (MOSCONE WEST)**

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**557**

**SOCS Makes Sense with Technology**

*8–10 Session*

This CCSSM-aligned presentation will provide engaging lessons through technology-integrated statistical activities. Various technologies from TI-Nspire, Tuva Labs, and relevant apps will be implemented in the lessons. The technology activities will support the development of statistical concepts by collecting, analyzing, and interpreting data.

Dawn Lockett  
Clark County School District, University of Nevada, Las Vegas

Amy Adkins  
University of Nevada, Las Vegas

**3005 (MOSCONE WEST)**

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**558**

**The Life-Changing Magic of Tidying the Math Curriculum**

*General Interest Session*

Is “setting up a proportion” really a topic? Phil Daro argues that a proportion is really just an equation—and we already teach students to set up and solve equations. In this presentation, I will continue Daro’s theme and provide additional examples of clutter that we can do without.

Jason Zimba  
Student Achievement Partners, New York, New York

**2024 (MOSCONE WEST)**

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**559**

**To Model or Not to Model**

*Pre-K–2 Session*

What is the role of models during Number Talks? How do we know when and which models to use? We will examine four stages of using models as tools for thinking that will help increase the effectiveness of Number Talks and support students in developing number relationships and structure of numbers.

Sue Dolphin  
Math Perspectives, Bellingham, Washington

**3001 (MOSCONE WEST)**

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**560**

**Why and How to Let Students Struggle? Thoughts from Research**

*General Interest Session*

*Principles to Actions* endorses “supporting productive struggle in learning mathematics.” With a common societal belief that student struggle indicates poor teaching, allowing and supporting student struggle seem foreign. We will discuss research on the benefits of this practice and some suggestions to effectively support student productive struggle.

Blake E. Peterson  
Brigham Young University, Provo, Utah

**2005 (MOSCONE WEST)**

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**561**

**Write in the Middle . . . of Literacy, Math, and Technology!**

*6–8 Session*

Come join us in integrating reading and writing seamlessly into your instruction to facilitate deeper understanding, productive struggle, mathematical reasoning, multicultural education and real-world application! Come away with specific activities, aligned to the Common Core reading and writing standards, and ideas for incorporating free online resources.

Kelley E. Gould  
Hyde Park Central School District, New York

John F. McAdam  
Marist College, Poughkeepsie, New York

**3012 (MOSCONE WEST)**
9:45 A.M.–11:00 A.M.

562 Comparing Your Way through Mathematics
Pre-K–2 Workshop
Same? Different? Is the same as? More than? Less than? Come and explore geometry, number, measurement, algebraic reasoning, and data-analysis tasks that explore these questions through comparison actions.
Kay A. Wohlhuter
University of Minnesota Duluth
3004 (MOSCONE WEST)

563 Counting Collections with Young Children: New Evidence from Research
Pre-K–2 Workshop
Young children show remarkable understandings of counting principles as they work to count collections of objects. This session will present new evidence from research and practice, engaging participants in the world of young children’s mathematical thinking through videos, student work, and hands-on experiences in counting collections.
Nick Johnson
University of California, Los Angeles
Angela Chan Turrou
University of California, Los Angeles
306 (MOSCONE SOUTH)

564 E = M3: Engagement = Meaningful and Motivating Mathematics
Pre-K–2 Workshop
Attend this workshop to experience hands-on, standards-based activities that facilitate early mathematics concepts; learn strategies to encourage student engagement; and motivate students. Participants will engage in interactive standards-based activities that explore geometry, measurement, and operations and algebraic thinking.
Latrenda Knighten
East Baton Rouge Parish School System, Baton Rouge, Louisiana
304 (MOSCONE SOUTH)

565 Fermi Estimation Problems: Valuing Strategies over “The Answer”
6–8 Workshop
How many bathtubs of water will you drink in your lifetime? How long would it take to count to 1 million out loud? Solve Fermi problems like these and discuss their value, their connection to the CCSSM Standards for Mathematical Practice, and strategies for implementation. Expect to work collaboratively and have fun solving problems!
Tyler P. Auer
Fay School, Southborough, Massachusetts
3006 (MOSCONE WEST)

566 Know When to Fold: Geometry and Paper Folding
6–8 Workshop
Participants will make several items by paper folding. The speakers will discuss and demonstrate ways to use paper folding to introduce, review, enhance, or facilitate geometric topics. The topics include geometric shapes, parallel and perpendicular lines, volume, area, and perimeter. Handouts will be provided.
Deborah A. Crocker
Appalachian State University, Boone, North Carolina
Betty B. Long
Appalachian State University, Boone, North Carolina
302 (MOSCONE SOUTH)

567 Linear vs. Exponential Functions: Engaging Investigations to Develop Conceptual Understanding.
8–10 Workshop
Learn hands-on, conceptual lessons to help students understand, compare, and contrast linear and exponential growth. Activities, such as Drop and Catch, Counting Candy, and Drop and Watch, will engage even the most reluctant of learners. These classroom-ready activities include focus on math practices and academic language support.
Karajean Hyde
University of California, Irvine
Janna Canzone
University of California, Irvine
Sarah M. Galasso
University of California, Irvine
2006 (MOSCONE WEST)
9:45 A.M.–11:00 A.M.

568
**Mathematical Practices at Play**

*Pre-K–2 Workshop*

Children love to play games. In this workshop, participants will explore how to use games to address the Common Core State Standards for Mathematics for early elementary grades. The focus will be on the Standards for Mathematical Practice and the content domain of Number and Operations in Base Ten, including number sense, computation, and estimation.

*Kathryn Coffey*
Grand Valley State University, Allendale, Michigan

*David Coffey*
Grand Valley State University, Allendale, Michigan

308 (MOSCONC SOUTH)

569
**Math, Making, and Designing Purpose**

*6–8 Workshop*

Work with a Maker Educator/21st-Century Shop Teacher and Math Teacher whose collaborations encourage creativity, persistence, and craftsmanship through the languages of design and math in relevant, interdisciplinary, standards-based projects that engage students in complex issues about themselves and their world.

*Carrina Hui*
East Bay School for Boys, Berkeley, California

*Kyle Metzner*
East Bay School for Boys, Berkeley, California

2004 (MOSCONC WEST)

570
**M. C. Escher’s Inspirations—Italy, Spain, Morocco, and Turkey**

*10–12 Workshop*

Learn how the artist, M. C. Escher, transformed geometric tessellations into unique prints. Photos of architectural tilings throughout Europe and Asia will be used to explain the transformational geometry underlying his art. Learn how to construct triangular and square grids, true stellations (stars), and Escher-like designs. Lots of handouts!

*Carol D. Desoe*
Scarsdale High School, New York

3018 (MOSCONC WEST)

571
**My Students Won’t Stop Talking . . . About FRACTIONS!**

*3–5 Workshop*

Student discourse, as a means of promoting conceptual understanding and ongoing formative assessment, is a critical component of mathematics instruction. This presentation will focus on utilizing open-ended tasks, mathematical tools and models, and high-level questioning to promote meaningful student discourse about and understanding of fractions.

*Terri Parker*
Durham Public Schools, North Carolina

310 (MOSCONC SOUTH)

572
**EQUITY PD for Developing ELLs’ Understanding of Both Mathematics and Language**

*Coaches / Leaders / Teacher Educators Workshop*

This workshop includes activities from a yearlong professional development for elementary classroom and ESOL teachers aimed at developing both mathematical discourse and the language of mathematics. Teacher leaders will gain instructional tools to support teachers working with English language learners, emphasizing the WIDA language standards.

*Rodrigo J. Gutierrez*
University of Maryland, College Park

*Galina Jmourko*
Prince George’s County Public Schools, Adelphi, Maryland

2003 (MOSCONC WEST)

573
**Restoring Order to Permutations and Combinations**

*10–12 Workshop*

Students struggle with finding sample spaces and knowing when it is appropriate to use permutations, combinations, or other strategies. Yet without mature counting techniques, it is impossible to do probability. Participants will engage in solving a counting problem, exploring the mathematics within, and discussing implications for teaching.

*Patrick M. Kimani*
Glendale Community College, Arizona

3010 (MOSCONC WEST)
9:45 A.M.–11:00 A.M.

**574**

*Seeing the Golden Ratio in a Five-Pointed Star*

8–10 Workshop

Students will be amazed by the geometric relationships they can discover in a five-pointed star inscribed in a regular pentagon. The design abounds with congruent and similar triangles. Hands-on activities will lead us to a proportion for deriving the golden ratio. Talk about transformations!

Shana Frank
Pathways to Mathematics, Putney, Vermont

Lew Douglas
University of California, Berkeley

2016 (MOSCONE WEST)

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**575**

*STEM Integration: Statistics Is the Connection*

6–8 Workshop

In this workshop, participants will engage in two inquiry-based activities designed to challenge them to engineer solutions to problems in thermometry and aerodynamics using data collection, technology, and statistical reasoning. STEM lesson design incorporating mathematical, science, and engineering practice standards will also be discussed.

Karen Togliatti
Illinois Mathematics and Science Academy, Aurora

Lindsey Herlehy
Illinois Mathematics and Science Academy, Aurora

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**Interactive Notebooks**

*Time-Saving Templates That Allow Students to Show What They Know!*

Teacher-designed resources help students organize and synthesize information through creative, independent thinking and writing tasks.

Stop by Booth #1238 to receive a FREE notepad!
9:45 A.M.–11:00 A.M.

576
**Teaching Algebraic Thinking and Problem Solving without the “X’s”**

*Pre-K–2 Workshop*

Strategies to develop algebraic thinking, including use of the equal sign, other representations, patterns, and solving for unknowns will be the focus for this hands-on session. Attendees will be actively engaged with manipulatives, effective questioning strategies, and the exploration of real-life problems that promote algebraic thinking.

Donna L. Knoell
Educational Consultant, Shawnee Mission, Kansas

3022 (MOSCON WEST)

11:00 A.M.–12:00 P.M.

577
**Assessing Understanding through Student Problem Writing**

*3–5 Session*

Student created word problems provide an useful assessment tool to examine the depth of student understanding. This session will focus on how to craft prompts for students on a chosen math topic, how to categorize the problems created, and how to use this information to determine understanding. Sample prompts and student problems will be included.

Marguerite M. Mason
College of William and Mary, Williamsburg, Virginia

Eric Shippee
College of William and Mary, Williamsburg, Virginia

305 (MOSCON SOUTH)

579
**Beyond Classroom Walls: “Doing Mathematics” on a Nature Trail**

*General Interest Session*

Beyond the classroom walls, there is a real world full of mathematical opportunities. This session will highlight an e-STEM project that infused a nature trail with mathematics tasks. This project clearly took mathematical principles and put them into action through faculty professional development, task writing, and the creation of a math trail.

Stefanie D. Livers
University of Alabama, Tuscaloosa

Diana Marchant
Woodland Forrest Elementary, Tuscaloosa City Schools, Alabama

Sandra Langdon
Woodland Forrest Elementary, Tuscaloosa City Schools, Alabama

3005 (MOSCON WEST)

580
**Conferring in the Elementary Mathematics Classroom: Making Interactions Powerful**

*3–5 Session*

Teachers often confer with readers and writers to provide responsive, differentiated instruction. But what does it look like to confer in mathematics? How can three-minute interactions make a difference in student thinking, engagement in math practices, and collaboration? Find out what math conferences look like and what it takes to make them work.

Jen Munson
Stanford University, California

3009 (MOSCON WEST)

581
**Cultural Resources for Effective Integration of Ethnomathematics into Mathematics Curriculum**

*10–12 Session*

Mathematics teachers have knowledge of some cultural specifics that exists in students’ culture but do not have knowledge of the mathematics concepts that can be taught using identified cultural specifics. This research expose mathematics concepts that teachers can use in teaching identified cultural specifics.

Gladys Ibibo Charles-Ogan
University of Port Harcourt, Nigeria

Nchelem Rosemary George
Ignatius Ajuru University of Education, Port Harcourt, Nigeria

2007 (MOSCON WEST)

2024 (MOSCON WEST)
11:00 A.M.–12:00 P.M.

582 Developing Numerical Understanding and Skills: Lessons Learned from Classroom Teaching
3–5 Session

Students often see the goal of math assignments to “do the page” instead of to “do the math.” This session presents pedagogical suggestions that build numerical proficiency, embrace the mathematical practices, and help students become effective learners and doers of mathematics. Suggestions are illustrated by specific classroom examples.

Marilyn Burns
Math Solutions, Sausalito, California

134/135 (MOSCONE NORTH)

583 Facilitating Meaningful Mathematical Discourse
General Interest Session

A teacher’s facilitation of meaningful mathematical discourse is a powerful tool to make mathematics reasonable to students, move their thinking forward, and help reach other classroom goals. This presentation provides resources for teachers trying to build a discourse community and addresses challenges faced when facilitating classroom discourse.

Megan Staples
University of Connecticut, Storrs
Sherryl King
Ellington Public Schools, Connecticut

3007 (MOSCONE WEST)

584 Fostering Class Culture with the Silicon Math Initiative
General Interest Session

Research shows the importance of students being owners of their learning, with a positive disposition to math, and engaging in high-cognitive discourse. We’ll examine how to foster class culture to enable students to develop agency, identity, and authority. Videos of elementary and secondary classroom will be analyzed and resources shared.

David W. Foster
Silicon Valley Mathematics Initiative, Morgan Hill, California

3016 (MOSCONE WEST)

585 Inching Our Way to Mathematics Equity
General Interest Session

President’s Series presentation

Inequities in the classroom take many forms. In this session, a discussion of problems and practices in today’s diverse classrooms will be based on these inequities.

Jack Price
Past President, National Council of Teachers of Mathematics;
Professor Emeritus, Cal Poly Pomona, California
Barbara Price
Orange Coast College, Costa Mesa, California

2005 (MOSCONE WEST)

586 Inquiry and Collaborative Learning through Authentic Mathematical Experiences
10–12 Session

Frustrated by students’ fear of mistakes, attachment to rote memorization, and a lack of grit, we re-envisioned our geometry and statistics classrooms to prioritize the activities of mathematical discovery. Through this environment, we have facilitated both student ownership and deeper understanding of the course content.

Robin Neschke
Miss Porter’s School, Farmington, Connecticut
Eileen B. Mooney
Miss Porter’s School, Farmington, Connecticut

3003 (MOSCONE WEST)

587 “Interpretation Is Hard Work!”: Teaching the Interpretation of Student Thinking
Coaches / Leaders / Teacher Educators Session

The Mathematics Teaching Practices in Principles to Actions call for teachers to interpret student thinking, but as our students have said, “Interpretation is hard work!” Learn how tablets were used in a methods course to help students interpret and use student thinking in teaching. Specific applications and field-based assignments will be modeled.

Tiffany Hill
Emporia State University, Kansas
Nancy L. Smith
Emporia State University, Kansas
Mari Wheeler Flake
Emporia State University, Kansas

3001 (MOSCONE WEST)
NCTM Regional Conferences & Expositions
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NCTM Regional Conference & Expositions are an opportunity to share knowledge and learn with leaders in the field of mathematics education. Gain new strategies to unleash the mathematical mind of every student when you take advantage of superior mathematics resources right on your doorstep.

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• Administrators
• Math teacher educator
• Preservice teachers
• Math specialists

Join NCTM in either Phoenix or Philadelphia and discover the tools that will help you promote the mathematical habits of mind that will lead your students to college and career success.

Learn more at nctm.org/regionals and follow us on #NCTMregionals
11:00 A.M.–12:00 P.M.

588
Making Inferences and Justifying Conclusions
10–12 Session
CCSSM includes standards related to making inferences and justifying conclusions from sample surveys, experiments, and observational studies. This session explores classroom activities that address the related topics of the role of random assignment and random selection in study design, margin of error, and the meaning of statistical significance.

Roxy Peck
California Polytechnic State University, San Luis Obispo

589
Math Talk: Teaching Concepts and Skills through Stories and Illustrations
Pre-K–2 Session
A young child’s understanding of the world is enlightened and expanded through stories and illustrations, so it makes sense to use these resources when learning mathematics. Participants will learn how to use “math talk” as a powerful way to provide consolidation and purposeful practice of essential skills and concepts.

Char Forsten
Staff Development for Educators, Peterborough, New Hampshire

Visit nctm.org/PrinciplesToActions to learn more and purchase your copy today.
11:00 A.M.–12:00 P.M.

590  
**Productive Discourse in Mathematics Classrooms—Research into Practice**
Research Session

Our work in Making Mathematics Reasoning Explicit (MMRE) emphasizes generalizing and justifying using mathematical reasoning by focusing on the rich implementation of tasks. We present results from our research, and we provide examples of rich implementation. In addition, we explore successful strategies for teachers, with an emphasis on norm setting, productive questioning, and discourse.

Libby Knott  
Washington State University, Pullman

Peter Klosterman  
Washington State University, Pullman

Joni Stevens  
Pullman School District, Washington

307 (MOSCON SOUTH)

591  
**Explore Counting Strategies with NCTM’s Activities with Rigor & Coherence**
Pre-K–2 Session

Be a part of NCTM’s effort to restructure Classroom Resource content available on nctm.org so that it best meets your needs. This workshop introduces the first component—newly developed Activities with Rigor and Coherence (ARCs). Participants will work through the mathematics in an exemplar ARC, led by a member of the ARC writing team. The ARCs are works in progress, so participants will be asked for feedback.

Jennifer Bay-Williams  
Board of Directors, National Council of Teachers of Mathematics; University of Louisville, Kentucky

301 (MOSCON SOUTH)

592  
**Some Famous Algebraic Identities**
10–12 Session

Some algebraic identities are things of beauty. They express symmetry and structure, and they have interpretations that inform geometry, probability, statistics, optimization, algebra, and other scientific disciplines. We will look at some famous identities, each of which has a rich history and multiple applications. Bring your favorite identity.

Al Cuoco  
Education Development Center, Inc., Waltham, Massachusetts

Bowen Kerins  
Education Development Center, Inc., Waltham, Massachusetts

2001 (MOSCON WEST)

593  
**Wealth Distribution as a Context for Mathematics for Social Justice**
General Interest Session

Wealth distribution activities developed and classroom tested by the presenter will be discussed as a context for “teaching mathematics for social justice” (TMfSJ). This discussion will include students’ responses, challenges, concerns, and possible adaptations for different grade levels and CCSSM.

Enrique Ortiz  
University of Central Florida, Orlando

2011 (MOSCON WEST)

594  
**What Are You Looking For? Mathematical Practices and Teaching Practices**
Coaches / Leaders / Teacher Educators Session

President’s Series presentation

Participants will be engaged in exploring “Look For” tools designed to assist in co-planning and co-teaching. The tools link to the Standards for Mathematical Practice and the Mathematics Teaching Practices and focus on student and teacher roles in instruction. Specific activities will involve a mathematical focus on place value and fractions.

Francis (Skip) Fennell  
Past President, National Council of Teachers of Mathematics; McDaniel College, Westminster, Maryland

Beth McCord Kobett  
Stevenson University, Baltimore, Maryland

Jon Wray  
Howard County Public School System, Ellicott City, Maryland

2020 (MOSCON WEST)
11:30 A.M.–12:00 P.M.

596
Addressing Students’ Misconceptions about Algebraic Concepts through Effective Teaching Practices
6–8 Burst

Students’ potential misconceptions about variables, expressions, and equations on nonroutine tasks will be discussed. Instructional strategies to promote conceptual understanding will be provided. Strategies will include using recent developments in technology, multiple representations effectively, and Principles to Actions teaching practices.

Ruveyda Karaman
University of Missouri, Columbia

William W. DeLeeuw
University of Missouri, Columbia

3022 (MOSCON WEST)

597
Framework for Effective Teaching—Integrate Common Core Math Practices!
General Interest / All Audiences Burst

Learn how to use your class time efficiently to maximize impact on student learning by integrating the Standards for Mathematical Practice. This research-based framework involves revisiting the process of planning and teaching and the interactions between them. Teachers who have used this framework have got results in student achievement!

Teruni Lamberg
University of Nevada, Reno

2002 (MOSCON WEST)

NEW | It’s Elementary: A Parent’s Guide to K–5 Mathematics
BY JOY W. WHITENACK, LAURIE O. CAVEY, AND CATHERINE HENNEY

Parents are sometimes baffled by the way elementary mathematics is taught in today’s classroom. This book reintroduces them to the subject, discussing not only the how of today’s teaching methods but also the why. It provides insights into children’s mathematical thinking and its development through the early grades, as well as information on helping with homework, engaging children in math at home, and participating in children’s math education.

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

For more information or to place an order, call (800) 235-7566 or visit nctm.org/store.
11:30 A.M.–12:00 P.M.

598
Math Club: A University-School Partnership to Promote Learning for All
Higher Education Burst
Learn how to incorporate a service learning partnership into a methods course. Math Club is a university-school partnership focused on improving struggling students’ mathematical abilities through a data-driven after-school program facilitated by preservice teachers (PSTs). Professors, teachers, and PSTs collaborate to create data-driven games.
Sararose D. Lynch
Westminster College, New Wilmington, Pennsylvania
Jeremy M. Lynch
Slippery Rock University, Pennsylvania

599
Measuring Up: Teaching Linear Measurement Concepts in Early Childhood
Pre-K–2 Burst
In this burst, attendees will learn how to use children’s literature to teach measurement concepts in the early childhood classroom. Specifically, the presenters will share how they used popular children’s books to develop a true conceptual understanding of linear measurement concepts in real-world measurements.
Karen Capraro
Rhode Island College, Providence
Michelle M. Nonis
Henry Barnard School, Providence, Rhode Island

12:30 P.M.–1:30 P.M.

600
Teach Mathematical Practices through Non-Routine Problems
8–10 Burst
Nothing inspires growth like a genuinely challenging problem. Inspire this feeling in your students by utilizing non-routine problems that align with your content. Participants will learn that good problems are easy to find (and make), that ALL students can have success, and how to teach mathematical habits without destroying your pacing guide.
Carl M. Oliver
City-As-School High School, New York, New York

601
Closing Keynote
The Future: The Energized Educator
General Interest Session
Hill Harper is an award-winning actor, best-selling author, and philanthropist. Harper starred on the CBS TV drama CSI: NY from 2004 to 2013 followed by two seasons on USA’s Covert Affairs. Harper returned to CBS in the fall of 2015 as Agent Boyle in the new fast-paced drama Limitless. He is the author of four New York Times best sellers and is founder of the Manifest Your Destiny Foundation, dedicated to empowering underserved youth through mentorship, scholarship, and grant programs.
Hill Harper
Actor & Advocate
Join Us For Music, Math, and Fun!

Engage Media-Savvy Students with Songs, Videos, Games, and Rewards

April 14, Thursday 2 pm, Convention Center Room 123
&
April 15, Friday 2 pm, Convention Center Room 123

Teachers are turning to a new collection of musical, high interest lessons called Math Upgrade to engage today’s media-savvy students. Find out how teachers use games and rewards to bring below proficient students grades K-8 up to grade level. Join us for math, music, and fun!

Join us for math, music, and fun!

What you can learn about in this session:

• Whole-class lessons with projectors, smartboards
• Individualized lessons that help students fill in gaps
• Tracking every student to mastery on every standard
• Making lessons fun with songs and games

Free school license for each attendee!

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When it comes to math, standards-aligned is achievement-aligned...

_The Common Core Mathematics Companion, Grades 6–8_ unpacks the standards in teacher-friendly language for: ratios and proportional relationships, the number system, expressions and equations, functions, geometry, and statistics & probability. Learn what to focus on at each grade; key vocabulary, materials, and teaching practices that help students become true problem solvers.

Give math students the connections between what they learn and how they do math—and suddenly math makes sense.

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Tips for a Rewarding Annual Meeting & Exposition

- **Attending the meeting is just the beginning!** Engage with featured speakers, access additional material, network with peers, and much more on the extended meeting experience website at annual.nctm.org.
- Access the conference app for program and speaker information, to connect with other attendees, and to share your feedback. Visit www.nctm.org/confapp.
- Access speaker handouts and build your schedule at www.nctm.org/planner.
- **New this year!** Highlighted and invited speakers will be assigned coves on the second and third floors of the Moscone West building to continue the conversation from their sessions in an informal setting. You must be present at their sessions to receive information about the reflection times and locations for these speakers. Board members, Affiliate Services Committee members, as well as the President and President-Elect will also spend time in the Reflection Coves discussing topics of interest with attendees—or you can just stop by to say hello or for a photo op. There will also be two Math Teachers’ Circle coves, one dedicated to K–8 mathematics and another for 9–16 mathematics.
- Become familiar with the layout of the Moscone Convention Center and the Marriott Marquis by reviewing the floor plans on pages 170–177.
- Visit us in NCTM Central at the exhibit hall entryway. Join the community exploring the many NCTM resources to meet your mathematics teaching challenges: Member Services, where you can pick up free resources and learn more about how NCTM can help you professionally; the Bookstore, where you can browse the latest titles; and the Networking Lounge, where you can enjoy free Wi-Fi and connect with other attendees.
- Plan to spend some quality time making new connections and exploring the “hands-on, minds-on” math education offerings in the Networking Lounge. There will be 20-minute “mini-sessions” ranging from serious play with math toys like Zome tools, to learning how to write or review articles for NCTM Journals; the Math Corner will have plenty of hands-on tools for explorations, rich tasks, and readings to mull over either in the Networking Lounge or to carry with you after the conference; and Featured Speakers will be hosting smaller, intimate conversations following up on their sessions.
- Attend the Mathematics Education Trust Wine Tasting on Wednesday evening after the Opening Keynote to taste some wonderful wines, toast the 2016 NCTM Lifetime Achievement Award recipients, and mingle with mentors, colleagues, and friends (tickets can be purchased through registration; limited supply).
- Stop by the San Francisco City Information Desk in the lobby of the North or West Buildings of Moscone for information on the Bay area.
- If you are attending the conference with colleagues, attend different presentations and share your learned knowledge after the conference.
- Stay connected with other Annual Meeting attendees by using #NCTMannual on Twitter, Facebook, and Instagram.
- Visit the Exhibit Hall, where more than 200 exhibitors will share the latest educational products.
- Silence cell phones during presentations.
- The more you participate in the presentations, the more you will benefit from the conference.
- Tell us about your conference experience by responding to the post-conference online survey.
- Be safe! Remove your name badge when you leave the conference facilities at the end of the day.

Technology at Your Fingertips

Wi-Fi Access

The Moscone Convention Center offers complimentary wireless throughout the convention center, except in the Exhibit Hall.

Conference App

The NCTM conference app, available on Apple and Android mobile devices, as well as a mobile app for 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 hashtag #NCTMannual); rate presentations; and connect with other attendees. 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.
Registration and Access to Presentations
Registration will be located in the lobby of the Moscone North Building. 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 2016 Annual Meeting & 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 Conference
The Research Conference, 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 11–13, at the Moscone Convention Center West Building. The Research Conference Registration Area and Sessions will be located on the third floor of the Moscone West Building. Separate registration is required to attend Monday and Tuesday of the Research Conference. More information is available at www.nctm.org/researchconference. Stay connected with other Research Conference attendees by using #NCTMr on Twitter, Facebook, and Instagram.

Registered NCTM Annual Meeting attendees may attend Wednesday’s Research Conference presentations at no extra charge with their Annual Meeting badge. The Wednesday program includes Linking Research and Practice sessions including the Linking Research and Practice Plenary at 10:00 a.m. Concurrent sessions begin at 8:30 a.m. and continue until 4:00 p.m.

Bookstore
Save 25% off the list price on all purchases made at the on-site NCTM Bookstore, located in Exhibit Hall D at the Moscone Convention Center North Building. View firsthand all the publications that will help you in your teaching career. Also, find a variety of specialty products that make great gifts, prizes, and incentives to spread the word about the importance of mathematics and that share your passion for the field. Preview the store at www.nctm.org/catalog.

Note on Sales Tax Exemptions: To qualify for sales tax exemption in the NCTM Bookstore, you must furnish a copy of a California 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 in the Moscone North Building is ready to assist you with your shipping needs.

NCTM Central
Make your meeting experience complete with a visit to NCTM Central in Exhibit Hall D of the Moscone North Building during exhibit hours.

Learn how NCTM supports you and mathematics education:

• Get your free take-home activities, sample journals, and more at Member Services. Take the opportunity to update your membership information and learn about your benefits.
• Discover available funding and resources to support you in your career and professional development through the Mathematics Education Trust (MET).
• Visit with The Math Forum and learn about online resources and services, such as the Problems of the Week, Ask Dr. Math®, T2T®, Powerful Problem Solving and more.
• View and play online math strategy games while learning about Classroom Resources.
• Connect with peers, social media, speakers, NCTM journal editors and more in the Networking Lounge. A presentation schedule is available on the conference app.
• New to NCTM Central this year, The Math Forum and NCTM host the Math Corner, a place to spend some time engaging in math explorations with friends new and old. We’ll have math crafts to make, tools and toys to explore, problems and scenarios to notice and wonder about, Powerful Problem Solving activities to read about and take home, and more. Bring your own math explorations and questions, whether it’s a task from a session you want to collaborate on further, a favorite task from your own classroom, or something that’s got you stumped!

Shuttle Service
Attendees who reserved their hotel room through NCTM’s official housing company will receive complimentary shuttle service from hotels in the NCTM housing block to the Moscone Convention Center North Building. Hotels that are within walking distance of the convention center will not have shuttle service. Note: There will be shuttle service from the Marriott Marquis on Wednesday, April 13, to accommodate attendees of the Mathematics Education Trust Wine Tasting. Routes and schedules will be posted in your hotel lobby and can be found online at www.nctm.org/sanfranhousing. The schedule will be followed as closely as possible. If you have questions, please visit the shuttle desk located at the entrance to the North Building of Moscone.

Information Booth
There will be two NCTM Information Booths at the Moscone Convention Center. One will be located outside of the NCTM Exhibit Hall D in the North Building and the other will be located in the lobby of the West Building. Convention staff will be available to answer your questions.
Lost-and-Found
You may retrieve or turn in lost-and-found items at either of the NCTM Information Booths in the North or West Buildings of Moscone. 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 San Francisco. Stop by the San Francisco City Information Desk located in the North and West building lobbies at the Moscone Convention Center. The friendly staff will be available to offer recommendations and make reservations. They can also assist you with directions and local information, from transportation and historical sites to shopping and entertainment.

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 conference hours Wednesday-Saturday, you can check your items at the bag/coat check, located in the lower level of the North Building at Moscone Center. 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 Moscone Convention Center North Building by the NCTM Exhibit Hall D during the conference. If you need medical services while in San Francisco, please check with your hotel concierge for the closest medical facilities. For any medical emergency, call 911 without hesitation.

For Your Child’s Safety
Because of the size and nature of the NCTM 2016 Annual Meeting & 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 Moscone Convention Center North Building.

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 2016 Annual Meeting & Exposition. In the days after the Annual Meeting, you will receive an e-mail asking you to evaluate your conference 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 Thursday from 8:00 a.m. to 5:00 p.m., Friday from 8:00 a.m. to 5:00 p.m., and Saturday from 8:00 a.m. to 12:00 p.m. Check out the list of exhibitors and a floorplan of the Exhibit Hall on pages 176–177.

Exhibitor Workshops
Do you want more in-depth and personal interaction with exhibitors? Plan to attend the Exhibitor Workshops. Held on Thursday and Friday these workshops offer a wide variety of topics. See the program for Exhibitor Workshop offerings, indicated by \textsc{cw} after the presentation number.
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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Join an NCTM Affiliate Today!

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 2016 Annual Meeting & 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.

Affiliate Information
California Mathematics Council
Gretchen Muller, executive@cmc-math.org

About the Host Affiliate

The California Mathematics Council (CMC) believes that all students have the capacity to become mathematically competent and confident when provided a rigorous and challenging mathematical program supported by high expectations. We are 6,000+ volunteer teachers, administrators, parents and teacher-educators from California, 45 other states, Canada, Australia, and seven other countries who are committed to improving mathematics teaching and learning in public and private classrooms throughout California, North America, and the world!

Join our vibrant work in support of mathematical equity for educators, students and families!

Contact us at: www.cmc-math.org
1-888-CMC-MATH
www.facebook.com/CAMathCouncil
Tweet to: @CAMathCouncil

Affiliates-at-Large

Adult Numeracy Network
Pam Meader, mdr151@aol.com

Association of Mathematics Teacher Educators
Timothy Hendrix, hendrixt@meredith.edu

Association of State Supervisors of Mathematics
Charles Watson, chaswatson@sbcglobal.net

Benjamin Banneker Association, Inc.
Mylah Deliford, mdeliford@outlook.com

Council for Technology in Mathematics Education
Stephanie Cooperman, scooperman@chatham-nj.org

Council of Presidential Awardees in Mathematics
Donald Scheuer, mathguy1@verizon.net

National Council of Supervisors of Mathematics
Sharon Rendon, rendosha@gmail.com

North American Study Group on Ethnomathematics
Janiece Edgington, janiece_edgington@yahoo.com

Society of Elementary Presidential Awardees
Martha Short, mshort@ldd.net

TODOS: Mathematics for ALL
Bob McDonald, mac@todos-math.org

Women and Mathematics Education
Andria Disney, andriadisney@live.com
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Yerba Buena Salons & Nob Hill Rooms

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TO GATE BALLROOM

NORTH REGISTRATION

B

NOB HILL A

YERBA BUENA GRAND ASSEMBLY

SOUTH REGISTRATION A

NOB HILL B

NOB HILL D

YERBA BUENA GARDENS

SOUTH STREET

FOURTH STREET

SERVICE CORRIDOR

HOWARD STREET

LOADING DOCK
Exhibit Hall Floor Plan

Moscone Center, North Hall D
(as of February 2, 2016)

NCTM Central

Renaissance Learning

824

Eureka Math

Pearson

NCTM 2016 Annual Meeting & Exposition
Exhibit Hall Floor Plan

Concessions

Origo Education

Lakeshore Learning

Texas Instruments

Math Solutions

McGraw-Hill Education

ENGRAVE

ENTRANCE

MOSCONE CENTER, NORTH HALL D

Exhibit Hall Floor Plan
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

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San Francisco, California • April 13–16, 2016

Diane J. Briars
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. Over 500 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.*

Robert M. Doucette  
Executive Director, NCTM

Diane J. Briars  
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.*
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Country_____________________________ Phone_________________________
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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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Mathematics Teacher (MT) (8–14)  □ $90
Journal for Research in Mathematics Education (JRME)  □ $117
Mathematics Teacher Educator (an NCTM/AMTE online journal)  □ N/A

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Mathematics Teaching in the Middle School (MTMS) (5–9)  □ $78
Mathematics Teacher (MT) (8–14)  □ $78
Journal for Research in Mathematics Education (JRME)  □ $105
Mathematics Teacher Educator (an NCTM/AMTE online journal)  □ N/A

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□ $66  □ $54
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□ $27
□ $27
□ $54
□ $22


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Mathematics Educational Trust (MET) Support (Your contribution is tax deductible)  $________
TOTAL: Payment to NCTM in U.S. Dollars  $________

5 Method of Payment
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District offices, high schools, universities, etc. are not eligible for PreK–8 membership. Please sign up for an Institutional Subscription.

Primary Contact First Name* _______________________________ Last Name* _______________________________

School* __________________________________________________

School Address* __________________________________________

City* ___________________________ State/Prov* ___________ ZIP/PC* ___________

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Indicate number of additional subscriptions desired.

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☐ Mathematics Teaching in the Middle School (MTMS) (5–9) $39 Mathematics Teaching in the Middle School (MTMS) (5–9)

To activate the 5 free e-memberships provided with your PreK–8 School Membership, please list the full name, e-mail address, and online journal choice here. Individuals will receive a membership confirmation (including login credentials) along with an ID card and instructions to access members-only benefits online. Individuals below must be educational professionals at the named school.

1. Name ___________________________________________ E-mail ___________________________________________ ☐ TCM or ☐ MTMS

2. Name ___________________________________________ E-mail ___________________________________________ ☐ TCM or ☐ MTMS

3. Name ___________________________________________ E-mail ___________________________________________ ☐ TCM or ☐ MTMS

4. Name ___________________________________________ E-mail ___________________________________________ ☐ TCM or ☐ MTMS

5. Name ___________________________________________ E-mail ___________________________________________ ☐ TCM or ☐ MTMS

To include additional individuals as e-members, attach a separate sheet of paper with name, e-mail address, and journal selection for each person. Include $10 for each individual with your payment. Note: E-memberships may be changed or removed only at the time of renewal. Only individuals not currently affiliated with NCTM may be included as new e-members under the PreK–8 membership for your school. All e-members will be listed under the mailing address of the school provided on this application/renewal.

4 Enter E-Memberships

To activate the 5 free e-memberships provided with your PreK–8 School Membership, please list the full name, e-mail address, and online journal choice here. Individuals will receive a membership confirmation (including login credentials) along with an ID card and instructions to access members-only benefits online. Individuals below must be educational professionals at the named school.

5 Payment Summary

Membership Dues (includes 5 free e-memberships) ................................................................. $ 155.00
Addtional e-Memberships ................................................................. $10 X _____ = $
Additional Journals ................................................................. $39 X _____ = $
SUBTOTAL ................................................................. $
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Mathematics Educational Trust (MET) Support (Your contribution is tax deductible) ................................................................. $
TOTAL: Payment to NCTM in U.S. Dollars ................................................................. $

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Mathletics is a K–12 online resource for teachers and students designed to motivate, inspire and help students learn new math concepts. Mathletics is accessible at home, in school, on iPads, and tablets. Schools select TEKS or Common Core Courses as needed. Teachers use videos, interactives and animated support within the adaptive activities to teach and enhance learning. Live Mathletics strengthens computational fluency as students love to engage in real time global or class challenges!

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A

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American Statistical Association
Booth 345
Alexandria, VA
703-684-1221
www.amstat.org/education

The American Statistical Association (ASA) is a scientific and educational society that works to improve statistical education at all levels. The ASA offers outreach activities and free resources such as teacher professional development, student competitions, publications, webinars, student activities, and lesson plans tied to the statistics standards in the Common Core. 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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B

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“When am I ever going to use this in the real world?” “I don’t want to be an accountant, teacher or engineer. What other careers can I do with math?” “What kind of career offers high salaries, job security and endless opportunities?” Sound familiar? Visit the Be An Actuary booth to pick up information that will make it easy to talk to your students and their parents about a career as an actuary. You can even request for an actuary to come talk to your students or take part in your career day.

Bedford, Freeman & Worth (BFW) Publishers & W.H. Freeman & Company
Booth 1310
New York, NY
212-375-7154
www.bfwpub.com/highschool

Bedtime Math Foundation
Booth 1109
Summit, NJ
908-444-4522
www.bedtimemath.org

Bedtime Math is a nonprofit organization dedicated to helping kids love numbers so they can handle the math in real life. For families, we offer a wacky nightly math problem on our website, our free app, and our daily email. For schools, we offer Crazy 8s, a hands-on after-school math club designed to get kids in grades K–5 fired up about math with high-energy activities like Spy Training and Toilet Paper Olympics. Bring Crazy 8s to your school and help kids learn to love numbers!
The Benjamin Banneker Association is a national non-profit organization dedicated to mathematics education advocacy, establishing a presence for leadership, and professional development to support teachers in leveling the playing field for mathematics learning of the highest quality for African-American students.

**Big Ideas Learning, LLC**
**Booth 419**
Erie, PA
814-651-0147
bigideaslearning.com

Big Ideas Math is a complete and continuous solution built for student success, with a variety of programs available from middle school to high school. The Dynamic Assessment System provides teachers and students an intuitive and state-of-the-art tool to help students effectively learn mathematics. The Dynamic Assessment System allows teachers to track and evaluate their students’ advancement through the curriculum. Visit us at booth #419 to learn more!

**Borenson and Associates, Inc.**
**Booth 719**
Allentown, PA
610-389-6908
www.borenson.com

Borenson and Associates, Inc. seek to make algebra and fraction concepts visual and intuitive for elementary and middle school students. The popular Hands-On Equations® program for learning basic algebra has now been used by more than a million students. In addition, more than 50,000 teachers of grades 3–8 have attended the popular Making Algebra Child’s Play® workshop. Visit our booth to see how we demystify the teaching of algebra and help teachers and students make sense of fractions.

**Box Cars & One-Eyed Jacks Inc**
**Booth 510**
Edmonton, AB
780-440-6284
boxcarsandoneeyedjacks.com

Box Cars and One-Eyed Jacks is the leader when it comes to math games. All of our award-winning K–10 resources are correlated to the common core standards and are used across the country. We are one of the leading suppliers of dice, cards, dominoes, and other math manipulatives. The Box Cars consulting team provides the best hands-on training in the country when it comes to games as a teaching strategy. We offer half, full, and intensive schoolwide trainings.

**Casio America, Inc.**
**Booth 525**
Pittsburgh, PA
412-690-2442
www.casioeducation.com

CASIO® has a full line of calculators for every level of education. As a leading producer of graphing, scientific and basic calculators, CASIO calculators are easy-to-use and their time-saving operation makes it easier for students to learn. CASIO also provides calculator emulators, print materials and professional development for a total math solution. To see the full line of easy-to-use, cost-savings CASIO Calculators, visit: www.casioeducation.com.

**Catherine Fosnot & Associates: New Perspectives**
**Booth 204**
New London, CT
860-444-8765
www.NewPerspectivesOnLearning.com

New Perspectives on Learning offers on-site support for coaches and teachers in the form of in-class work, learning communities, and workshops. NewPerspectivesOnline.net offers an online platform for professional learning, K-6, taught by Cathy Fosnot and Maarten Dolk, specifically targeted to the Standards of Mathematical Practice using CFLM. Come to the booth for a preview. A new app is also available at the booth to assess and document learning using our Landscapes of Learning tools.

**Carson Dellosa Publishing**
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Greensboro, NC
336-632-0084
www.carsondellosa.com

Carson-Dellosa™ Publishing Group is the leading provider of supplemental educational products for educators and parents. The company’s teacher-developed products and resources are thoughtfully designed to align to current state standards and meet children’s diverse learning needs. Carson-Dellosa’s award-winning brands include Carson-Dellosa Education™, Spectrum®, Summer Bridge™, Thinking Kids™, and Brighter Child™. Carson-Dellosa is also the exclusive distributor for Mark Twain Media.

**CanFigureIt LLC**
**Booth 1037**
New York, NY
212-574-6087
www.canfigureit.com

Rediscover geometry with CanFigureIt™. Our web-based resource enables high school students to work through proof problems independently and interactively by offering continuous feedback and relevant hints. CanFigureIt Geometry facilitates problem-solving by breaking down complex problems into manageable chunks, and fosters forward and backward reasoning. To support teachers, we’ve designed a dashboard to inform data-driven pedagogical decision-making at the individual student and class level.

**Carnegie Learning**
**Booth 214**
Pittsburgh, PA
412-690-2442
www.carnegielearning.com

Carnegie Learning offers print, digital, and professional development solutions for grades 6–12 that are proven effective at raising student achievement in math. Born from cognitive science research at Carnegie Mellon University, we are focused exclusively on helping students be successful in math to be prepared for college and careers in the 21st century.
Build a Strong Foundation for Algebraic Reasoning

Learn new instructional techniques to ensure your students develop strong algebraic reasoning skills at this two and a half days of interactive professional development.

Join your peers to collaborate during sessions that address topics specific to your strand of focus.

- Gain strategies to build the foundation of knowledge and skills that leads to students’ future success in algebra.
- Use Principles to Actions as a tool for posing purposeful questions, engaging students in productive discourse, and building student responsibility within the community of learners.
- Learn strategies for implementing tasks that promote reasoning and problem solving, that provide all students opportunities to develop strong algebraic reasoning skills.

Learn more at nctm.org/institutes and follow us on #NCTMinstitutes
Center for Mathematics and Teaching, Inc.
Booth 636
Sherman Oaks, CA
310-310-4948
www.mathandteaching.org
Transition to the Common Core with the Center For Mathematics and Teaching. We provide engaging, student-centered programs for middle school students and professional development for teachers.

Cignition, Inc.
Booth 744
Portola Valley, CA
650-714-1069
cignition.com
With a focus on transforming K–12 mathematics learning, Cignition is the result of a deep collaboration between neuroscientists, teachers, and gameplay designers. We develop immersive online games which intrinsically integrate mathematical structure. With an emphasis on deep conceptual understanding, our games provide continuous assessment and adaptation to optimize student learning. Our profiles of conceptual understanding and procedural fluency provide teachers with actionable information.

CK-12 Foundation
Booth 224
Palo Alto, CA
650-494-1302
www.ck12.org
CK-12 Foundation is a leading non-profit organization dedicated to improving student learning by increasing access to educational materials through the FlexBook® platform and concept-based modalities. CK-12 offers free, high-quality, standards-aligned, open content through an integrated set of tools for learning, including digital textbooks, concept-based learning resources, simulations, interactive practice, and more. All content is created and curated by subject-matter experts and teachers.

Claire Lynn Designs
Booth 237
Midlothian, TX
972-723-2251
www.clairelynn.com
Curated by subject-matter experts and teachers. Practice, and more. All content is created and learning resources, simulations, interactive including digital textbooks, concept-based modalities. CK-12 offers free, high-quality, standards-aligned, open content.

Common Sense Education
Booth 445
San Francisco, CA
415-863-0600
www.graphite.org
Common Sense Graphite has 2,500+ apps, games, and websites rated and reviewed by teachers and experts for learning potential. Educators can search by subject, grade, and standard. Graphite also has ready-made lesson plans and a community of expert educators from across the country to help you transform your classroom.

ConsumerMath.org
Booth 1137
Bakersfield, CA
661-865-8518
www.ConsumerMath.org
Our goal is to help students move from the classroom to real life through a virtual learning environment that allows students get a job, pay bills, manage their bank accounts, and stay out of debt, all from the safety of the classroom. They gain the math skills they need to survive in the real world as they learn personal and business topics including: Calculating Wages, Budgeting, Interest, House Buying and Remodeling, Menu Conversions, Profit Margins, Taxes, Probability, and much more!

Corwin
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At Corwin, we have one objective and one objective only: to help educators do their important work better. We offer a host of independent and integrated professional learning options that conform with your budget, your timeline, and your objectives: books and resources, institutes, author consulting, Visible Learningplus, eLibraries, and eCourses. To learn more about our resources and services on language development, literacy, equity, leadership, math, science, and STEM, visit www.corwin.com.

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Curriculum Associates is a rapidly growing education company committed to making classrooms better places for teachers and students. We serve millions of students with our i-Ready®, Ready®, BRIGANCE® and other programs because of our laser focus on educators’ needs over our own bottom line, and a belief that thoughtful and continuous innovation leads to a positive impact on classrooms and measurable growth for students. Learn more at www.curriculumassociates.com.

CueThink
Booth 1333
North Reading, MA
781-640-0526
www.cuethink.com
CueThink is an iPad application for grades 4–12 that empowers learners to see problem solving challenges as opportunities. It scaffolds Polya’s 4 phases of Understand, Plan, Solve and Review and then layers in peer annotations for intelligent feedback. CueThink’s unique approach captures both individual and collective thinking and ensures that students are fully engaged in the CCSS Mathematical Practices. With CueThink, you can #makemathsocial.

CPM Educational Program
Booth 1134
Elk Grove, CA
209-745-2055
www.cpm.org
CPM offers grades 6–12 mathematics textbooks that use problem based learning in student centered classrooms and supports it with funded professional development. The Core Connections series is 100% aligned with CCSS content and practices. High school books offer both traditional and integrated pathways.

D
D & H Distributing Company
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D & H is the Nation’s # 1 Distributor of Calculators to Schools.
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www.desmos.com

Explore math with Desmos. Graph functions, plot tables of data, evaluate equations, explore transformations, and much more—for free! Available online at desmos.com and in the iPad app store.

**Didax Inc**

Booth 211  
Rowley, MA  
800-458-0024  
www.didax.com

Didax publishes supplemental resources for grades pre-K–12, including books, games, interactive resources, manipulatives, and more. In addition, we partner with Math Perspectives to distribute Kathy Richardson’s assessment and curriculum materials. Our materials provide teachers with innovative, hands-on ways to help students achieve the goals of the Common Core State Standards.

**Digi-Block**

Booth 342  
Cambridge, MA  
508-591-3268  
www.digi-block.com

Digi-Block is a research-based system that allows students to discover number-sense for themselves. Before addressing the abstract and technical aspects of arithmetic operations (symbols, language, regrouping, etc.), students discover for themselves the meaning of numbers and digits through the blocks and “smart box” system. Once students discover and internalize how numbers work, they naturally pair their hands-on understanding with the conventional, abstract understanding of arithmetic.

**Dinah.com**

Booth 1133  
San Antonio, TX  
210-698-0123  
www.dinah.com

Dinah.com is the new name for the education al publishing and consulting company owned by author/speaker Dinah Zike. The name change reflects a shift toward digital products. Dinah is known for her 3-D interactive graphic organizers, featured in all her publications. Materials are available from grades PK–12 in all subjects. She offers professional development for educators at the Dinah Zike Academy, a unique trainer of trainers facility in Comfort, Texas.

**Discovery Education**

Booth 1400  
Silver Spring, MD  
301-272-2564  
www.discoveryeducation.com

Discovery Education empowers school systems worldwide to create dynamic digital learning environments that improve student achievement. With proven expertise in developing and delivering standards-based digital content and professional development, Discovery Education builds lasting partnerships across the globe that transform teaching and learning. Discovery Education’s services are in half of U.S. classrooms, over 40 percent of all primary schools in the U.K., and more than 50 countries.

**DreamBox Learning**

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Bellevue, WA  
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www.dreambox.com

DreamBox Learning provides a deeply personalized K–8 math learning experience with lessons that differentiate for the highest levels of student achievement. Driven by Intelligent Adaptive Learning™ technology, students benefit from a rigorous curriculum in English and Spanish and embedded formative assessments. The result is a game-like experience that students love, actionable data that supports teachers so they can be powerful coaches, and outcomes administrators are proud to share.

**Drexel University, School of Education**

Booth 218  
Philadelphia, PA  
215-595-6770  
www.drexel.edu/soe

Drexel University School of Education offers online MS degree and Certificate Programs in Mathematics, Teaching and Learning. Courses are offered asynchronously online.

**EAI Education**

Booth 1200  
Oakland, NJ  
800-770-8010  
www.eaieducation.com

Your one-stop source for Math manipulatives, classroom resources, educational games, calculators, STEM products and teaching aids for grades pre-K–12. Stop by our booth to see our NEW products for 2015, watch exciting product demonstrations, enter to win prizes, and browse a selection of our most popular games and resources available for purchase. Come learn how EAI Education can create custom manipulative kits to complement your curriculum and SAVE your district funding.

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443-731-9123  
www.magicmassagetherapy.com

Since 2007 we have specialized in the marketing and sales of high quality Magic Massagers. These revolutionary products use Tens (Unit) technology and are based on the same electronic stimulation technology that Chiropractors and Physical therapists use every day. The difference between these devices and regular tens units are the fact that tens units are made simply to treat pain versus our Magic Massagers.

**ETA hand2mind**

Booth 819  
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www.hand2mind.com

We believe students learn best by doing. We offer over 8,000 educational and supplemental materials for math, science, reading/language arts, and STEM, including popular brands such as Hands-On Standards, VersaTiles, and Cuisenaire Rods. Our instructional content, custom-kit options for content providers, manipulatives, interactive digital applications, and teacher coaching and development empower teachers and engage students.

**Eureka Math**

Booth 205  
Washington, DC  
202-223-1854  
www.eureka-math.org

Eureka Math was built after the creation of the new standards, when a group of teachers came together to create a totally new, powerful pre-K–12 curriculum. Eureka wasn’t retrofitted to meet the new standards, it was born from them. So the standards are seamlessly integrated, not shoved into old textbooks. Created by a non-profit, Eureka offers basic curriculum at no charge along with customizable solutions to fit your needs. Learn more at eureka-math.org or call 844-853-1010.
Exemplars
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Underhill, VT
802-899-4409
www.exemplars.com
For more than 20 years, Exemplars has published math performance tasks for instruction and assessment. Our authentic material engages students and is differentiated at 3 levels. Our latest material, Problem Solving for the Common Core, features newly developed tasks and classroom tools to support the implementation of CCSSM. Planning sheets, rubrics, anchor papers and assessment rationales are provided. Material supports and is aligned to the Standards for Mathematical Content and Practice.

Expii, Inc.
Booth 1237
Pittsburgh, PA
844-314-1593
www.expii.com
The Interactive Wikipedia is here. Expii makes it easy for you to create and rate interactive lessons which simulate one-on-one tutor experiences (http://expii.com/e/1521). Think rapid-fire Q&A, video, and more. We’re crowd-sourcing a one-stop destination for the Internet’s most lively educational content, which we then distribute to the world for free.

ExploreLearning
Booth 625
Charlottesville, VA
866-882-4141
www.explorelearning.com
ExploreLearning develops online solutions to improve student learning in math and science. ExploreLearning Gizmos are the world’s largest library of interactive, online simulations for math and science in grades 3–12. Explore-Learning Reflex is the most powerful solution available for math fact fluency. Gizmos and Reflex bring research-proven instructional strategies to classrooms around the world.

Exhibitor Directory

Family Math Night by Math Unity
Booth 206
Rocklin, CA
916-772-2788
familymathnight.com
Our focus at Math Unity is to build strong family-school partnerships through fun and engaging Family Math Night events. We do this through our ready-to-go Family Math Night kits. Each kit comes complete with everything needed to run a successful event and includes a nice balance of standards-based activities, projects, and games. Continuing the learning at home is also important so we also provide Take-Home kits filled with fun games. We make it easy to engage parents on an academic level!

FluidMath / Fluidity Software, Inc.
Booth 837
Somerville, MA
617-666-4442
www.fluiditysoftware.com
FluidMath brings handwritten math to life! Simply hand-write math expressions on the screen of an iPad, Tablet PC, or Interactive Whiteboard to easily create, solve and graph math problems! Math teachers and students handwrite math every day. Fluidity Software, Inc. is the leader in transforming static handwritten math into interactive graphs, computations, self-grading worksheets, and more! From Arithmetic to Algebra to Calculus, FluidMath is the write way to teach and learn math!

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G
Geyer Instructional Products
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We offer a complete line of math aids, math supplies, and math equipment for the middle and high school classroom. Many of our products are exclusively produced by Geyer! We specialize in graph paper, graphing and measurement tools, dry erase products, and posters. We also carry books, games, and general school supplies. Use code SANFRAN by May 26th and receive 15% Off Your Order! Purchase Orders Accepted. Check Us out online at www.geyerinstructional.com.

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Grade assignments instantly with virtually any webcam or mobile device. #GradeFast #GradeSmart @GradeCam Find out more at www.gradecam.com.

GraphLock
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We sell supplementary math books that are a unique blend of math and art. Our books are created by classroom teachers and are suitable for students in 1st grade through high school Algebra 2.
Heinemann is a leading publisher of professional resources and provider of educational services for K–12 educators. We strive to give voice to those who share our respect for the professionalism, creativity, and compassion of teachers. Our mathematics-focused professional books and curricular resources are practical and child-centered, developed by master educators who care deeply about teaching and learning. Discover more at Heinemann.com/Math.

Hooda Math has over 20 free math apps for iPhone, iPad, Android, and Kindle. Visit their booth to try them out. For over 5 years they have been providing free online math games and tools at www.hoodamath.com. New this year, Hooda Math is proud to introduce www.hoodamath.com Mobile that works on all mobile browsers (including iPad), no downloading required.

Houghton Mifflin Harcourt is a global learning company with the mission of changing people’s lives by fostering passionate, curious learners. Among the world’s largest providers of pre-K–12 education solutions and one of its longest-established publishing houses, HMH combines cutting-edge research, editorial excellence and technological innovation to improve teaching and learning environments and solve complex literacy and education challenges. For more information, visit www.hmhco.com.

HowTheMarketWorks.com is the #1 FREE stock market game website that allows teachers to create a custom stock market trading contest for their classes. Teachers choose the trading dates, initial cash balance, and other trading parameters and then students manage a virtual portfolio of stocks and mutual funds in a real-time, streaming virtual environment. This website is used by over 10,000 teachers each year in their personal finance, math, social studies and economics classes.

HP education technologies revolutionize the classroom with multi-representational tools that spark student interest and empower educators. And with the launch of the HP Wireless Classroom Network, teachers can share data, conduct instant polls, create apps and view student’s calculator screens. Visit HP at booth 410 to learn more about the HP Prime Full Color Touch Graphing Calculator with its new Wireless Connectivity Kit.

Illustrative Mathematics is a discerning community of educators dedicated to the coherent learning of mathematics. We collaborate at illustrativemathematics.org, sharing carefully vetted resources for teachers and teacher leaders to give our children an understanding of mathematics and skill in using it. We provide expert guidance to states, districts, curriculum writers, and assessment writers working to improve mathematics education.

Geometiles are a versatile set of interlocking tiles that can be used for math exploration and as a supplement to any math curriculum from grade 1 upwards. Geometiles come with online access to many lesson plans and problems. For those interested in unstructured exploration and play, Geometiles offer limitless possibilities. Visit our booth to get a chance to build and play with Geometiles, and be a part of the discovery!

It’s About Time believes that students learn math and science the way that practicing scientists and mathematicians do. They learn when something grabs their attention . . . when the content is relevant to their lives. They learn when we allow them, in fact encourage them, to talk to one another and question each others’ results. They learn when we permit them to get their hands on the subject matter. In short, when we allow students to use all of their senses, they make sense of math and science.

IXL provides a standards-aligned immersive learning experience for all subjects, K–12. Come learn how IXL’s carefully crafted content and direct instruction supports students as they build the foundational skills needed for success. With IXL Analytics, teachers have insights to help them drive gains in student performance and on high-stakes assessments.
Exhibitor Directory

J
Johns Hopkins Center for Talented Youth
Booth 1314
Baltimore, MD
410-735-6133
www.cty.jhu.edu
The Johns Hopkins Center for Talented Youth identifies and develops the most advanced K–12 learners worldwide. As part of Johns Hopkins University, CTY helps fulfill the university’s mission of preparing students to make significant contributions to our world. Since 1979 CTY has identified young people of great academic promise, then nurtured their intellects and personal growth through our academic Summer Programs, CTYOncine courses, and other services and resources.

Jump Math
Booth 740
Toronto, ON
510-677-0001
jumpmath.org
JUMP Math is a non-profit organization dedicated to closing the math achievement gap in children grades 1 to 8. Through its classroom curriculum (which has been carefully rewritten to adhere to the common core standards), JUMP helps teachers guide discovery in their students which leads to deeper problem solving skills.

K
Kagan Publishing & Professional Development
Booth 1309
San Clemente, CA
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www.kaganonline.com
Kagan’s line of products are All About Engagement! Kagan works with educators to implement scientifically proven strategies that increase academic gains, create positive social relations, and foster a love for learning. Browse Kagan’s booth stocked with books, SmartCards, software, learning games, and resources all designed to make learning come alive. Kagan is the #1 source for cooperative learning and active engagement products. Scientifically research based and extensively classroom tested.

Kendall Hunt Publishing Company
Booth 1317
Dubuque, IA
563-589-1075
kendallhunt.com/prek12
Kendall Hunt provides educators with a complete, Common Core-aligned pre-K–12 mathematics solution. Our curriculum emphasizes mathematical practice standards, builds student’s critical thinking and procedural skills, and promotes conceptual understanding. Available in digital and print formats, our programs are supported with ongoing professional development to ensure effective implementation and elevate classroom achievement.

KnowRe
Booth 1225
New York, NY
310-617-8890
www.knowre.com
KnowRe is an innovative adaptive learning solution for mathematics. KnowRe assesses an individual’s strengths and weaknesses, personalizes a curriculum for each student’s focus areas and engages students through gamified features, attractive graphics and social learning. KnowRe believes in the importance of a good education, the need for personalization in our educational system and that technology is the most effective tool to help bring about these goals.

Koyo Publishing
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Tualatin, OR
503-557-8100
www.koyopublishing.com
Koyo Publishing Inc.™ brings the best of Japan’s elementary mathematics curriculum to North America. Our first offering is Sansu Math™, a series for grades 1–5. Created in collaboration between academics and publishers on both sides of the Pacific, Sansu Math™ grants English speaking teachers and students access to a program with proven results. Learn more at our NCTM workshop: “Using Japanese Problem Based Teaching Methods to Develop Conceptual Understanding,” Friday, April 15th at 3:30 p.m.

L
Lakeshore Learning Materials
Booth 1124
Carson, CA
310-537-8600
www.lakeshioreLearning.com
Lakeshore Learning Materials is one of the leading manufacturers of K–6 math resources—including in-depth teaching products focused on developing mathematical reasoning and problem-solving skills. We also offer hundreds of other items that support daily instruction and intervention strategies in the classroom, and help educators make math relevant to students.

LearnBop
Booth 200
New York, NY
917-231-1129
www.learnbop.com
LearnBop is a step-by-step automated tutoring system for K–12 mathematics. Unlike most math learning systems, where a wrong answer leads to students being prompted to drill more similar problems, LearnBop’s system is interactive, guiding students to find the answer on their own by breaking the problem into smaller steps. Each step is tagged with a mathematical concept, providing teachers with in-depth data to personalize math instruction by identifying and closing each student’s individual gaps.

Learning Resources
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Learning Resources® is a leading global manufacturer of innovative, hands-on educational products trusted by teachers and parents and loved by children. The Company’s 1100+ high-quality products are sold in more than 80 countries, serving children and their families, preschool, kindergarten, primary, and middle-school markets. For more information visit www.LearningResources.com or call 1-800-333-8281.

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Learning Upgrade publishes the Algebra Upgrade and Math Upgrade online courses featuring songs, video and games. Transform your classes with interactive lectures using projectors and interactive whiteboards. Bring the whole school up to proficiency with high interest online student courses.
Facilitated by the application, the students with individualized learning of each student. Teachers can easily provide easy view of the individual path and progress quizzes give teachers and administrators an instructional materials, practice problems, and their K–5 students. Detailed dashboards, full comprehensive solution that aligns formative assessment, professional development, and open curriculum so that teachers can successfully implement the new standards and better meet the needs of their students.

**LEGO Education**

**Booth 220**
Pittsburg, KS
620-231-0000

[www.legoeducation.us](http://www.legoeducation.us)

LEGO® Education combines the unique excitement of LEGO bricks with hands-on classroom solutions that engender engagement with the mathematical concepts. We focus on providing high-quality education solutions that appeal to a variety of learning styles and for all educational levels. Visit the LEGO Education booth to learn how our products can bring innovation to your classroom where students will feel encouraged and motivated to think, write, and speak freely about mathematics.

**Lone Star Learning**

**Booth 514**
Lubbock, TX
806-281-1424

[lonestarlearning.com](http://lonestarlearning.com)

Lone Star Learning is a curriculum development company offering unique, easy-to-use visuals and interactive bulletin boards that give students the specific practice needed to achieve mastery in math, science and language arts. Lone Star Learning is the proud winner of Learning Magazine’s Teachers’ Choice Award for 3 years running. We strive to increase student success while decreasing teacher effort with our innovative products! We hope to become an integral part of your classroom!

**LoveMath™ by GPA Learn**

**Booth 633**
Atlanta, GA
404-507-2571

[www.gpalearn.com](http://www.gpalearn.com)

Our GPALOVEMATH™ application is designed to create time efficiency for teachers while providing real-time, actionable data on their K–5 students. Detailed dashboards, full instructional materials, practice problems, and quizzes give teachers and administrators an easy view of the individual path and progress of each student. Teachers can easily provide the students with individualized learning facilitated by the application.

**M**

**Mangahigh.com**

**Booth 424**
London, UK
877-626-4244

[www.mangahigh.com](http://www.mangahigh.com)

Mangahigh’s new approach to online math uses behaviourist techniques from the social games world to generate incredible student engagement. Adaptive technology and personalized learning pathways ensure that students not only master the curriculum, but learning to love math. “Mangahigh is delivering fun, competitive, game-based lessons that drive greater engagement and understanding” Bill Gates annual letter 2012 Get your FREE trial account: www.mangahigh.com

**Marshall Cavendish Education**

**Booth 724**
Tarrytown, NY
914-332-8888

[www.mceducation.us](http://www.mceducation.us)

With more than 40 years of experience in educational publishing, Marshall Cavendish Education is a leader in providing well-researched and world class holistic education solutions in curriculum, technology and professional development to meet the needs of teachers and students in the 21st century. Since 1995, we contribute to the outstanding performance of Singapore students in international studies such as TIMSS and PISA. Our materials were adopted in more than 50 countries and 11 languages.

**Math For America**

**Booth 536**
New York, NY
646-437-0904

[www.MathForAmerica.org](http://www.MathForAmerica.org)

At Math for America (MfA), we do everything we can to make teaching a viable, rewarding, and respected career choice for the best minds in science and mathematics. Our three fellowships bring together outstanding teachers to share knowledge, advance teaching skills, and define excellence itself. Learn more at MathForAmerica.org.

**Math Solutions**

**Booth 911**
Sausalito, CA
415-339-4846

[mathsolutions.com](http://mathsolutions.com)

Math Solutions, founded by Marilyn Burns, has been transforming instruction for over 30 years by providing the highest quality professional learning, resources, and coaching to improve mathematics instruction and student proficiency. With partnerships across schools and districts nationwide, Math Solutions offers comprehensive professional learning to transform curriculum and instruction, while preparing students for the rigorous expectations of college and career.

**Math Teachers’ Circle Network**

**Booth 1141**
San Jose, CA
408-350-2088

[www.mathteacherscircle.org](http://www.mathteacherscircle.org)

Math Teachers’ Circles are professional communities of K–12 mathematics teachers and mathematicians. Groups meet regularly to work on rich mathematics problems, allowing teachers to enrich their knowledge and experience of math, while building meaningful partnerships with other teachers and mathematicians. Founded in 2006, the Math Teachers’ Circle Network is a project of the American Institute of Mathematics (AIM, www.aimath.org) in San Jose, California.

**Math Teachers Press**

**Booth 1110**
Minneapolis, MN
800-852-2435

[www.movingwithmath.com](http://www.movingwithmath.com)

Provides pre-K–12 formative assessment and conceptual instruction using concrete manipulatives with research based strategies and proven results. Includes the 4 essential elements of RTI: screening, decision making, explicit instruction, progress monitoring. Instruction integrates the Concrete-Representational-Abstract (CRA) pedagogy with scripted lesson plans providing embedded PD. Objectives are correlated to state & national standards. Proven achievement gains. Optional Web-Based Technologies.
61% of middle schoolers would rather take out the garbage than do math homework. For them, math isn’t just a chore . . . it’s worse! But it doesn’t have to be that way. Mathalicious offers engaging real-world lessons & projects aligned to Common Core Standards for middle and high school. Lessons promote the CC Standards for Mathematical Practice by providing opportunities for students to think critically and creatively, develop arguments, and critique the reasoning of others.

**Mathalicious**
Booth 519
Austin, TX
530-420-5474
www.mathalicious.com

Mathalicious takes a unique approach to teaching K–6 math using hands-on, interactive mini-games called episodes. These immersive bite-sized apps for tablets and personal computers, based on a modular and progressive spiral learning system. Our portfolio of hundreds of activities and worksheets are entirely curriculum-driven. The activities and worksheets were developed to facilitate easy mapping to standard math curricula.

**MathLine at Howbrite Solutions**
Booth 833
Cokato, MN
320-286-2597
www.howbrite.com

MathLine is a blended learning strategy offering a multi-sensory tool for students and an interactive whiteboard tool for teachers to teach K–5 math. Common Core essentially focuses on deeper comprehension of targeted math concepts which is precisely MathLine’s greatest asset! MathLine will increase your teacher’s confidence teaching math as it is an easy-to-use support strategy. Come learn how you can achieve your Common Core objectives and raise your math scores.

**MathOdes Company**
Booth 1236
Festus, MO
314-717-8577
www.mathodes.com

MathOdes Company designs fun and creative math teaching and study aids for middle and high school! A rhyming format helps students remember math concepts and formulas in the form of poetry, music, and color illustrations. Each “ode” details a particular math concept such as surface area, polynomials, and matrices. Algebra 1, Algebra 2, and Geometry products are currently available.

**Matific**
Booth 313
New York, NY
646-259-3229
www.matific.com

Matific takes an entirely different approach to teaching K–6 math using hands-on, interactive mini-games called episodes. These immersive bite-sized apps for tablets and personal computers, based on a modular and progressive spiral learning system. Our portfolio of hundreds of activities and worksheets are entirely curriculum-driven. The activities and worksheets were developed to facilitate easy mapping to standard math curricula.

**Mathsticks LLC**
Booth 1145
Virginia Beach, VA
737-401-3524
mathsticksedu.com

MathSticks is the premier math manipulative. It can present all phases of elementary math and more! MathSticks are models of numbers. It can present all phases of elementary math and more! MathSticks are models of numbers. The student can learn the number value of each stick by its relative length by placing it next to the number line provided. A full set is composed of the various unit combinations from one to twelve. Set may be combined as needed. Please stop by booth 1145 for a brief demonstration of “Math Made Visual”. Made entirely in the USA.

**Mathspace**
Booth 300
New York, NY
718-510-2582
www.mathspace.co

Come see something truly different! Mathspace is the world’s ONLY app that allows students to show all their work step-by-step for every question, writing naturally into their iPad, or in a web browser. Our feedback at every intermediate step of a question is like having a teacher side-by-side with the student, and our adaptive learning personalizes their math journey. So if you always say, “HOW you got the answer is as important as the final answer,” come speak to us about a free trial!
MIND Research Institute

Booth 1316
Irvine, CA
888-751-5443
www.mindresearch.org

MIND Research Institute is a neuroscience and education non-profit that applies its heritage of educational expertise, the company offers highly personalized learning experiences that improve learning outcomes around the world. The company has offices across North America, India, China, Europe, the Middle East and South America, and makes its learning solutions available in more than 60 languages.

Michigan State University

Booth 1215
East Lansing, MI
517-432-5472
prime.natsci.msu.edu

The doctoral program in mathematics education is designed for those who show promise of becoming leaders in local, state, national and international mathematics education communities. We prepare researchers and leaders to address critical mathematics education issues by developing analytical perspectives for research, engaging in reflective teaching, and deepening mathematical knowledge. Assistantships and fellowships are available.

MOEMS

Booth 1234
Bellemore, NY
516-781-2400
moems.org

Math Olympiads is a not-for-profit corporation dedicated to stimulating enthusiasm, fostering creativity and strengthening intuition in mathematical problem solving. Through the use of five monthly contests, teachers and teams of up to 35 students explore and review mathematical concepts while developing flexibility in solving non-routine problems. Certificates, medals or trophies are awarded to all participants. Visit our booth for information, sample problems and prizes.

Motion Math

Booth 733
San Francisco, CA
631-374-0667
motionmathgames.com

Motion Math creates delightful games for the most challenging elementary math concepts, plus a teacher dashboard to measure progress based on gameplay. Visit our booth to start your free iPad trial. “Helps develop understanding of important mathematics, visually.” —Jo Boaler, Professor of Mathematics Education, Stanford Graduate School of Education, Motion Math advisor. “Great gameplay and great learning. Highly recommended.” —Dan Meyer, math teacher, blogger.

MQI Coaching

Booth 1327
Cambridge, MA
781-373-7068
mqicoaching.org

We offer MQI Coaching, an individualized professional development opportunity that helps teachers improve their practice. The Mathematical Quality of Instruction (MQI) instrument is a Common Core-aligned, math-specific rubric from Harvard University that provides teachers with a framework for analyzing math instruction. Teachers work with MQI expert coaches in video-based, virtual coaching cycles that help teachers to reflect on their practice and look closely at the work of their students.

MTBoS/Math Twitter Blogosphere

Booth 1335
Salem, MA
978-528-4673
mathtwitterblogosphere.com

The MTBoS is an informal network of math teachers who have found community online through Twitter and blogs. We’ve built resources, curricula, websites, and have co-authored a book. We also run workshops, problem-solving groups, and a weekly “department meeting” via webinar. We are passionate teachers who take pride in freely sharing our ideas. Come meet fellow teachers who use the internet to grow professionally. Browse the resources we’ve made. Even start your own Twitter account or blog!

Mu Alpha Theta

Booth 1139
Norman, OK
405-325-4489
www.mualphatheta.org

Mu Alpha Theta, the National High School and Two-Year College Mathematics Honor Society served over 2200 high schools and over 108,000 student members last year. Chi Alpha Mu is our Middle School math club organization. We provide recognition for talented math students, scholarships, grants, awards, and free math contests students compete in right at your school. We have money to give you to support your math club. Come see us at booth 1139 to find out how we can finance your chapter.
Exhibitor Directory

N

Nasco
Booth 1209
Fort Atkinson, WI
920-563-2446
eNasco.com

Nasco is proud to supply all the materials necessary for successful hands-on math programs. We have the latest mathematics teaching aids, supplies and equipment for elementary, middle school, and secondary math programs. Nasco has products that are aligned to the standards and target STEM initiatives that engage 21st Century Learning. We are skilled at creating cost-effective, customized kits to meet your classroom needs.

National Assessment of Educational Progress (NAEP)
Booth 340
Washington, DC
202-706-3600
www.nationsreportcard.gov

The National Assessment of Educational Progress (NAEP) is the largest continuing and nationally representative assessment of what students across the United States know and can do. NAEP is administered by the National Center for Education Statistics within the U.S. Department of Education. The results are released as The Nation’s Report Card.

National Geographic Learning | Cengage Learning
Booth 411
Mason, OH
800-543-0487
NGL.Cengage.com

National Geographic Learning provides quality pre-K–12, academic, and adult education instructional solutions for reading, writing, science, social studies, ESL/ELD, and Spanish/Dual language.

National Museum of Mathematics
Booth 1143
New York, NY
212-542-0566
www.momath.org

Come visit the National Museum of Mathematics to learn how you can win $25,000! The Museum runs an annual contest for innovative math lessons, and we want YOU to participate: rosenthalprize.momath.org. We’ll also have some unique math manipulatives to share that help math come alive.

NewPath Learning
Booth 1232
Victor, NY
585-742-0164
www.newpathlearning.com


NextLesson
Booth 734
San Francisco, CA
415-968-9655
www.nextlesson.org

NextLesson connects learning to the real world. We offer 5,000 K–12 resources that engage students through topics they love, such as books, movies, sports and technology, and provide students with opportunities to develop and apply critical thinking skills in real world contexts. NextLesson resources are easy to use and adaptable for any classroom environment. They are designed by teachers and aligned to the Common Core and other state standards. Stop by to learn about our trial program!

North American Study Group on Ethnomathematics (NASGEm)
Booth 541
Estes Park, CO
970-371-0167
nasm.edu

Ubiratan D’Ambrosio and others coined “Ethnomathematics” to describe math practices of identifiable cultural groups. More broadly, it can refer to those of larger groups also of small sects. Mathematical practices include symbolic systems, spatial designs, practical construction techniques, algorithms, measurement, ways of reasoning, etc. for which formal representation is possible. NASGEm and EONAS promote culturally responsive math education practices.

NumbersAlive!
Booth 836
Washington, DC
202-652-1820
www.numbersalive.org

Created by educator Rebecca Klemm, PhD, NumbersAlive! presents numbers as fun and friendly characters who uncover numeric patterns embedded everywhere. The playful numbers captivate children as they come alive through interdisciplinary storytelling. They are tactile as soft plush numbers (0–9 and π) and enchant children through books, games, puzzles, and apps. Bring our award-winning learning tools into YOUR classroom and watch anxiety disappear! All products are teacher-developed and teacher-tested.

O

Origo Education
Booth 925
Earth City, MO
314-475-3061
www.origoeducation.com

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

P

Pearson
Booth 400
Boston, MA
800-848-9500
www.PearsonEd.com

As the leading education company, 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.
Perfection Learning
Booth 1034
Logan, IA
800-821-4190
perfectionlearning.com
For over 85 years, Perfection Learning has been a leader in reading, literature, and language arts programs with both textbook and supplemental programs. Our math programs feature Kinetic Books, cutting-edge digital math programs for high schools and higher education; preparation for the ACT and SAT; programs for Common Core standards practice; programs for English Language Learners; and more.

PhET Interactive Simulations
Booth 1320
Boulder, CO
303-492-6963
phet.colorado.edu
The PhET Interactive Simulations Project has developed over 127 free simulations for teaching and learning science and math (http://phet.colorado.edu). Over the past year, our software development team pushed the boundaries of HTML5 to enable our new sims to run in any modern web browser, including on tablets such as the iPad. They emphasize the connections to real life, make the invisible visible (e.g. electrons), and include expert visual models.

Pitsco Education
Booth 737
Pittsburg, KS
620-231-0000
www.pitsco.com
Math—particularly algebra—is the sticking point for many students. But individualized lessons and hands-on learning can make the difference. These are the values Pitsco has promoted for 40 years. With two unique curriculum solutions and a host of engaging math products, Pitsco has the tools for your math classroom.

Prodigy Math Game
Booth 229
Burlington, ON
866-585-4655
www.prodigygame.com
Prodigy is a FREE, highly engaging math game that’s used by over 3,000,000 students in North America. It’s fully aligned to Common Core State Standards for grades 1–8 and automatically differentiates for each child. Educators can easily create formative assessments, track trouble spots, and view teacher/admin reports in real time.

R
Reasoning Mind
Booth 201
Houston, TX
832-255-2903
www.reasoningmind.org
Reasoning Mind is a nonprofit dedicated to providing a first-rate math education for every child. Reasoning Mind has created an online learning platform complete with an internationally proven curriculum that fully engages students. Teachers receive access to a user-friendly data and reporting tool as well as a vast catalog of professional development courses. Reasoning Mind provides Core Curriculum, Ancillary Curriculum, and Common Core Assessment Readiness Materials for grade 2–6.

Redbird Advanced Learning
Booth 824
Wisconsin Rapids, WI
715-424-3636
www.renaissance.com
Redbird Advanced Learning offers digital curriculum, blended learning tools and services, and professional development that is the future of mathematics education.

Renaissance Learning
Booth 201
Houston, TX
832-255-2903
www.renaissance.com
Accelerated Math™ differentiates dynamic practice of grade-level CCSS or state standards by depth, as current standards recommend. The software automates the assess-teach-learn cycle by integrating STAR Math™ data to place students in instructional groups and automatically scheduling a full year of standards coverage. Assignments can be delivered online or printed.

RobotLAB US Inc.
Booth 1231
San Francisco, CA
415-702-3033
www.RobotLAB.com/box
RobotLAB introduces RobotsLAB BOX, an award-winning teaching-aid demonstrating math’s core concepts using robots. The easy to use tablet includes interactive lessons which bring the robots to life, helping students understand why math is relevant to their life. Algebra, Geometry, Trig, Pre-Calc, are some of our favorite topics, but for most middle and high school students this isn’t the case. In fact, math proficiency in US has fallen to 32%, disqualifying many graduates from entry-level jobs.

Routledge / Eye on Education
Booth 441
New York, NY
212-216-7800
routledge.com
Routledge publishes practical books for in-service teachers and administrators, as well as textbooks and resources for pre-service teachers and higher education professionals on a variety of subjects including math teaching and learning, professional development, teaching skills, and more. Routledge Journals is an international publisher of scholarly research. Visit the Routledge booth to learn about our products and services, and request free copies of publications in the field of education.

S
Scholastic
Booth 333
New York, NY
212-343-6100
www.scholastic.com
Scholastic is the world’s largest publisher and distributor of children’s books and is a leader in educational technology. The company creates quality books, print- and technology-based learning materials and programs, classroom magazines, multimedia, and other products that support teachers and help children learn both at school and at home.

SIAM – Society for Industrial & Applied Mathematics
Booth 1326
Philadelphia, PA
267-992-8681
www.siam.org
The mission of SIAM is to build cooperation between mathematics and the worlds of science and technology through our publications, research, and community. As part of this, we organize the Moody’s Mega Math (M3) Challenge, an annual high school math modeling competition open to juniors and seniors across the country, which gives away $150,000+ in scholarships to winning teams. M3 is an opportunity for students to take what they’ve learned in the classroom and apply it to a real-world problem.
### Exhibitor Directory

#### Singapore Math Inc.
**Booth 818**  
Tualatin, OR  
503-557-8100  

Singapore Math Inc. is dedicated to bringing the highest quality educational resources to the U.S. and Canada. These resources include a range of selected core curricula and supplemental titles. We welcome you to come by Booth 818 to peruse our Singapore Math® books and to learn more about the Singapore approach to teaching and learning mathematics.

#### Solution Tree
**Booth 341**  
Bloomington, IN  
800-733-6786  
[www.solution-tree.com](http://www.solution-tree.com)

Solution Tree delivers comprehensive professional development to schools and districts around the world. Solution Tree has empowered K–12 educators to raise student achievement through a wide range of services and products including educator conferences, customized district solutions for long-term professional development, books, videos, and online courses. Last year, more than 25,000 educators attended Solution Tree events on professional learning communities, RTI, assessment, and other topics.

#### Staff Development for Educators
**Booth 936**  
Peterborough, NH  
603-924-9621  
[www.sde.com](http://www.sde.com)

We believe that educators have the most important job in the world. That’s why we’re dedicated to empowering educators with ongoing professional development that is not only research-based, innovative, and rigorous, but also practical, motivating, and fun. SDE offers PD in Singapore Math, CCSS for Math, Differentiated Math, Math Interventions & more. Our Singapore Math Conference each July in Las Vegas is attended by math educators from all over the world. Visit www.sde.com/nationals

#### Stenhouse Publishers
**Booth 932**  
Portland, ME  
800-988-9812  
[www.stenhouse.com](http://www.stenhouse.com)

Stenhouse provides quality professional development resources by teachers, for teachers. Our goal is to offer educators a set of proven strategies from which they can choose and adapt what will work best for their students and in their own environment.

#### Stokes Publishing Company
**Booth 832**  
Sunnyvale, CA  
408-541-9145  
[www.stokespublishing.com](http://www.stokespublishing.com)


#### SumBlox Group
**Booth 332**  
Paradise, UT  
435-512-5161  
[www.sumblox.com](http://www.sumblox.com)

SumBlox Group is the creator of the revolutionary math manipulative, SumBlox Building Blocks. This premiere STEM toy allows children to visualize the value of numbers through height, making elementary math concepts significantly easier to grasp and remember. The concept was developed in 2012 by B. David Skaggs while volunteer tutoring elementary mathematics. The company’s mission is simply to improve early math education and inspire a love of mathematics in children everywhere.

#### SunTex International/First in Math
**Booth 431**  
Easton, PA  
610-253-5255  
[www.firstinmath.com](http://www.firstinmath.com)

FIRST IN MATH® ONLINE: Harnessing the power of digital gaming to build math skills. A 2015 “Best of Show” award winner at the International Society for Technology in Education (ISTE) conference, FIRST IN MATH® provides a rich, digital platform that helps students acquire, reinforce, and retain basic through advanced math skills. Used by more than 10 million students in the U.S., this standards-aligned program utilizes digital games proven to facilitate deep practice among students in K–grade 8.

#### TenMarks Education, An Amazon Company
**Booth 1201**  
Burlingame, CA  
415-305-7211  
[www.tenmarks.com](http://www.tenmarks.com)

TenMarks, an Amazon company, develops an innovative web-based mathematics curriculum program aligned with the new math standards that is used by students and teachers across thousands of districts across the country. Designed by teachers for teachers, TenMarks knows that students achieve greater success when they’re individually motivated, engaged, and nurtured.

#### TERC
**Booth 1103**  
Cambridge, MA  
617-873-9709  
[www.terc.edu](http://www.terc.edu)

For fifty years, TERC has been introducing millions of students throughout the United States to the exciting and rewarding worlds of math and science learning. Led by experienced, forward-thinking math and science professionals, TERC is an independent, research-based organization dedicated to engaging and inspiring all students through stimulating curricula and programs designed to develop the knowledge and skills they need to ask questions, solve problems, and expand their opportunities.

#### Texas Instruments
**Booth 917**  
Dallas, TX  
214-567-6409  
[education.ti.com](http://education.ti.com)

TI provides free classroom activities that enhance math, science and STEM curricula, technology that encourages students to develop a deeper understanding of concepts, and professional development that maximizes your investment in TI technology. TI offers handhelds, software, apps for iPad®, and data collection technology, designed to promote conceptual understanding, and formative assessment tools that gauge student progress. Visit education.ti.com.

#### The Actuarial Foundation
**Booth 241**  
Schaumburg, IL  
847-706-3535  
[www.actuarialfoundation.org](http://www.actuarialfoundation.org)

The Actuarial Foundation’s free lesson plans and curriculum resources. See what the buzz is all about! Visit the Foundation booth to bring these exciting “real world math” and financial literacy materials home to your students. Visit us at: [http://www.actuarialfoundation.org/programs/youth_education.shtml](http://www.actuarialfoundation.org/programs/youth_education.shtml).
The College Board  
Booth 1105  
New York, NY  
866-630-9205  
www.collegeboard.org  
The College Board is a mission-driven not-for-profit organization that connects students to college success and opportunity. Founded in 1900, the College Board was created to expand access to higher education. Today, the membership association is made up of over 6,000 of the world’s leading educational institutions and is dedicated to promoting excellence and equity in education.

The Learning Carpet-TLC, Inc.  
Booth 324  
Huntsville, ON  
705-789-8912  
thelearningcarpet.com  
The Learning Carpet (a 6-foot square) enables teachers to more effectively teach math and language concepts through the integration of body movement and language development. On the carpet, children have opportunities to play, discover, learn and understand concepts. As a result they are able to articulate and demonstrate their learnings. Look for Wendy Hill’s interactive workshop, “Let’s Get Physical—with Math on the Floor.” Teachers will leave this interactive session with multiple practical ideas.

The MarkerBoard People  
Booth 1212  
Lansing, MI  
800-379-3727  
www.dryerase.com  

The Math Learning Center  
Booth 1219  
Salem, OR  
800-575-8130  
www.mathlearningcenter.org  
The Math Learning Center (MLC) is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based curriculum, resources, and professional development. Our products and services are used by educators throughout the United States and in many international locations.

The Presidential Awards for Excellence in Mathematics and Science Teaching  
Booth 311  
Arlington, VA  
703-292-8742  
www.paeast.org  
The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the highest honors bestowed by the US government specifically for K–12 mathematics and science (including computer science) teaching. Up to 108 awards are made annually. Each recipient receives $10,000 from the National Science Foundation (NSF); a trip for 2 to Washington D.C.; and a certificate signed by the President. NSF manages PAEMST on behalf of the White House Office of Science and Technology Policy.

Think Through Math  
Booth 532  
Pittsburgh, PA  
866-357-8664  
www.thinkthroughmath.com  
Think Through Math (TTM) helps struggling students love math, allows gifted students to excel at math, and gives teachers the tools and data they need to help students succeed. TTM has become a critical part of the RTI, STEM, and 1-to-1 strategies of state education departments and thousands of districts and schools across the United States.

Triumph Learning  
Booth 730  
New York, NY  
855-552-5765  
www.triumphlearning.com  
Triumph Learning, LLC, is a leading educational content publisher of print and digital K–12 resources and standards-aligned instructional materials, serving over 400,000 teachers and 6 million students. Triumph Learning offers a mix of interactive digital tools and innovative student texts with products such as Coach, Waggle, and Buckle Down.

Tutto Luggage/Mascot Metropolitan, Inc.  
Booth 1329  
South San Francisco, CA  
650-873-7717  
www.tutto.com  
Mascot Metropolitan has been in luggage business for more than 15 years and specializes in innovative, elegant solutions to universal problems in the mobile marketplace. The foundation of our product design is our patented luggage frame, which is sturdy, light, foldable, and 4-wheel based for superb stability. Tut ro product won the design award from Arthritis Foundation as well as the editor’s choice and best product from the magazines.

UM Products  
Booth 835  
Los Angeles, CA  
714-540-5995  
www.unimedmassager.com

US Math Recovery Council  
Booth 1218  
Apple Valley, MN  
952-683-1521  
www.mathrecovery.org  
Getting it right from the start, Math Recovery® Learning & Instructional Frameworks in Number identify and overcome core numeracy problems when young students struggle by intervening as early and quickly as possible. Our programs also help educators differentiate and stay on the cutting edge of learning. Add+VantageMR® includes assessments and instruction for classroom and small groups. Math Recovery® Intervention Specialist provides assessments and intensive intervention.

WeDu Communications  
Booth 328  
Seoul, KR  
822-315-37460  
www.wedu.co.kr  
WeDu communications has been continually growing since 2003 to keep up with the rapidly changing educational environment by producing innovative contents. Having completed successful projects in a variety of areas, we have been recognized internationally, we will continue to grow as a company that constantly researches for more efficient, more pleasing ways to provide service for our customers.
WestEd
Booth 440
San Francisco, CA
415-615-3144
www.wested.org
With rigorous college- and career-readiness standards like the Common Core State Standards for Mathematics, developing mathematical content knowledge and academic literacy is more important than ever for both teachers and students. WestEd’s curricula, books, and professional learning courses and workshops feature engaging, standards-based academic content, as well as instructional strategies that build academic literacy skills as an integral part of subject-matter learning.

Western Governors University
Booth 640
Salt Lake City, UT
385-428-1000
www.wgu.edu
The Teachers College at Western Governors University offers regionally, nationally, and NCATE accredited, online competency-based master's degrees in mathematics education. WGU is the largest educator of math and science teachers in the U.S., conferring 5% of the nation’s baccalaureate degrees and 15% of the nation’s master’s degrees in STEM teaching. WGU students enjoy modest tuition rates, unbelievable flexibility, and unmatched student support. Scholarships and financial aid are available.

Wiley
Booth 325
Hoboken, NJ
201-748-6000
www.wiley.com
Wiley is an independent, global publisher of print and electronic products. Wiley provides content and learning resources for courses from honors and AP high school curriculum through undergraduate and graduate textbooks and reference materials. Jossey-Bass offers materials to enhance K–12 teacher effectiveness, meet Common Core standards, support AP courses, and build student-centered leadership skills.

Women and Mathematics Education
Booth 543
Philadelphia, PA
267-992-1612
www.wme-usa.org
The purpose of Women and Mathematics Education is to: encourage women and girls to study and to have active to careers in the mathematical sciences; promote equal opportunity and the equal treatment of women and girls in the mathematical sciences; serve as a clearinghouse for ideas and resources in the area of women and mathematics; promote leadership among women and girls in the broad mathematics education community; and conduct research in the area of women and mathematics.

Woot Math
Booth 225
Boulder, CO
303-449-6284
www.wootmath.com
Woot Math provides free instructional resources to help students master rational numbers: fractions, ratios, decimals and percents. Woot Math is a platform that enables teachers to leverage research-based content for classroom instruction and personalized learning: access an Interactive Problem Bank of thousands of hands-on problems; create Quizzes & Polls for real-time, classroom assessment; use the award-winning Adaptive Practice proven to have a significant impacts on learning outcomes.

You Can Do The Rubik’s Cube
Booth 233
Danvers, MA
978-768-7674
www.youcandothecube.com
Unlock the secret! Challenge all your students to solve the Rubik’s Cube and enrich STEM, STEAM and 21st Century skills. We provide all the resources needed to engage your students with a new enrichment activity. No purchase necessary! While supplies last through December 2016, we offer free shipping (to/from) for our Lending Library sets. Use code NCTMFR16 and apply via this link: www.youcandothecube.com/lending-library

Zearn
Booth 208
New York, NY
215-527-3971
www.zearn.org
Zearn Math is a comprehensive math classroom experience - personalized digital student lessons for independent work time, and insights and curated materials to support teachers' small group instruction. We will offer a full K–5 program by Fall 2016, and our core content is available to educators, students and families for free. Zearn Math is created by Zearn, a nonprofit education organization on a mission to partner with educators to help all students achieve numeracy. Learn more at zearn.org!
<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass, Ebony</td>
<td>169</td>
</tr>
<tr>
<td>Batstable, Virginia</td>
<td>355, 437.2</td>
</tr>
<tr>
<td>Bauduin, Charity</td>
<td>369, 459</td>
</tr>
<tr>
<td>Bay-Williams, Jennifer</td>
<td></td>
</tr>
<tr>
<td>Bearden, Brady</td>
<td>201, 309, 591</td>
</tr>
<tr>
<td>Beatini, Tom</td>
<td>249</td>
</tr>
<tr>
<td>Beartie, Rachel</td>
<td>378</td>
</tr>
<tr>
<td>Beaudrie, Brian</td>
<td>421, 543</td>
</tr>
<tr>
<td>Beck, Pamela</td>
<td>436</td>
</tr>
<tr>
<td>Bedford Freeman and WorthPublishers</td>
<td>339.4, 385.4</td>
</tr>
<tr>
<td>Bien, Darin</td>
<td>154</td>
</tr>
<tr>
<td>Bellman, Allan</td>
<td>340</td>
</tr>
<tr>
<td>Bendall, Lisa</td>
<td>46</td>
</tr>
<tr>
<td>Benone, Jordana</td>
<td>216</td>
</tr>
<tr>
<td>Benson, John</td>
<td>269</td>
</tr>
<tr>
<td>Berda, Chryste</td>
<td>375</td>
</tr>
<tr>
<td>Berg, Sean</td>
<td>101</td>
</tr>
<tr>
<td>Bergthold, Trisha</td>
<td>77</td>
</tr>
<tr>
<td>Berry, Robert</td>
<td>83, 453</td>
</tr>
<tr>
<td>Bertolone-Smith, Claudia</td>
<td>115</td>
</tr>
<tr>
<td>Beske, Barbara</td>
<td>341</td>
</tr>
<tr>
<td>Bewick, Gloria</td>
<td>348</td>
</tr>
<tr>
<td>Bethel, Patrick</td>
<td>427</td>
</tr>
<tr>
<td>Bezuk, Nadine</td>
<td>398</td>
</tr>
<tr>
<td>Bill, Victoria</td>
<td>327, 494</td>
</tr>
<tr>
<td>Bisk, Richard</td>
<td>73</td>
</tr>
<tr>
<td>Black, Chris</td>
<td>545</td>
</tr>
<tr>
<td>Blackwell, Terri</td>
<td>477</td>
</tr>
<tr>
<td>Blanke, Barbara</td>
<td>137</td>
</tr>
<tr>
<td>Boakes, Norma</td>
<td>454</td>
</tr>
<tr>
<td>Boaler, Jo</td>
<td>407</td>
</tr>
<tr>
<td>Board of Directors, NCTM</td>
<td></td>
</tr>
<tr>
<td>Bogosian, Lauren</td>
<td>402</td>
</tr>
<tr>
<td>Bolz, Joseph</td>
<td>424, 523</td>
</tr>
<tr>
<td>Bonaparte, Andrew</td>
<td>448</td>
</tr>
<tr>
<td>Bond, Jennifer</td>
<td>413</td>
</tr>
<tr>
<td>Borenson and Associates</td>
<td></td>
</tr>
<tr>
<td>Borowski, Rebecca</td>
<td>9</td>
</tr>
<tr>
<td>Boschmans, Barbara</td>
<td>421, 543</td>
</tr>
<tr>
<td>Bosse, Michael</td>
<td>418</td>
</tr>
<tr>
<td>Boston, Melissa</td>
<td>503</td>
</tr>
<tr>
<td>Braddy, Linda</td>
<td>143</td>
</tr>
<tr>
<td>Bragg, Jason</td>
<td>371</td>
</tr>
<tr>
<td>Bray, Wendy</td>
<td>369, 459</td>
</tr>
<tr>
<td>Brewer, Lindsey</td>
<td>306</td>
</tr>
<tr>
<td>Briars, Diane</td>
<td>143, 208, 411</td>
</tr>
<tr>
<td>Briceño, Eduardo</td>
<td>113</td>
</tr>
<tr>
<td>Brooks, Lisa</td>
<td>422</td>
</tr>
<tr>
<td>Brown, Kyndall</td>
<td>263</td>
</tr>
<tr>
<td>Brown, Sara</td>
<td>51</td>
</tr>
<tr>
<td>Bryant, Cynthia (Cindy)</td>
<td>506</td>
</tr>
<tr>
<td>Bubnowicz, Angela</td>
<td>90</td>
</tr>
<tr>
<td>Buchheister, Kelley</td>
<td>85, 298</td>
</tr>
<tr>
<td>Burnett, James</td>
<td>39</td>
</tr>
<tr>
<td>Burns, Marilyn</td>
<td>582</td>
</tr>
<tr>
<td>Burrill, Gail</td>
<td>125.1, 236, 405</td>
</tr>
<tr>
<td>Bush, Sarah</td>
<td>387</td>
</tr>
<tr>
<td>Butler, Jedidiah</td>
<td>535</td>
</tr>
<tr>
<td>Cagile, Peg</td>
<td>98</td>
</tr>
<tr>
<td>Campbell, Lincoln</td>
<td>374</td>
</tr>
<tr>
<td>CanFigurelt</td>
<td>385.5</td>
</tr>
<tr>
<td>Cannon, Cherubim</td>
<td>230</td>
</tr>
<tr>
<td>Canzone, Janna</td>
<td>439, 567</td>
</tr>
<tr>
<td>Cape, Elizabeth</td>
<td>181, 345</td>
</tr>
<tr>
<td>Cape, Liz</td>
<td>207</td>
</tr>
<tr>
<td>Capraro, Karen</td>
<td>599</td>
</tr>
<tr>
<td>Carlson, Raphael</td>
<td>479</td>
</tr>
<tr>
<td>Carlyle, Ann</td>
<td>498</td>
</tr>
<tr>
<td>Carranza, Richard</td>
<td>317</td>
</tr>
<tr>
<td>Carranza, Shelley</td>
<td>390, 551</td>
</tr>
<tr>
<td>Carroll, Cathy</td>
<td>119</td>
</tr>
<tr>
<td>Carter, Kathleen</td>
<td>297</td>
</tr>
<tr>
<td>Carter, Vicki</td>
<td>125.1, 205</td>
</tr>
<tr>
<td>Casey, Ruth</td>
<td>437</td>
</tr>
<tr>
<td>Casey, Ryan</td>
<td>544</td>
</tr>
<tr>
<td>Casio America</td>
<td>134.5</td>
</tr>
<tr>
<td>Cavanagh, Mary</td>
<td>91</td>
</tr>
<tr>
<td>Cevallos, Lynn</td>
<td>455</td>
</tr>
<tr>
<td>Cevallos, Pedro</td>
<td>455</td>
</tr>
<tr>
<td>Champagne, Zachary</td>
<td></td>
</tr>
<tr>
<td>Charles-Ogan, Gladys</td>
<td>581</td>
</tr>
<tr>
<td>Chelst, Kenneth</td>
<td>159, 266</td>
</tr>
<tr>
<td>Child, Barbara</td>
<td>69</td>
</tr>
<tr>
<td>Chisholm, Barbara</td>
<td>44</td>
</tr>
<tr>
<td>Cho, Hoyun</td>
<td>360</td>
</tr>
<tr>
<td>Choinis, John</td>
<td>468</td>
</tr>
<tr>
<td>Chokshi-Pox, Shephali</td>
<td>328</td>
</tr>
<tr>
<td>Christensen, Jennifer</td>
<td>212</td>
</tr>
<tr>
<td>Chval, Kathryn</td>
<td>532</td>
</tr>
<tr>
<td>Civil, Marta</td>
<td>400</td>
</tr>
<tr>
<td>Clark, Lawrence</td>
<td>133</td>
</tr>
<tr>
<td>Clarke, Barbara</td>
<td>172</td>
</tr>
<tr>
<td>Clarke, Doug</td>
<td>172</td>
</tr>
<tr>
<td>Clemens, Douglas</td>
<td>283</td>
</tr>
<tr>
<td>Cleveland, Leandra</td>
<td>530</td>
</tr>
<tr>
<td>Cliche, Cindy</td>
<td>482</td>
</tr>
<tr>
<td>Coffey, David</td>
<td>568</td>
</tr>
<tr>
<td>Coffey, Kathryn</td>
<td>568</td>
</tr>
<tr>
<td>Coffey, Margaret</td>
<td>357</td>
</tr>
<tr>
<td>Cole, Shelbi</td>
<td>138, 228, 389</td>
</tr>
<tr>
<td>Collins, Anne</td>
<td>509</td>
</tr>
<tr>
<td>Colum, Karen</td>
<td>349</td>
</tr>
<tr>
<td>Colwell, Brenda</td>
<td>495</td>
</tr>
<tr>
<td>Combs, Emily</td>
<td>72</td>
</tr>
<tr>
<td>Conroy, Connie</td>
<td>297</td>
</tr>
<tr>
<td>Coombs, James</td>
<td>150, 282</td>
</tr>
<tr>
<td>Cooper, Sandi</td>
<td>155</td>
</tr>
<tr>
<td>Cooperman, Neil</td>
<td>111</td>
</tr>
<tr>
<td>Cooperman, Stephanie</td>
<td>111</td>
</tr>
<tr>
<td>Corrigan, Aimee</td>
<td>384</td>
</tr>
<tr>
<td>Cox, Dana</td>
<td>42, 493</td>
</tr>
<tr>
<td>CPM Educational Program</td>
<td></td>
</tr>
<tr>
<td>Dacca, Michael</td>
<td>28, 65, 117</td>
</tr>
<tr>
<td>Crocked, Deborah</td>
<td>475, 566</td>
</tr>
<tr>
<td>Crosby, Kimberly</td>
<td>437.1</td>
</tr>
<tr>
<td>Cugini, Stephanie</td>
<td>268</td>
</tr>
<tr>
<td>Cullen, Craig</td>
<td>536</td>
</tr>
<tr>
<td>Cuoco, Al</td>
<td>592</td>
</tr>
<tr>
<td>Curriculum Associates</td>
<td>34.5, 85.7, 511.3</td>
</tr>
<tr>
<td>Cutler, Sara</td>
<td>415</td>
</tr>
<tr>
<td>Cyr, Eileen</td>
<td>342</td>
</tr>
<tr>
<td>Dacey, Linda</td>
<td>483</td>
</tr>
<tr>
<td>Dahlquist, Kristine</td>
<td>461</td>
</tr>
<tr>
<td>Daig, Michael</td>
<td>28, 117</td>
</tr>
<tr>
<td>Damase, Jane</td>
<td>184</td>
</tr>
<tr>
<td>Daml, Michelle</td>
<td>221</td>
</tr>
<tr>
<td>Daniels, Teena</td>
<td>22</td>
</tr>
<tr>
<td>Danielson, Christopher</td>
<td>518</td>
</tr>
<tr>
<td>Davis, Jennifer</td>
<td>452</td>
</tr>
<tr>
<td>Davis, Ronda</td>
<td>227</td>
</tr>
<tr>
<td>Davis, Stephen</td>
<td>125.1, 205</td>
</tr>
<tr>
<td>Day, Roger</td>
<td>357</td>
</tr>
<tr>
<td>de la Cruz, Juan</td>
<td>449</td>
</tr>
<tr>
<td>DeCarli, Elizabeth</td>
<td>307</td>
</tr>
<tr>
<td>Descovsky, Fred</td>
<td>343</td>
</tr>
<tr>
<td>DeLeeuw, Sarah</td>
<td>194, 336</td>
</tr>
<tr>
<td>Deleeuw, William</td>
<td>596</td>
</tr>
<tr>
<td>Delong, Adrienne</td>
<td>219</td>
</tr>
<tr>
<td>DenBesten, Wendy</td>
<td>20, 273</td>
</tr>
<tr>
<td>Dent, Ryan</td>
<td>430</td>
</tr>
<tr>
<td>DePaul, Debi</td>
<td>135</td>
</tr>
<tr>
<td>DeRose, Tony</td>
<td>280</td>
</tr>
<tr>
<td>Desoe, Carol</td>
<td>570</td>
</tr>
<tr>
<td>DeVaul, Lina</td>
<td>202, 337</td>
</tr>
<tr>
<td>Di Domenico, Jeanne</td>
<td>182</td>
</tr>
<tr>
<td>Diamantis, Maria</td>
<td>277</td>
</tr>
<tr>
<td>Dick, Thomas</td>
<td>16</td>
</tr>
<tr>
<td>Dickenson, Patricia</td>
<td>132</td>
</tr>
<tr>
<td>Dillard, Kathryn</td>
<td>496</td>
</tr>
<tr>
<td>Dillon, Fred</td>
<td>379, 503</td>
</tr>
<tr>
<td>Dinah.com</td>
<td>511.2</td>
</tr>
<tr>
<td>Dingman, Shannon</td>
<td>552</td>
</tr>
</tbody>
</table>
### Speaker Index

- **Discovery Education**
  - 34.8, 216.7, 266.6, 292.7, 339.7, 385.7, 511.5
- **Dixon, Juli**
  - 191, 406, 501
- **Dobson, Cred**
  - 173
- **Dolphin, Sue**
  - 559
- **Donaldson, Brianna**
  - 234
- **Donaldson, Catherine**
  - 53
- **Dougherty, Barbara**
  - 46, 387
- **Douglas, Lew**
  - 574
- **Drake, Corey**
  - 174, 357.1
- **Drake, Jill**
  - 440
- **DreamBox Learning**
  - 419.3
- **Duncan, Jamie**
  - 430
- **Duncan, Matthew**
  - 193
- **Dupree, Lakesia**
  - 382
- **Dykema, Kevin**
  - 144

**E**

- **Eddings, Aminah**
  - 549
- **Edelman, Jennifer**
  - 190
- **Edwards, Ann**
  - 378, 489
- **Edwards, Carol**
  - 124
- **Edwards, Michelle**
  - 537
- **Edwards, Thomas**
  - 159, 266

**F**

- **Fager, Alicia**
  - 228
- **Feldman, Ziv**
  - 10
- **Feldstein, Shelah**
  - 420
- **Felling, Jane**
  - 49, 218
- **Fennell, Francis (Skip)**
  - 326, 594
- **Fenton, Michael**
  - 410
- **Ferguson, Brent**
  - 140, 254, 365
- **Fetter, Annie**
  - 320, 447
- **Finkelstein, Neal**
  - 147
- **Fisher, Allyn**
  - 314
- **Fisher, Josh**
  - 478
- **Fletcher, Graham**
  - 226, 399
- **Flores, Tia**
  - 383
- **Flynn, Michael**
  - 408
- **Foote, Karen**
  - 474
- **Foote, Mary**
  - 174, 476
- **Forbringer, Linda**
  - 176
- **Forsten, Charlie**
  - 589
- **Fossom, Astrid**
  - 231
- **Foster, David**
  - 584
- **Foti, Steve**
  - 278
- **Fox, Sidney**
  - 485
- **Foy, Noirin**
  - 390, 551
- **Frandsen, Eric**
  - 165
- **Frank, Shana**
  - 574
- **Freier, Sari**
  - 179.1
- **Fricchione, Cheryl**
  - 402
- **Friesema, Andrew**
  - 179.1
- **Front Row**
  - 339.5
- **Fulmore, Linda**
  - 258
- **Fulton, Brad**
  - 394
- **Fulton, Elizabeth**
  - 300
- **Funk, Martin**
  - 64
- **Funkhouser, Charles**
  - 123
- **Fuson, Karen**
  - 59, 283

**G**

- **Gael, Andrew**
  - 31
- **Galasso, Sarah**
  - 439, 567
- **Gale, Mardi**
  - 141
- **Gallagher, Debra**
  - 260
- **Galson, Scott**
  - 325
- **Gamino, Elizabeth**
  - 534
- **Gann, Cheryl**
  - 8
- **Garcia, Nicole**
  - 250, 310
- **Garfunkel, Solomon**
  - 106
- **Garreau, Marc**
  - 55
- **Gattis, Kim**
  - 24
- **Gault, Rebecca**
  - 406
- **Gavin, Katherine**
  - 426
- **Gay, Susan**
  - 513
- **Gayman, Anne**
  - 556
- **Gehr, Jessica**
  - 304
- **George, Nchelem**
  - 581
- **Georgiou, Ariadne**
  - 77
- **Germain-McCarthy, Evelyne**
  - 121
- **Gerver, Robert**
  - 148

---

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Gibbs, Krysta ........ 311, 376
Gibson, Taylor ........ 40
Giera, Joseph ........ 262
Gilbert, Michael ........ 292
Gillert-Koyen, Linda .... 331
Ginsburg, David ........ 146
Girard, Nina ........ 521
Glasis, Kari ........ 199
Glendening, Jennifer .... 210
Glenn, Michele ........ 267
Godbold, Landy ........ 403
Godfrey, Angie ........ 183, 428
Godwin, Linda ..... 166, 192, 351
Goodner, Pam ........ 82
Goodson-Espy, Tracy .... 70
Gordon, Norma .... 136
Gough, Jill ........ 480
Gould, Kelly ........ 561
Gray, Kristin ........ 456
Greene, Carol ........ 91
Greenstein, Marni .... 231
Griffin, Mel ........ 41, 296
Griffin, Melinda .... 290
Grims, Matthew .... 417
Guariro, Jody ........ 550
Gundogdu, Megan ....... 7
Guy, Rodger ........ 572
Gutiérrez, Rochelle .... 85.1
Guzi, Parkinson, Amy .... 321

Habecker, Duane .... 23
Haga, Stephanie .... 469
Hair, Carrie ........ 164
Hakanson, Susie .... 257
Hallman-Thrasher, Allyson ..

Hamada, Lori ........ 533
Hammett, David .... 525
Hansen, Pia .......... 212
Harbaugh, Adam .... 89
Harbin Miles, Ruth .... 351
Harbour, Kristin .... 354
Harkness, Shelly .... 522
Harper, Hill .......... 601
Harper, Suzanne .... 42
Harrell, Marvin .... 344
Hartland, Kristin .... 193
Hassan, Stafanie ........ 149, 434, 528
Haun, Melissa .... 427
Hayes, Heidi ........ 92
Hearn, Meghan ...... 104
Hedrick, Ben ........ 125.1, 205
Heffy, Lukas .... 456
Heid, M. Kathleen .... 12
Henderson, DeeDee .... 87
Hendrickson, Jen .... 516
Herbel-Eisenmann, Beth .. 13
Herley, Lindsey ........ 575
Hernek, Amy .......... 237
Hernandez, Maria ..., 40, 409
Hickey, Danette .... 493
Hickman, Judy ........... 138, 389
Hickman, Micah ... 511
Hicks, Judith ........... 184
Hicks, TaeKeel ...... 169
Hildebrand, Susan .... 303
Hill, Douglas ........ 460
Hill, Tiffany .......... 344.5, 587
Hillen, Amy ........ 10, 180, 327
Hiltibid, Jessica .... 56
Hilly, Kristy ........... 125
Hinton, Jujuana .... 110
Hinz, Allison ........ 152
Hirsch, Christian .... 106
Hodge, Angie ........ 247
Hofacker, Erick .... 404
Holdren-Kong, Ann ... 276, 336
Holt, Sheila ........... 240
Horgan, Connie .... 281.4, 423
Horn, Ilana ........ 416
Hosten, Melissa ... 578
Houghton Mifflin Harcourt .. 85.3, 168.1, 216.2, 339.2, 419.2, 465.2
Howse, Mark .... 481
Howse, Tashana .... 481
HP Inc. ........ 34.6, 292.1
Hu, Tina Weiting .... 370
Huberty, Patti ........ 276
Hudson, Rich ........ 305
Hughes, Elizabeth .... 465
Hui, Corrina ........ 569
Huinker, DeAnn .... 5, 327
Hull Barnes, Lizzy .... 317
Hunowice, Laura .... 114
Hurt, Jessica ........ 334
Hurtado, Carolle .... 76
Hyde, Karajean .... 439.1, 567
Hyers, Karen ........ 19
Hyman, Ben ........... 197

Isaacs, Andy ........ 487
It’s About Time 292.6
Iverson, Tonjuna .... 549
IXL Learning ........ 419.1

Jackson, Chrisa .... 85
Jackson, William .... 464, 542
Jacobbe, Elizabeth .... 526
Jacobbe, Tim ........ 278, 526
Jemison, TJ .......... 137
Jenkins, Christine .... 451
Jensen, Susan ........ 189, 267
Jilk, Lisa M. .......... 120
Jmouko, Galina .... 388, 572
Johnson, Amy ........ 492
Johnson, Donna ... 230
Johnson, Jesse .... 102
Johnson, Kendra .... 297
Johnson, Nanette .... 519
Johnson, Nick .... 563
Johnson, Raymond .... 229
Johnston, Elisabeth .... 145
Jolly, Eric ........... 12
Jones, Tammy ........ 347
Jorgensen, Dale .... 321
Kaplinsky, Robert .... 363
Kapulka, David .... 249
Karaman, Ruveyda .... 596
Karnani, Monisha .... 56
Karp, Karen .......... 30, 387
Kasmer, Lisa .... 552
Katt, Susie .......... 286
Kazemi, Elham .... 152
Keleher, Lori .... 306
Kelemanik, Grace .... 414
Kelley, Jaly .... 69
Kendall Hunt Publishing ... 216.5, 266.4
Kepner, Henry .... 239
Kerins, Bowen .... 525, 592
Kersaint, Gladis .... 62
Khalas, Arjan .... 399
Killion, Kurt .... 89
Klits, Laurie .... 163
Kimani, Patrick .... 573
Kimmans, Dovie .... 482
King, Sherry .... 583
Kinzer, Cathy .... 532
Kitchen, Richard .... 524
Klander, David ...... 536
Klass, Steve .... 398
Klein, Ray ........ 171
Klooster, Peter .... 65, 590
Knighten, Larenza .... 564
Knoell, Donna .... 576
Knott, Libby .... 590
Kobert, Beth .... 539, 594
Kohn, Heath .... 470
Kosheleva, Olga .... 214, 443
Kosik, Jennifer .... 25, 512
Kyo Pitch Publishing ... 511.4
Kraal, Geoff .... 368
Kramer, Gene .... 255
Kriegler, Shelley .... 54
Krownapple, Kelly .... 60
Kuehl, Barbara .... 38

Kys, Judith .... 488

L
La Ferla, Vivian .... 94
Laby, Erik ........ 517
Lam, Juwen ........ 200
Lamber, Teruni .... 259, 597
Lambert, Rachel ...... 31
Lancaster, Ron .... 127, 357
Land, Tonia .... 357.1
Landers, Mara .... 14, 242, 489
Lan, Matt .... 139
Langdon, Sandra .... 579
Larkin, Kevin .... 219
Larson, Matthew .... 438
Laughlin, Connie .... 262, 311, 376
Lawrence, Gary .... 360
LearnBop .... 385.2
Learning Upgrade .... 216.6, 465.7
Leatham, Keith .... 21, 118
Lee, Susan .......... 238
Leer, Mary .......... 542
Lehman, Liz .... 182
Leib, David .... 185
Leimberer, Jennifer .... 181, 345
Leinwand, Steven .... 323
Lenges, Anita .... 152
Leslie, Deborah .... 182
Levine-Wissing, Robin .... 236
Levenson, Toby .... 336
Levy, Rachel .... 251
Lewis, Rebecca .... 396
Libbenton, Jason .... 428
Libeskind, Shlomo .... 312
Lindsey, Shelly .... 58
Lischka, Alyson .... 126
Liu, Celine .... 200, 265
Liu, Yue Mei .... 50
Livers, Stefanie .... 579
Lo, Hsueh .... 462
Lochel, Robert .... 471
Lockett, Dawn .... 202, 557
Long, Betty .... 475, 566
Long, Chonda .... 466
Long, Mike .... 473
Lopez, Jacqueline .... 183.1
Lor, Sarah .... 415
LoveMath by GPA Learn .... 168.3
Luberoz, Eli .... 352, 458
Luebeck, Jennifer .... 300
Lynch, Jayne .... 483
Lynch, Jeremy .... 598
Lynch, Monique .... 41, 296
Lynch, Saroese .... 598
Lynch-Arroyo, Ruby .... 443

April 13–16, 2016 | San Francisco, CA 201
<table>
<thead>
<tr>
<th>Speaker Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>Mack, Nancy</td>
</tr>
<tr>
<td>Madura, Kate</td>
</tr>
<tr>
<td>Magnier, Jodelle</td>
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<tr>
<td>Mahoney, Kevin</td>
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<tr>
<td>Maiorca, Catherine</td>
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<tr>
<td>Mangahigh</td>
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<tr>
<td>Manganello, Michael</td>
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<tr>
<td>Mangus, Kristen</td>
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<tr>
<td>Marano, McDendy</td>
</tr>
<tr>
<td>Marchant, Diana</td>
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<tr>
<td>Marchy, Jennifer</td>
</tr>
<tr>
<td>Marks, Krista</td>
</tr>
<tr>
<td>Markworth, Kim</td>
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<tr>
<td>Marshall Cavendish</td>
</tr>
<tr>
<td>Martin, Andres</td>
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<tr>
<td>Martin, W. Gary</td>
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<tr>
<td>Martinez-Cruz, Armando</td>
</tr>
<tr>
<td>Martinie, Sherry</td>
</tr>
<tr>
<td>Mason, Marguerite</td>
</tr>
<tr>
<td>Masunaga, David</td>
</tr>
<tr>
<td>Mason, Marguerite</td>
</tr>
<tr>
<td>Martinie, Sherri</td>
</tr>
<tr>
<td>Mathspace</td>
</tr>
<tr>
<td>Math Learning Center</td>
</tr>
<tr>
<td>Math Teachers Press</td>
</tr>
<tr>
<td>Mathspace</td>
</tr>
<tr>
<td>Matsumoto, Carol</td>
</tr>
<tr>
<td>Maxcy, Rebecca</td>
</tr>
<tr>
<td>Mayer, Erin</td>
</tr>
<tr>
<td>McAdam, John</td>
</tr>
<tr>
<td>McCallum, William</td>
</tr>
<tr>
<td>McCool, Jenni</td>
</tr>
<tr>
<td>McCoy, Ann</td>
</tr>
<tr>
<td>McCoy, Rachel</td>
</tr>
<tr>
<td>McGatha, Maggie</td>
</tr>
<tr>
<td>McGowan, William</td>
</tr>
<tr>
<td>Mcgraw-Hill Education</td>
</tr>
<tr>
<td>McIntyre, Keysa</td>
</tr>
<tr>
<td>McLeod, Matt</td>
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<tr>
<td>McMillan, Brandon</td>
</tr>
<tr>
<td>McMillen, Sue</td>
</tr>
<tr>
<td>McNamara, Julie</td>
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<tr>
<td>McQueen, Amy</td>
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<tr>
<td>Mechenbier, Judith</td>
</tr>
<tr>
<td>Mello, Alison</td>
</tr>
<tr>
<td>Menthuhotep, Efa</td>
</tr>
<tr>
<td>Merrill, Jason</td>
</tr>
<tr>
<td>Merrill, Lindsay</td>
</tr>
<tr>
<td>Merrill, Maria</td>
</tr>
<tr>
<td>Metz, Mary Lou</td>
</tr>
<tr>
<td>Metzner, Kyle</td>
</tr>
<tr>
<td>Meyer, Dan</td>
</tr>
<tr>
<td>Meyer, Lisa</td>
</tr>
<tr>
<td>Mikles, Christine</td>
</tr>
<tr>
<td>Miles, Victoria</td>
</tr>
<tr>
<td>Lynch-Davis, Kathleen</td>
</tr>
<tr>
<td></td>
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<tr>
<td>N</td>
</tr>
<tr>
<td>Naizer, Gilbert</td>
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<tr>
<td>Nalu, Nicolette</td>
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<tr>
<td>Nance, Becky</td>
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<tr>
<td>Naresh, Nirma</td>
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<tr>
<td>Nasco, Andrew</td>
</tr>
<tr>
<td>Nataro, S. Leigh</td>
</tr>
<tr>
<td>National Geographic Learning</td>
</tr>
<tr>
<td>Cengage Learning</td>
</tr>
<tr>
<td>Nebesniak, Amy</td>
</tr>
<tr>
<td>Nelson, Algrenon</td>
</tr>
<tr>
<td>Neschke, Robin</td>
</tr>
<tr>
<td>Nielsen, Kelli</td>
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<tr>
<td>Niemiera, Sandy</td>
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<tr>
<td>Nolan, Edward</td>
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<tr>
<td>Nonis, Michelle</td>
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<tr>
<td>Norris, Kit</td>
</tr>
<tr>
<td>Nosalik, Peter</td>
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<tr>
<td>Novak, Andrew</td>
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<tr>
<td>Novak, Elizabeth</td>
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<tr>
<td>Novak, Jenny</td>
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<tr>
<td>Novakovski, Janice</td>
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<tr>
<td>Nutakki, Nirmala</td>
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<tr>
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<tr>
<td>Oien, Janet</td>
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<td>Oliver, Carl</td>
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<td>Omohundro Wedekind, Kassia</td>
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<tr>
<td>O’Neill, Michaela</td>
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<tr>
<td>Ortega, Courtney</td>
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<td>Ortiz, Enrique</td>
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<td>Oron, Chase</td>
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<tr>
<td>Osterbuhr, Toni</td>
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<tr>
<td>Osters, Jonathan</td>
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<td>Oso, Selena</td>
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<td>Ortiz, Jennifer</td>
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<tr>
<td>Overmyer, Jerry</td>
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<td>Orgun-Koca, S. Asli</td>
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<td>Pahler, Laura</td>
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<td>Pak, Melody</td>
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<td>Palmer, Pam</td>
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<td>Pantozzi, Ralph</td>
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<td>Parker, Terri</td>
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<td>Parrish, Sherry</td>
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<td>Parslow, Deborah</td>
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<td>Pass, Karen</td>
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<td>Patterson, Margaret</td>
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<td>Pauley, Gayle</td>
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<td>Paulson, Nancy</td>
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<td>Pearson</td>
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<tr>
<td>168.5, 216.4, 266.2, 292.4, 339.3, 385.3, 419.5, 465.4</td>
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<tr>
<td>Peck, Frederick</td>
</tr>
<tr>
<td>Peck, Roxy</td>
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<td>Pendergrass, Amanda</td>
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<td>Pensack, Dawn</td>
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<td>Pfahl, Miles</td>
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<td>Peel, Jessica</td>
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<td>Philipp, Randolph</td>
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<td>Picciotto, Henri</td>
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<td>Pickford, Avery</td>
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<td>Pierson, Caryl</td>
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<td>Pilgrim, Mary</td>
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<td>Placa, Nicora</td>
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<td>Price, Jack</td>
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<td>Price, Lori</td>
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<td>Ragan, Gay</td>
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<td>Ray-Rick, Max</td>
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<td>Reames, Matthew</td>
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<td>Redmond, Tom</td>
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<td>Recinos, Karen</td>
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<td>Reckase, Mark</td>
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<td>Reeder, Stacy</td>
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<td>Reiners, Mike</td>
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<td>Reynolds, Jean</td>
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<td>Rogers, Rachelle</td>
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<tr>
<td>Roscoe, Matt</td>
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<td>Rose, Suzanne</td>
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<td>Roth Mcduffie, Amy</td>
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<td>Roux, Sherron</td>
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<td>Roy, George</td>
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<td>Ruiz, Angel</td>
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<td>Rule, Lynn</td>
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<td>Rupnow, Theodore</td>
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<td>Russell, Susan Jo</td>
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<td>Ruttle, Martha</td>
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<td>Ryan, Jim</td>
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<td>Ryan, Joanne</td>
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<td>Safak, Elif</td>
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<td>Sali, Farshid</td>
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<td>Saldhia, Luis</td>
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<td>Salls, Jenny</td>
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<tr>
<td>Samples, Brandon</td>
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<tr>
<td>Samuel, Alexa</td>
</tr>
<tr>
<td>Sanchez, Jafeth</td>
</tr>
</tbody>
</table>
Sanchez, Wendy .... 126, 210
Santaroni, Doris .... 186
Sara, Julie .... 283
Sawyer, Lindsey .... 346
Scarbrough, Kim .... 318
Schackow, Joy .... 268
Schefelker, Beth .... 262
Sch, Daniel .... 308
Schiertino, Carmel .... 95
Shiffer, Deborah .... 437.2
Schnell, Kemble .... 150, 282
Schoen, Robert .... 339
Scholastic .... 134.3, 419.4
Schrock, Connie .... 266.1
Schuhl, Sarah .... 243
Schwartz, David .... 43
Schichilone, Joe .... 419
Scott, Kwame Anthony .... 395
Seary, Mary .... 130
Seda, Pamela .... 263
Seeley, Cathy .... 74
Seidler, Paul .... 516
Selling, Sarah .... 250, 433
Sencibaugh, Angela .... 413
Sencibaugh, Joseph .... 97
Serra, Michael .... 262
Serros, Sherrie .... 404
Sessler, John .... 397
Sgroi, Richard .... 335
ShadowCon .... 511.7
Shahriari, Razieh .... 547
Sharlow, Lynette .... 177
Sharon, Valerie .... 299
Shaughnessy, J. Michael .... 541
Shaughnessy, Meghan .... 250, 433
Shay, Brian .... 381
Sheffield, Linda .... 426
Shelton, Ryan .... 367
Shih, Jeffrey .... 192
Shippee, Eric .... 577
Shiver, Janet .... 350, 538
Short, James .... 293
Shultz, Stephanie .... 222
Shumway, Jessica .... 69
Siegfried, John Zig .... 18
Siegrist, Raymond .... 432
Silbey, Robyn .... 241
Silva, Erika .... 149
Silva, Jennifer .... 293
Silver, Edward .... 63
Simpson, Jeanne .... 282.1
Singer, Miriam .... 95
Sjostrom, Mary Par .... 435
Slate Young, Eric .... 240
Slobbe, Jason .... 467
Small, Marian .... 154.1
Smith, Margaret .... 270, 504
Smith, Nancy .... 344, 587
Smith, Steven .... 59
Smith, Wendy M .... 555
Solano-Campos, Ana .... 292
Soo, Vei Li .... 279
Soto, Roberto .... 425
Spangler, Denise .... 248
Stadel, Andrew .... 45
Stafford, William .... 112
Stairs, Jennifer .... 104
Staley, John .... 285
Staples, Megan .... 583
Starnes, Daren .... 116, 204
Starmore, Elizabeth .... 233
Steele, Michael .... 504
Steele, Mike .... 232
Steinberg, Joan .... 80
Steckett, Scott .... 308
Stephens-French, Patricia .... 37
Stevens, John .... 329
Stevens, Joni .... 590
Stevens, Sarah .... 256
Stockero, Shari .... 118
Stohlmann, Michal .... 337, 497
Strange, Kathleen .... 66
Strickland, Carla .... 53
Strickland, Janet .... 440
Strom, April .... 34.1, 295
Strutchens, Marilyn .... 453
Stuckey, Ginny .... 33
Stumpf, Donna .... 253
Sturgill, Derek .... 533
Su, Francis .... 167
Subramanian, Umamaheswari .... 315
Sun, Kathy .... 431
Surti, Mishaal .... 178
Susi, Laurie .... 47
Swarzwout, Mary .... 299
Sweeney, Molly .... 357.1
Szamosfalvi, Bence .... 103
Szoke, Noam .... 84
Tabor, Josh .... 116, 204
Talley, Erin .... 210
Tanner, Jane .... 385
Tanton, James .... 234
Tapp, Laura .... 406
Tate, Jessika .... 242
Tate, William .... 364
Tarto, Maria Teresa .... 555
Taylor, Cynthia .... 85, 366
Taylor, Matthew .... 180
Tazaz, Amanda .... 339, 369
Teacher Created Materials .... 34.7, 168.6, 266.5
Teague, Daniel .... 156
Tellish, Joan .... 104
TenMarks .... 292.5
Teserzi, Ruth .... 477
Teuscher, Dawn .... 552
Texas, Leslie .... 347
Texas Instruments .... 85.2, 216.1, 419.6, 465.1
Thomas, Christine .... 143, 315
Thomas, Ryan .... 547
Thomas, Valerie .... 209
Thompson, Angela .... 316
Thompson, Beth .... 112
Thompson, Debbie .... 177, 484
Thronsden, Jennifer .... 37, 362
Tobias, Jennifer .... 61, 168
Togliatti, Karen .... 575
Tondovule, Christina .... 107
Tony, Richard .... 29
Torres, Ana .... 120
Torres, Angela .... 84
Torres-Ardila, Fabian .... 292
Town, James .... 200
Trakas, Denise .... 223
Tran, Liem .... 450
Treisman, Philip Uri .... 143, 288
Troutman, Susan .... 294
Turner, Erin .... 174
Turner, Peter .... 106
Turrou, Angela Chan .... 563
U
Usiskin, Zalman .... 109
Urley, Juliana .... 151
V
Van Ingen, Sarah .... 382
Van Zoest, Laura .... 118
VanGelder, Saffron .... 238, 380
Vanwinkle, Michelle .... 465
Vaughn, Amy .... 556
Viera, Julian .... 214, 443
Vierka, Vicki .... 293, 396
Von Bergen, Julie .... 489
W
Wager, Anita .... 476
Walker, Erica .... 131
Walsh, Melissa .... 173
Ward, Elizabeth .... 145
Wares, Arsalan .... 235
Webb, David .... 229
Webster, Kristen .... 455
Wedow, Mary .... 490
Wees, David .... 517
Welder, Rachael .... 10
Werner, Judy .... 442
Wessman-Enzinger, Nicole .... 168, 211
Wiest, Lynda .... 244, 383
Wilcox, Luke .... 220
Wiley, Bethann .... 472
Wilhelm, Kyle .... 58
Willkerson, Trena .... 367
Willard, Teri .... 350, 538
Williams, Catherine .... 77
Williams, Cathy .... 106.1
Willingham, James .... 193
Willis, Amber .... 310
Wilson, Dee Ann .... 529
Wilson, Jennifer .... 480
Wilson, Kathleen .... 287
Wingard, Clifton .... 511
Winters, Jeremy .... 482
Wohlhuter, Kay .... 562
Wojciksz, Judith .... 346
Wolbert, Roger .... 162
Wong, Son-Hui (Sonny) .... 44
Wood, Marcy .... 158
Woodward, Jerry .... 108
Wootton, Karen .... 187
Worley, Christina .... 371
Worthington, Michelle .... 553
Wray, Jon .... 291, 326, 594
Wurtzig, Samantha .... 221
Wyberg, Terry .... 153, 284
Y
Yates, Sheila .... 281, 423
Yeh, Cathery .... 550
Yesbeck, Diane .... 6
Yoshida, Makoto .... 464, 542
You CAN Do the Rubik's Cube .... 292.2
Z
Zager, Tracy .... 520
Zbiek, Rose .... 106
Ziegler, Jeff .... 51
Zimba, Jason .... 558
### Program Advertisers (in alphabetical order)

- 3P Learning ........................................ Tab/Wednesday
- Bach Company .................................. 147
- Bedtime Math ..................................... Tab/General Information
- Big Ideas Learning .......................... Tab/Wednesday
- Carson-Dellosa Publishing .............. 156
- Casio, Inc .................................. Inside Front Cover
- Center for Mathematics and Teaching ................... 119
- Corwin .................................. Tab/General Information
- CPM Educational Program .................. 84
- Curriculum Associates ..................... Tab/Wednesday
- Discovery Education ......................... Tab/Wednesday
- Exemplars ............................................ 13
- Heinemann .................................. Tab/Friday, Outside Back Cover
- Houghton Mifflin Harcourt ................. Tab/Friday
- Learning Upgrade ......................... 164
- LearnZillion ........................................ 16
- Math Learning Center ...................... 27
- Math Solutions, a division of Scholastic Inc .......................... Tab/Thursday
- Matholia - Blue Ring Education .......... 47
- McGraw-Hill Education ..................... Inside Back Cover
- Mu Alpha Theta .................................. 75
- Nasco ............................................. 70
- ORIGO Education Inc .................... Coupon 213
- Redbird Advanced Learning .................. 117
- Stenhouse Publishers .................... Tab/Thursday
- Suntex International/First in Math .......... 37
- Teacher Created Materials ................ 87
- World Scientific Publishing ............. 94
- Zearn ........................................... 24

### NCTM Advertising

#### CONFERENCES
- NCTM 2017 Annual Meeting & Exposition ....... 32, 112
- NCTM 2016 Regional Conferences & Exposition........... 159
- NCTM 2016 Innov8 Conference .................. Tab/Saturday

#### MEMBERSHIP
- Classroom Resources ...................... Tab/Saturday
- Mathematics Education Trust (MET) ........ 149
- Membership Benefits ....................... 6
- NCTM Central .................................... 97, 152

#### PROFESSIONAL DEVELOPMENT
- NCTM Interactive Institute- K-8 .............. 57
- NCTM Interactive Institute- PK-5 ............. 131
- NCTM Interactive Institute- 9-12 ............ 140
- NCTM Interactive Institute- 6-8 ............. 185

#### PUBLICATIONS
- New Books .......................................... 8
- Principles to Actions ...................... 160
- Featured Books ......................... 162

#### SUBMISSIONS
- Journal Editorial Sessions .......... 105
- Call for Speakers .................. 200

### Coupon Advertisers (in alphabetical order)

- Borenson & Associates ................. Coupon 205
- Carson-Dellosa Publishing .......... Coupon 205
- Casio, Inc ........................................ 205
- Common Sense Education ............... Coupon 207
- Didax ............................................ Coupon 209
- Drexel University ......................... Coupon 209
- ETA hand2mind ................................ Coupon 209
- Exemplars ........................................ 211
- LoveMath™ by GPA Learn .............. Coupon 211
- HP Inc ........................................... Coupon 211
- Lakeshore Learning Materials .......... Coupon 213
- Math Unity .................................... Coupon 213
- ORIGO Education Inc ................ Coupon 213
- Perfection Learning .................... Coupon 215
- Staff Development for Educators/Crystal Spring Book .......... Coupon 215
- Stokes Publishing Company ............... Coupon 215
- The Actuarial Foundation ............ Coupon 217
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Would you be willing to volunteer/test your TI skills?

Event Name: _______________________________

Type:  ☐ Consumer  ☐ Educator

Name: ________________________________  Title: ________________________________

School Name: _____________________________________________________________

City: ____________________________  State: _________  Zip: ______________________

Email: ________________________  Phone: (____) __________

Grade Level Taught:  ☐ K-5  ☐ 6  ☐ 7  ☐ 8  ☐ 9  ☐ 10  ☐ 11  ☐ 12

☐ College/University  ☐ AP/IB  ☐ Other

Does your class/school use calculators?  ☐ Y  or  ☐ N

Who determines the model calculator(s) used at your school?

☐ Superintendent/District  ☐ Principal

☐ Assistant Principal  ☐ Department Chair  ☐ Classroom Teacher

Would you like to be contacted by your Casio Representative?  ☐ Y or ☐ N

Would you be interested in receiving free calculator training?  ☐ Y  or  ☐ N

Notes: ____________________________________________________________________

____________________________________________________________________________

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Name________________________ Title________________________

School Name________________________ District________________________

Email*________________________ Phone________________________

City________________________ State________________________

*Email required. Print clearly, winner will be notified via email
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Math Topics of Interest:
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Grades:
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- □ 9–12

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