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All Annual Meeting presentations will be held at the Alamo District Council of Teachers of Mathematics.

REGISTRATION
Wednesday 8:00 a.m. – 7:00 p.m.
Thursday 7:00 a.m. – 5:00 p.m.
Friday 7:00 a.m. – 5:00 p.m.
Saturday 7:00 a.m. – Noon

EXHIBITS
Thursday 8:00 a.m. – 5:00 p.m.
Friday 8:00 a.m. – 5:00 p.m.
Saturday 8:00 a.m. – Noon

NCTM CENTRAL
Wednesday 10:00 a.m. – 7:00 p.m.
Thursday 8:00 a.m. – 5:00 p.m.
Friday 8:00 a.m. – 5:00 p.m.
Saturday 8:00 a.m. – Noon

www.nctm.org/annual2017

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Welcome to the NCTM 2017 Annual Meeting & Exposition! You’re a part of the world’s largest annual meeting for mathematics education, which brings together classroom teachers; school, district, and state mathematics education leaders; administrators; mathematics teacher educators; mathematicians; and researchers from around the world. You’ll see and hear new ideas and approaches that you can take away to do your part to provide more and better mathematics for each and every student. We hope you’ll connect with friends and colleagues—both new and familiar—to share ideas and information. The variety of our sessions, workshops, bursts, and networking opportunities will spark your imagination and send you back home energized to put what you’ve learned into practice. Our goal is for you to have the best professional learning experience possible and for you to leave San Antonio with new ideas, tools, and materials to share with your students and colleagues alike.

If this is your first NCTM Annual Meeting, you’re in for a professional treat. 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 to you. Even veterans of NCTM conferences may want to attend the orientation to learn about what’s new at this year’s conference. And whether you’re a first-timer or long-timer, I want to call your attention to ShadowCon at 5:00 p.m. on Thursday, April 6. Because of its growing popularity and an overwhelming demand, over the past three years we’ve made it part of the NCTM Annual Meeting experience.

A conference this size depends on the work of hundreds of volunteers—many of them at the local level. We want to thank all of them. To support our theme of Creating Communities and Cultivating Change, the Program Committee has been working for two years to put together a diverse program with presentations covering a wide range of topics. With hundreds of sessions to choose from, note especially the focus strands and the equity strand in the program. Preservice teachers and those in their first few years in the classroom will want to check out the special New Teacher strand with sessions designed to especially support those who are early in their careers. And the conference doesn’t end when you leave. Once again this year we’re offering an extended meeting experience, so after you leave San Antonio go to NCTM.org to find out how you can get more out of the conference. While you’re here, be sure to take advantage of the Exhibit Hall, which gives you access to dozens of vendors who are willing and eager to talk to you about what they have to offer.

Finally, when the conference day is over, join your colleagues and experience one of America’s great cities, which just happens to be right in the heart of Texas. Visit the World Heritage Designation site of the San Antonio Missions. Walk to the Alamo, the Briscoe Western Art Museum, the Institute of Texan Cultures, or the San Fernando Cathedral. Steps from the convention center, the River Walk offers many options for food and fun with longtime favorites Casa Rio, La Gloria, and Rio Rio Cantina. The Texas wildflowers, in full bloom at this time, enrich a beautiful drive along the countryside on to other excursions such as to the Natural Bridge Caverns or the old John T. Floore Country Store Honky Tonk. Join the millions of other people who make San Antonio their destination for its rich culture and its love for enjoying life with family and friends.

Wherever you go and whatever you do, enjoy your time in San Antonio.
Program Information

The NCTM 2017 Annual Meeting & Exposition officially begins with the Opening Session, starting at 5:30 p.m. on Wednesday, April 5, in the Stars at Night Ballroom at the Henry B. Gonzalez Convention Center. Presentations on Thursday, Friday, and Saturday begin at 8:00 a.m. each day and are scheduled concurrently throughout the day at both the Henry B. Gonzalez Convention Center and the Grand Hyatt 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, please silence your cell phone during all presentations.

Annual Meeting Overview & Orientation

Whether you’re 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 221 (Henry B. Gonzalez Convention Center)

Thursday
Presentation #3
7:15 a.m.–7:45 a.m.
Room 221 (Henry B. Gonzalez Convention Center)

Types of Presentations

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

Sessions (60 minutes) allow speakers to convey information about multiple topics or broad ideas in lecture format. Rooms are set in either theater or classroom style.

Workshops (75 minutes) allow speakers to engage participants in an interactive environment. Rooms are set with round tables for hands-on activities.

Bursts (30 minutes) allow speakers to quickly convey information on a specific topic or idea. Rooms are set with round tables.

Exhibitor Workshops (60 minutes) are set theater style. Exhibitors showcase their products and services. Look for the symbol indicating exhibitor workshops in the program book.

Reflection Coves

Highlighted and invited speakers will be assigned coves on the second and third floors of the Henry B. Gonzalez Convention Center to continue the conversation from their sessions in an informal setting. You must be present at their sessions to receive information about the locations for these speakers. When you review presentation titles and descriptions, be on the lookout for presentations tagged REFLECTION COVE. Take this opportunity to continue the discussion with these highlighted speakers or join a K–5, 6–8, or 9–12 Math Teacher’s Circles cove.

Cove Times
9:30 a.m. – 10:30 a.m.
11:00 a.m. – 12:00 p.m.
12:30 p.m. – 1:30 p.m.
2:00 p.m. – 3:00 p.m.

Grade Bands

To help you find appropriate presentations to attend, each presentation lists the presentation’s target grade band audience:

- Pre-K–Grade 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—Issues of interest to multiple grades and audiences
- Research
FOCUS STRANDS

ACCESS AND EQUITY: TEACHING MATHEMATICS WITH AN EQUITY STANCE [A&E]

Sessions will focus on instructional practices and strategies that meet the needs of all students, including Response to Intervention (RTI)/Multi-Tiered Systems of Supports (MTSS), Universal Design for Learning (UDL), culturally responsive pedagogy (CRP), social justice, inclusion, and differentiation. Sessions may also address practices and strategies that target English language learners (ELL), students who are gifted, students with special needs, students who struggle in the regular classroom, and diverse populations such as students from various cultural, racial, and socioeconomic backgrounds.

ASSESSMENT: A TOOL FOR PURPOSEFUL PLANNING AND INSTRUCTION [ASSESS]

Proposals in this strand will provide examples of varying types of assessments that offer teachers important information in the planning of future learning experiences. Those assessments can provide evidence of proficiency, include a variety of strategies and data sources, and inform feedback for students, instructional decisions, and program improvement.

BUILDING CONCEPTUAL AND PROCEDURAL UNDERSTANDING [BUILD]

When students possess conceptual understanding of mathematical concepts, they recognize connectedness among mathematical ideas, are fluent in multiple forms of representations, and can communicate and justify the strategies they employ in problem-solving situations. Sessions in this strand will highlight mathematical ideas that enable students to choose flexibly among methods and strategies.

PROFESSIONALISM: LEARNING TOGETHER AS TEACHERS [PROF]

This strand focuses on teachers learning through collaborative networks. Sessions will showcase ways in which teachers can build these learning experiences and find opportunities to expand their network. Examples such as mentoring, lesson studies, book studies, collaborative planning, coaching, and social media represent various collaborative learning experiences, whether face-to-face or virtual.

TEACHING, LEARNING, & CURRICULUM: BEST PRACTICES FOR ENGAGING STUDENTS IN PRODUCTIVE STRUGGLE [TLC]

Sessions in this strand focus on best practices for engaging each and every student in productive struggle by highlighting students’ meaningful learning experiences that promote sense making and perseverance through challenging and engaging mathematics. Sessions include, but are not limited to, designing and implementing high cognitive demand tasks, developing learning progressions/trajectories, and leveraging student work to orchestrate productive mathematical talk (purposeful discourse).

THE “M” IN STEM/STEAM [“M”]

Presentations in this strand will highlight the mathematical focus of integrated STEM/STEAM inquiry-based instruction. Attendees will find sessions that allow participants to explore mathematics in an integrated, interactive, and hands-on way that has direct connections to the latest developments in engineering, computer science, physical science, design and aesthetics, architecture, and more.

TOOLS AND TECHNOLOGY: USING TECHNOLOGY TO EFFECTIVELY TEACH AND LEARN MATHEMATICS [TECH]

In these sessions, presenters will address the purposeful implementation of technology, using technology to help students communicate their mathematical thinking, or using technology to visualize and understand mathematical ideas. When possible, sessions should prepare teachers to successfully resolve situations when technology implementation doesn’t go as planned.

EQUITY STRAND [EQUITY]

The Equity strand features presentations given by the Benjamin Banneker Association, TODOS: Mathematics for ALL, and Women and 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. Presentations are scheduled throughout the conference.

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 [NT]

This 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 beginning their teaching careers. The strand targets early-career teachers and those working on certification; all are welcome.

Start early with the New Teacher Workshop & Kickoff (presentation #41) on Thursday at 8:00 a.m. and finish with the New Teacher Celebration (presentation #542) on Friday at 3:15 p.m. for more fun. Visit www.nctm.org/newteacher for more information.
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Booth #1024

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HIGHLIGHTS
The Research Conference is free on Wednesday to Annual Meeting registrants.
Opening Session, 2

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8:00 a.m.–7:00 p.m.

NCTM CENTRAL HOURS
10:00 a.m.–7:00 p.m.

FIRE CODES
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4:00 P.M.–4:30 P.M.

1
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

Henry B. Gonzalez Convention Center, 221

5:30 P.M.–7:00 P.M.

2
How Not to Be Wrong: The Power of Mathematical Thinking
General Interest Session

The math we learn in school can seem like a dull set of rules, laid down by the ancients and not to be questioned. In this talk, Jordan Ellenberg shows us how wrong this view is: Math touches everything we do, allowing us to see the hidden structures beneath the messy and chaotic surface of our daily lives. It’s a science of not being wrong, worked out through centuries of hard work and argument. Drawing from history as well as the latest theoretical developments, Ellenberg demonstrates that profound mathematical ideas are present whenever we reason, from the commonplace to the cosmic. He also shows how you can use this knowledge in your own life, whether you’re a business looking to discover the power of big data, a corporate audience out to improve logic and understanding within your organization, or a college crowd with an appetite for the latest research by one of America’s rising scholarly stars.

Jordan Ellenberg is a professor of mathematics at the University of Wisconsin–Madison and the author of two books: How Not to Be Wrong: The Power of Mathematical Thinking, and The Grasshopper King, which was a finalist for the New York Public Library Young Lions Fiction Award. His work has appeared in the New York Times, the Wall Street Journal, the Washington Post, Wired, The Believer, and the Boston Globe, and he is the author of the “Do the Math” column in Slate. In 2013 he was named one of the inaugural class of Fellows of the American Mathematical Society.

The 2017 NCTM Lifetime Achievement Awards will be presented to Margaret J. (Peg) Kenney, posthumously, and J. Michael Shaughnessy at the Opening Keynote.

Jordan Ellenberg
University of Wisconsin–Madison

Henry B. Gonzalez Convention Center, Stars at Night Ballroom

Join us at the Lifetime Achievement Award Celebración Reception (ticketed event) hosted by the Mathematics Education Trust (MET) on Wednesday evening after the Opening Session. Toast the 2017 awardees, enjoy light refreshments, and engage in lively conversations. Attendees will be entered in a drawing to win a bundle of MET products (valued at $195)!
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7:00 a.m.–5:00 p.m.

EXHIBIT HOURS
8:00 a.m.–5:00 p.m.

NCTM CENTRAL HOURS
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7:15 A.M.–7:45 A.M.

**3 PROF**

**Annual Meeting Overview & Orientation**

*General Interest Session*

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**Board of Directors, National Council of Teachers of Mathematics**

Reston, Virginia

*Henry B. Gonzalez Convention Center, 221*

7:30 A.M.–9:00 A.M.

**Regional Caucuses**

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 54 for the Delegate Assembly information. The Regional Caucuses information is below.

*Henry B. Gonzalez Convention Center*

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<td>Kathleen (Taffy) McAneny, West Chester University, Landenberg, Pennsylvania</td>
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<td>Southern</td>
<td>Betty B. Long, Appalachian State University, Boone, North Carolina</td>
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<td>Jeremy Zelkowski, University of Alabama, Tuscaloosa</td>
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<td>Jill Sumerlin, Tillamook School District, Tillamook, Oregon</td>
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8:00 A.M.–9:00 A.M.

5 A&E
A Brief History of Math, The Musical
General Interest Session
A stylized history of elementary mathematics (up to the beginnings of calculus) should be shared with the masses! No better way to learn about mathematical folk and ideas than in song! Unfortunately, it’s a one-man act, so the singing might leave a lot to be desired. But, if you’ve got the stomach for parodies, come join your crazy ex-math teacher!

Lee Stiff
Past President, National Council of Teachers of Mathematics, Reston, Virginia; North Carolina State University, Raleigh
Henry B. Gonzalez Convention Center, Stars at Night 2&3

6 A&E
An Innovative Online Course for Math Teachers: How to Teach ELLs
Coaches/Leaders/Teacher Educators’ Session
We introduce an innovative online course, Teaching Mathematics to English Language Learners, designed for K–12 preservice and in-service teachers. Participants explore course activities of research-based ELL strategies through case studies and practices in diverse classroom situations. We will also share the responses and impact of the course.

Ji Yeong I
Iowa State University, Ames
Ricardo Martinez
Iowa State University, Ames
Henry B. Gonzalez Convention Center, 008AB

7 TLC
Beyond Superficial: Use Rigorous Mathematics to Engage Students in Global Challenges
6–8 Session
Deeply engage students in productive struggle through rigorous math projects using the precision of mathematics to explore the ambiguities of global issues. This presentation shares an approach to CCSS-aligned math projects that incorporates team and personalized learning with performance-based learning exhibits. Sample student work and hands-on tasks are included.

Tamar Posner
@mathaction.org
MathAction, Oakland, California
Henry B. Gonzalez Convention Center, Star at Night 2&3

8 BUILD
BIG Problems Become Small Problems When Mathematical Modeling Is Used
6–8 Session
This session will engage participants in solving non-routine problems through modeling. Participants will examine the use of tape diagrams, double number lines, percent tables, and the Cartesian coordinate plane to solve ratio and proportion problems. We will also examine why unit rates and scale factors are the best ways to solve proportions.

Anne Collins
Lesley University, Cambridge, Massachusetts
Grand Hyatt San Antonio, Travis CD

Create your personal schedule using the online conference planner by visiting nctm.org/planner
Breathing Classroom Life into the Eight NCTM Teaching Practices

We can summarize the eight Mathematics Teaching Practices in *Principles to Actions* as goals, tasks, representations, discourse, questioning, fluency, struggle, and evidence. This fast-paced, example-laden presentation will provide examples by which we’ll model and discuss each of these critical research-affirmed practices.

Steven Leinwand
American Institutes for Research, Washington, D.C.
Henry B. Gonzalez Convention Center, Lila Cockrell Theatre

Classroom Dessert: Putting Assessment into Students’ Hands

A fine meal is topped off by a carefully crafted dessert; in the classroom, it’s called “assessment,” and it often lacks flavor. The authors of *The Classroom Chef* rethink how we assess our students, empowering them by tapping into their voice. Leave with ready-to-use resources for authentic assessment in your class.

John Stevens
@jstevens009
Chaffey Joint Union High School District, Ontario, California
Matt Vaudrey
Bonita Unified School District, San Dimas, California

“He this book is a tremendous book study.”
—Scott Carr, middle-level reconfiguration coordinator, Liberty Public Schools, Missouri

“Uncover Your Professional Impact”

Available at booth #1309 or at SolutionTree.com/Heart

Solution Tree
11 TECH
Coding Computer Games to Motivate Middle School Math Class
6–8 Session
We will share how we have used the free computer programming software Scratch from MIT to reinforce math concepts. By utilizing paired programming techniques, students create games that help them channel creative energy while coding games that use coordinates, quadrants, comparing, ordering, and logical thinking skills.

Joanne Barrett
@jbarrettsrq
The Out-of-Door Academy, Sarasota, Florida

Joanna Johnson
The Out-of-Door Academy, Sarasota, Florida

12 PROF
Context in Content: The Purpose of Project-Based Learning in Mathematics
10–12 Session
This session will be a deep dive into the why and the how of project-based learning curriculum in mathematics. Topics will include: selection of state standards, project ideation and implementation, and exploration of actual exemplar as well as non-exemplar student project work.

Pedro Merced
@pjmerced
Manor New Technology High School, Manor, Texas

Sarah DiMaria
Manor New Technology High School, Manor, Texas

13 ASSESS
Defining Number Concept and Number Sense
Coaches/Leaders/Teacher Educators’ Session
One district’s journey to create a common definition of number concept and number sense leading to eNumeracy. The eNumeracy system can be used as universal screeners, benchmarkers, progress monitoring tools, and even diagnostics. This FREE system was locally normed to create a multi-tiered system of support in K–3 elementary math.

Carrie Fortunato
Burlington Public School District, Massachusetts

Henry B. Gonzalez Convention Center, 205

14 TLC
Engaging PK-2 Students in Productive Struggle
Pre-K–2 Session
In this session, we will explore problem-solving tasks that provide students opportunities to grapple with mathematical concepts. This session will also allow participants to reflect on instructional strategies designed to support all students in productive struggle as outlined in NCTM’s Principles to Actions.

Jenni McCool
University of Wisconsin-La Crosse, La Crosse, Wisconsin

Jennifer Koaiak
University of Wisconsin-La Crosse, La Crosse, Wisconsin

Kim Markworth
Western Washington University, Bellingham, Washington

Grand Hyatt San Antonio, Crockett CD

15 A&E
Enhancing Deeper Learning for English Language Learners and Students Who Are Struggling
6–8 Session
This session will provide research-based instructional strategies that help English learners, students with disabilities, and other struggling students to achieve deeper understanding of math concepts. Examples that improve success will be discussed in an interactive manner, with the goal to ensure equitable and high-quality mathematics education.

William Jasper
Sam Houston State University/TODOS, College Station, Texas

Grand Hyatt San Antonio, Lonestar Ballroom E
16 **PROF**  
Feedback as a Fractal: Developing a Toolkit for Effective Feedback  
Coaches/Leaders/Teacher Educators’ Session  
For students, teacher feedback is critical for improving learning. Similarly, feedback from a coach is essential for improving teacher practice. Is there a correlation between the two? In this session, we share specific feedback tools that can be used by coaches and teachers to improve teaching and learning.  
Stephanie Slabic  
Metamorphosis Teaching Learning Communities, New York, New York  
Antonia Cameron  
Metamorphosis Teaching Learning Communities, New York, New York  

Henry B. Gonzalez Convention Center, 214A

17 **PROF**  
Finally! A Coaching Framework That’s Actually about the Math  
Coaches/Leaders/Teacher Educators’ Session  
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. Promising preliminary research findings show how MQI video-based coaching model helps teachers.  
Claire Gogolen  
MQI Coaching, Cambridge, Massachusetts  
Samantha Booth  
MQI Coaching, Cambridge, Massachusetts  

Grand Hyatt San Antonio, Bowie ABC

18 **ASSESS**  
Fractions: Developing Understanding through Meaningful Tasks and Discussion  
3–5 Session  
Participants will examine various fraction tasks, fractional models, and student work in order to explore ways to build conceptual understanding about equivalency and computation. Explore specific strategies for utilizing the Mathematics Teaching Practices to promote fractional understanding. Video and math tasks from classrooms will be analyzed.  
Megan Burton  
Auburn University, Alabama  
Elizabeth Daniel  
Auburn University, College of Education, Alabama  
Madison Hutto  
Auburn University, Alabama  

Grand Hyatt San Antonio, Bowie ABC

19 **TLC**  
Framing Mathematics Instruction with the TQE Process  
General Interest Session  
The presenters will use classroom video to introduce the TQE process and how it can be used to frame mathematics instruction with (1) TASKS that promote thinking, prompt discourse, and reveal misconceptions; (2) QUESTIONS that advance understanding; and (3) EVIDENCE from the formative assessment process.  
Thomasenia Adams  
@TLAMath  
University of Florida, Gainesville, Florida  
Edward Nolan  
Towson University, Maryland  
Juli Dixon  
University of Central Florida, Orlando  

Henry B. Gonzalez Convention Center, 221
20 TECH Harnessing the Power of 1:1 Classrooms: Integrating Devices to Support Conceptual Understanding
Coaches/Leaders/Teacher Educators’ Session
Participants will be engaged in a discussion on how to support teachers in developing lessons that use technology to support conceptual understanding. This will include an activity in which leaders develop strategies for supporting teachers in this work by examining and providing feedback on lesson plans.

Lorraine Males
@drmalesmathed
University of Nebraska-Lincoln
Joshua Males
Lincoln Public School District, Nebraska
Henry B. Gonzalez Convention Center, 214C

21 A&E Improving Girls’ Mathematics Achievement by Improving Spatial Skills
General Interest Session
Girls tend to have lower spatial skills than males, and these skills have been linked to mathematics achievement. This presentation will discuss spatial visualization research and evidence-based interventions that promote gender equity and success in mathematics and also why spatial visualization training is vital, especially for low performing girls.

Martha Carr
University of Georgia, Athens
Sheryl Sorby
Ohio State University, Columbus, Ohio
David Uttal
Northwestern University, Evanston, Illinois
Grand Hyatt San Antonio, Crockett AB

22 PROF Learning to Listen: Using Clinical Interviews for Professional Growth
Coaches/Leaders/Teacher Educators’ Session
Come learn how we use clinical interviews to deepen our understanding of how students think about math. We will watch videos of interviews and analyze teacher learning from this process. You will leave the session with tools to implement and analyze clinical interviews with teacher teams in your school.

Nicora Placa
@nicoraplaca
Hunter College, New York, New York
Grand Hyatt San Antonio, Lonestar Ballroom D

23 A&E Lessons Learned from ICME-13: International Perspectives on Equity in Mathematics Classrooms
Coaches/Leaders/Teacher Educators’ Session
The speakers summarize lessons learned on issues related to equity in mathematics education from the International Congress on Mathematical Education held in summer of 2016, where global educators shared strategies for increasing access to mathematics learning. Participants will consider diverse interventions that can be applied in local settings.

Susan Holloway
St. Vrain Valley School District, Boulder, Colorado
Marilyn Strutchens
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Auburn University, Alabama
Dave Tannor
Baker College Online, Flint, Michigan
Grand Hyatt San Antonio, Travis AB

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24 **A&E** REFLECTION COVE

**Looking at Tier 1 Instruction and Tier 2 Interventions: Supporting Students Who Struggle**

3–5 Session

With a focus on multilevel systems of support, classroom teachers seek ways to develop highly engaging Tier 1 instruction and Tier 2 interventions for students who struggle in learning mathematics. This session considers interventions and assessments using multiple strategies for learning number and operations and algebraic thinking.

Karen Karp
Johns Hopkins University, Baltimore, Maryland

Henry B. Gonzalez Convention Center, 225

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25 **TLC**

**Problems Worth Talking About: Posing Purposeful Questions for Class Discourse**

6–8 Session

Not all mathematics problems are created equal. In this session, we will share types of problem-solving problems that lend themselves to meaningful class discourse. We will focus on question posing as a first step to establishing the environment for discourse and share examples of teaching practices and student interactions from the classroom.

Linda Venenciano
University of Hawaii at Manoa, Honolulu

Fay Zenigami
University of Hawaii, Curriculum Research & Development Group, Honolulu, Hawaii

Seanyelle Yagi
University of Hawaii at Manoa, Honolulu

Henry B. Gonzalez Convention Center, 303

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26 **BUILD**

**Raise the Bar, Deepen the Learning**

3–5 Session

This interactive workshop focuses on analyzing the Standards for Mathematical Practice, understanding levels of cognitive demand that tasks require as students engage in the practices, and exploring ways to raise and lower the demand through varied question strategies. Join us as we engage in tasks appropriate for grades 3–5.

Kit Norris
Self-employed, Southborough, Massachusetts

Sarah Schuhl
Self-employed, Gresham, Oregon

Henry B. Gonzalez Convention Center, 214B

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27 **PROF**

**Successes & Challenges of Creating a Coaching Culture**

Coach Educators’ Session

Join a conversation and share stories and successes of a coaching program (specific to PK-8). Explore the components in place that support a working teacher:coach partnership. Models, templates, artifacts, and other resources will be shared so that group members will benefit from discussing and exploring what works, and what is a challenge.

Megan Holmstrom
American School of Dubai, Dubai

Henry B. Gonzalez Convention Center, 007D

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28 **TLC**

**The Truth about Mathematical Modeling**

General Interest Session

Ask anyone what it means to model with mathematics, and you will get different answers from each one. As we look at a set of K-12 modeling activities that spark deeper understanding of math, we will uncover what it means to meet the demands of Math Practice 4 (model with mathematics) and how to scaffold each student’s experience.

Sarah Galasso
Carnegie Learning, Pittsburgh, Pennsylvania

Jill Swissa
Carnegie Learning, Chicago, Illinois

Vanessa Cerrahoglu
Orange County Department of Education, Huntington Beach, California

Henry B. Gonzalez Convention Center, 207B
29 PROF
Where We Disagree on the SMPs
8–10 Session
You probably can name all eight Standards for Mathematical Practice, but do you agree with others about what they mean? Big on vision but short on description, the SMPs leave room for interpretation. In this session, you’ll see where you disagree on the SMPs, both with other attendees and with teachers who participated in a two-year research study.

Raymond Johnson
@MathEdnet
Colorado Department of Education, Denver
Grand Hyatt San Antonio, Texas Ballroom F

29.1 EW
Engage Reluctant Learners through 3-Act Mathematical Modeling
6–8 Exhibitor Workshop
Explore lessons that present high-interest situations in 3 acts. Engage students in relevant problems through videos to identify variables, formulate a model, perform operations, and more. You will receive enVisionmath2.0 Grades 6–8 3-Act Mathematical Modeling lesson samples with video access to use in your classroom.

Pearson Learning Services
Chandler, Arizona
Henry B. Gonzalez Convention Center, 206B

29.2 EW
Solving for Every Variable with Reasoning Mind
General Interest Exhibitor Workshop
Math education is complicated. Education technology usually promises a quick fix. To succeed, we have to solve for every variable. Experience how education nonprofit Reasoning Mind accomplishes this with award-winning instructional technology mathematics solutions designed by experts for a variety of curriculum needs.

Reasoning Mind
Houston, Texas
Henry B. Gonzalez Convention Center, 207A

30 BUILD
Building Conceptual Understanding: Exploring and Connecting Mathematical Ideas Using Technology
6–8 Workshop
In this session, we will explore technology-enhanced tasks that emphasize the coherence of mathematics and highlight strategies to engage and empower your students as they delve into meaningful mathematics.

George Roy
University of South Carolina, Columbia
Farshid Safi
University of Central Florida, Orlando
Brian Dean
District School Board of Pasco County, Land O’ Lakes, Florida
Henry B. Gonzalez Convention Center, 304B

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Co-Constructing Assessment Criteria with Students & Student Moderation of Assessment

8–10 Workshop

The goal of this presentation is to develop ways to include students in the assessment process. By allowing students to co-construct the criteria used in assessing their work (e.g., creating rubrics) and then using those criteria to assess their own work and the work of their peers by student moderation, student buy in and ownership is increased.

Patricia Loney
@MsLoneyMath
Thames Valley District School Board, London, Ontario

Henry B. Gonzalez Convention Center, 217C

Early Beginnings: Creating Mathematical Thinkers

Pre-K–2 Workshop

For young learners, it is essential that they be immersed in a language-rich mathematical environment from the first day of entering school. In this session, you will learn how “the beginning processes” cultivate mathematical thinkers and communicators, and how those critical processes lead to early numeracy success.

Jessica Bobo
ORIGO Education, Inc., Earth City, Missouri

Henry B. Gonzalez Convention Center, 224

Fair Sharing the Decimal Way: Understanding and Connecting Decimals, Fractions, and Division

3–5 Workshop

Come see how using equal sharing problems with your students can help support their ability to see how decimals, fractions, and division are related. We will compare fair sharing problems solved “the fraction way” versus “the decimal way” and discuss key features of contexts and manipulatives that support decimal AND fraction understanding.

Christy Pettis
@PettisChristy
University of Minnesota, Minneapolis
Aran Glancy
University of Minnesota, Woodbury
Pamela Richards
International Center for Leadership Education, Waconia, Minnesota

Grand Hyatt San Antonio, Texas Ballroom B

Fostering Rigor in Mathematics for ALL K–5

3–5 Workshop

A rigorous mathematics program is part of TODOS Goal 1. What is rigor and what does that mean for the elementary grades? Participants will be engaged with activities and problems with accompanying manipulatives that promote and enhance the learning of mathematics through rigor.

Don Balka
Retired, Saint Mary’s College, Notre Dame, Indiana

Henry B. Gonzalez Convention Center, 302AB

Don’t miss ShadowCon at 5:00 p.m. on Thursday, April 6. Because of its growing popularity and overwhelming demand, over the last three years we’ve made it part of the NCTM Annual Meeting experience.
8:00 A.M.–9:15 A.M.

35 A&E Fractions on the Number Line for ALL Students
3–5 Workshop
This session will focus on increasing teachers’ conceptual understanding of fractions using the number line approach and will include activities and materials that can be adapted for use in the classroom, including best practices for working with English learners. Come and have some fun learning and interacting with others about fraction sense!

Susie Hakansson
Retired, Venice, California

Henry B. Gonzalez Convention Center, 005

36 TLC Great Combinatorial Reasoning Activities for AP Statistics and Discrete Mathematics
10–12 Workshop
Participants will solve challenging problems with combinations (and permutations) with surprising results. We will then complete two activities that can be used to enhance student combinatorial learning. The first uses playing cards; the second, dice. Students become very engaged in the learning process with these activities.

James Matthews
Siena College, Old Chatham, New York

Henry B. Gonzalez Convention Center, 007A

37 TLC Launching Tasks through Questioning: What Do You Notice and Wonder?
8–10 Workshop
Participants will consider how the questions “What do you notice?” and “What do you wonder?” can be used to launch tasks in order to promote reasoning and problem solving for all students. Join us as we engage in noticing and wondering, examine students’ noticings and wonderings, and consider how to help students learn how to notice and wonder.

Amy Hillen
Kennesaw State University, Georgia
Jennifer Outzs
Pinellas County Schools, Seminole, Florida

Henry B. Gonzalez Convention Center, 217A

38 BUILD 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
@grbeswick
Teachers Teaching with Technology, Louisville, Kentucky

Henry B. Gonzalez Convention Center, 304A

39 A&E Meeting the Needs of All Students through Instructional Routines
6–8 Workshop
The predictable nature of instructional routines make them powerful tools for engaging students with special needs and English language learners. Come learn how the uniform design of the Recognizing Repetition routine incorporates research-based support strategies to develop repeated reasoning (MP.8) in all students.

Grace Kelemanik
@gracekelemanik
Kelemanik Consulting, Natick, Massachusetts
Amy Lucenta
Math Consultant, Natick, Massachusetts

Grand Hyatt San Antonio, Texas Ballroom C

40 PROF Navigating Professional Learning to Make Productive Mathematics Classrooms
Coaches/Leaders/Teacher Educators’ Workshop
Improving mathematics instructions can overwhelm novice and experienced teachers and coaches. This session introduces the components of high-quality mathematics instruction in a memorable and compressed format. Participants will learn how TRU Math can help them reflect on instruction, set learning priorities, and organize professional learning.

Robert Wood
@TeachMrWood
GEMS World Academy-Chicago, Illinois

Grand Hyatt San Antonio, Texas Ballroom E
New! Pre-K through Grade 6 mathematics program takes flight from ORIGO Education.

This new program combines rigorous problem solving activities, engaging digital games, and a balance of print materials to enhance students’ thinking and reasoning skills.

Experience all of our new products at Booth #209
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 are welcome!

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

Grand Hyatt San Antonio, Texas Ballroom D

Number Talks in the Middle Grades: Focusing on Student Reasoning

6–8 Workshop

Number talks are ideal in supporting procedural and conceptual understanding of mathematics, but implementation in the middle grades is different than elementary grades due to the nature of the content. This session will present ideas for middle level teachers looking to learn how to implement number talks in their classroom.

Cory Bennett
@AlohaCory
Idaho State University, Pocatello, Idaho
Emily Lockhart
Alameda Middle School, Pocatello, Idaho

Henry B. Gonzalez Convention Center, 217B

Parabolas and Transformations

10–12 Workshop

This session will examine the beautiful and intricate relationship between parabolas and the quadratic functions that define them. Special emphasis will be placed on transformations. We will take a look at the mathematical explanation for some marvelous everyday properties of parabolas. Online and print resources from the UCLA Curtis Center will be provided.

Elyse McVerry
Saddleback Valley Unified School District, Mission Viejo, California
Michael Nakamaye
University of New Mexico, Albuquerque, New Mexico

Henry B. Gonzalez Convention Center, 006B

Parabolas: Properties and Proofs

10–12 Workshop

Participants will engage in a productive struggle at the crossroads of algebra and geometry as we explore the properties of parabolas. Concrete models will lead to puzzling results and ultimately to proofs about this familiar U-shaped curve. Rigorous and engaging lesson ideas will be shared that can be applied across a wide-variety of courses.

Selena Oswalt
Great Minds, Washington, D.C.
Wendy DenBesten
Great Minds, Washington, D.C.

Henry B. Gonzalez Convention Center, 007B

Proportional Reasoning: Three Strategies to Spark Engagement

6–8 Workshop

Come experience three activities that engage students in concept development and practice of proportional reasoning: “poster problems,” a “blank paper lesson,” and a “big square puzzle.” Takeaway lessons included!

Shelley Kriegler
Center for Mathematics and Teaching, Sherman Oaks, California
Cynthia Raff
Center for Mathematics and Teaching, Sherman Oaks, California

Henry B. Gonzalez Convention Center, 006D
8:00 A.M.–9:15 A.M.

46   **BUILD**  
Ramp It Up! with STEM  
6–8 Workshop  
STEM extends learning beyond the mathematics classroom. Learn the basics of creating, implementing, and assessing integrated STEM projects that are relevant to students. Participants will collaborate within grade levels to design and engage in a STEM lesson utilizing ramps to collect data.  
Katherine Hammonds  
AMSTI-USA, Mobile, Alabama  
Susan Arnette  
AMSTI-USA, Mobile, Alabama  
Angela Williams  
AMSTI-USA, Mobile, Alabama  
Henry B. Gonzalez Convention Center, 305

47   **BUILD**  
Solving the Same Problem Multiple Ways: Building Conceptual Understanding  
8–10 Workshop  
Is it important for students to know multiple ways of solving the same problem? This hands-on workshop will explore the benefits to both teachers sharing multiple approaches and encouraging students to come up with their own strategies. Together we will solve problems, observe new approaches and build conceptual understanding with our students.  
Matthew Beyranevand  
Chelmsford Public Schools, Chelmsford, Massachusetts  
Henry B. Gonzalez Convention Center, 006C

48   **BUILD**  
Teaching Probability on a Dime! (Well, Maybe “Two” Dimes!)  
6–8 Workshop  
Probability is introduced in grade 7 in the Common Core Standards. With just a few select models, picture strategies, and questioning techniques, you can help your students make sense of fundamental probability concepts. We will also discuss important concepts/skills from grades 4–6 that students must have to succeed in statistics and probability.  
Jennifer Fillingim  
Madison County School District, Ridgeland, Mississippi  
Henry B. Gonzalez Convention Center, 004

49   **TLC**  
Teaching Two-Way Frequency Tables: Fostering Mathematical Minds with Statistical Inquiry  
8–10 Workshop  
The CCSS 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 Orton  
@mathgeek76  
Center for Mathematics and Teaching, Venice, California  
Henry B. Gonzalez Convention Center, 304C

50   **A&E**  
Technology + Choice = Success  
6–8 Workshop  
Do you long to hear your students say these three little words, “I love math”? Come discover how the use of UDL via choice, movie clips, and TI-Technologies can increase conceptual understanding and create a fun, dynamic, student-centered classroom. Participants will leave with many resources that can be easily implemented on Monday morning.  
Melissa Jackson  
@luvmath2  
New Jersey Department of Education, Clarksboro  
Henry B. Gonzalez Convention Center, 007C

51   **BUILD**  
Unleash the Mathematician Within: Crafting Rich and Interesting Problems  
3–5 Workshop  
Do you want to improve your ability to pose stimulating and thought-provoking problems that engage students in mathematical practices? We will learn how to unpack a standard exercise and turn it into a meaningful mathematical problem through the lens of the CCSS Standards of Mathematical Practice. Materials will be shared.  
Bridget Druken  
California State University Fullerton, Fullerton  
Roberto Soto  
California State University Fullerton, Fullerton  
Henry B. Gonzalez Convention Center, 006A
8:00 A.M.—9:15 A.M.

52 **TLC**
Using High-Quality Tasks to Promote Meaningful Teacher Feedback
3–5 Workshop
High-quality math tasks actively engage students and allow them to share their thinking and demonstrate understanding. Participants explore high-cognitive tasks and examine related student work to discuss feedback strategies to move learning forward.

Sandra Niemiera
University of Illinois at Chicago

Elizabeth Cape
University of Illinois at Chicago

Jennifer Leimberer
University of Illinois at Chicago

Grand Hyatt San Antonio, Lonestar Ballroom B

53 **TLC**
Young Mathematicians at Play
Pre-K–2 Workshop
Participants will explore how to support the development of young mathematicians through purposeful play using manipulative-based games, with a focus on the Standards for Mathematical Practice and the content domain of Number & Operations in Base Ten, including number sense, computation, and estimation.

Kathryn Coffey
@literacygurl
Grand Valley State University, Allendale, Michigan

David Coffey
Grand Valley State University, Allendale, Michigan

Grand Hyatt San Antonio, Lonestar Ballroom A

53.1 **BUILD**
Reflective and Collaborative Processes to Improve Mathematics Teaching: APME 2017
Coaches/Leaders/Teacher Educators’ Workshop
Chapter authors in the newly published APME 2017 share ideas for enhancing mathematics teaching from teachers’ perspectives, including school-based initiatives, research-based models and frameworks, and collaborations between multiple stakeholders.

Melissa Boston
Duquesne University, Pittsburgh, Pennsylvania

Lucy West
Metamorphosis Teaching Learning Communities, New York, New York

Grand Hyatt San Antonio, Texas Ballroom A

9:00 A.M.—10:00 A.M.

54 **PROF**
Sixty-Eighth 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 the activities and policies of NCTM concerning mathematics education.

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

Henry B. Gonzalez Convention Center, Hemisfair 2

54.1 **BUILD**
6 x ¾ or ¾ x 6: Using Structure and Precision to Build Understanding of Fraction Multiplication
3–5 Session
6 copies of \(\frac{2}{3}\) and \(\frac{2}{3}\) of 6 are a commutative pair, but they involve different mental processes for students to model and evaluate. While interpreting expressions, participants will be presented with various structures for multiplication of fractions and will examine ways that students can develop connections between representations of these products.

Ryan Casey
Boston Public Schools, Roxbury, Massachusetts

Henry B. Gonzalez Convention Center, 214B

55 **BUILD**
Approaching Ten Tough Mathematical Ideas for High School Students
General Interest Session
In this talk, ten of the most difficult yet important ideas from high school algebra, geometry, and precalculus are identified. Reasons for the difficulties are discussed, and ideas are given for approaching each idea.

Zalman Usiskin
University of Chicago, Illinois

Henry B. Gonzalez Convention Center, Stars at Night 4
56 “M”
Bright Lights on the Horizon
General Interest Session

What do a square-wheeled bicycle, a 17th-century French painting, and the Indiana legislature all have in common? They appear as bright stars on the mathematical horizon; that is in Math Horizons, the undergraduate magazine published by the Mathematical Association of America. Math Horizons introduces students to the world of mathematics.

Deanna Haunsperger
Carleton College, Northfield, Minnesota

Henry B. Gonzalez Convention Center, 303

57 TLC
Decimal Operations: Making Meaningful Moves from Misconceptions
6–8 Session

Student misconceptions about multiplying and dividing decimals will be shown as a way to launch a brief discussion of the underlying mathematics. To prevent and/or address such misconceptions, three instructional strategies will be presented that include selecting purposeful tasks, facilitating discussions, and varying representations.

Cindy Jong
University of Kentucky, Lexington
Molly Fisher
University of Kentucky, Lexington
Jonathan Thomas
University of Kentucky, Lexington

Grand Hyatt San Antonio, Crockett AB

58 TLC
Ensuring the Tasks in Our Curriculum Are Worthwhile
Coaches/Leaders/Teacher Educators’ Session

How do we assure that the tasks we pose promote reasoning and problem solving? In this session, we take up this charge from Principles to Actions and consider ways to develop and use worthwhile tasks. Participants analyze typical tasks to consider their potential and revise tasks to provide for multiple entry points and solution strategies.

Steve Vancil
David Douglas School District, Portland, Oregon
Nicole Rigelman
Portland State University, Oregon
Paul Latiolais
Portland State University, Oregon

Henry B. Gonzalez Convention Center, 225

59 PROF
The Crafting and Use of Technology for Professional Learning
General Interest Session

A variety of digital formats for professional learning such as MOOCs, blogs, forums, and online courses with both synchronous and asynchronous designs have been tried in the past with varied success. This session will present research results and potential new possibilities for the future that allow teachers more control over their own learning.

Maarten Dolk
New Perspectives Online, Utrecht, the Netherlands
Cathy Fosnot
New Perspectives Online, New London, Connecticut

Henry B. Gonzalez Convention Center, 214A

57.1 Preparing the Next Generation of Teachers of Mathematics: Setting Standards
General Interest Session

Learn about the Association of Mathematics Teacher Educators’ Standards for Preparing Teachers of Mathematics and discuss your role in supporting the preparation of the next generation of teachers of mathematics.

Nadine Bezuk, Jennifer Bay-Williams, Douglas H. Clements, W. Gary Martin

Henry B. Gonzalez Convention Center, Stars at Night 1
Don’t miss **ShadowCon** at 5:00 p.m. on Thursday, April 6. Because of its growing popularity and overwhelming demand, over the last three years we’ve made it part of the NCTM Annual Meeting experience.
9:30 A.M.–10:30 A.M.

64 BUILD
How to Tinker with the Algebraic Thinker
3–5 Session
This session will focus strategies to develop problem solving and generalization skills to prepare the early algebraic thinker conceptually for algebra. Weekly algebra readiness problem-solving activities will be shared. We will model the classroom climate and discuss strategies to implement these algebraic reasoning activities.

Martin Briggs
La Porte Community Schools, Indiana
David Feikes
Purdue University Northwest, Westville, Indiana
Mike Maesch
Michigan City Area Schools, Michigan City, Indiana

65 TLC
Implement and Reflect on Challenging Mathematical Modeling Tasks to Engage and Empower ALL Students
8–10 Session
Engage students in challenging mathematics and explore effective practices to draw upon student experiences in exploring mathematical modeling tasks. Take part in an interactive workshop where the topics will range from algebra to precalculus concepts, and see how all students can be empowered by becoming sense-makers in rich classroom discussions.

Farshid Safi
@farsafid
University of Central Florida, Orlando
Aline Abassian
University of Central Florida, Orlando

66 A&E
Inspiring Every Child
General Interest Session
Join me as I share an inspirational talk about my experience with students in my own classes 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 Dillard
Borenson and Associates, Inc. & Benjamin Banneker Association, Allentown, Pennsylvania

67 TLC
Making Connections from a Simplex Lock to the Binomial Theorem
10–12 Session
Making mathematics projects from real-life examples provides mathematical relevance for students. Using a simplex lock is a unique way to explore and study combinatorics. Participants will gain insights and unexpected discoveries, and they will be able to conceptualize the meaning of the binomial theorem.

Ping-Hsiu Lee
Heights High School, Houston, Texas
Ivan Rocha
University of Houston-Downtown, Texas

68 TECH
Making Math in Scratch
10–12 Session
See how topics in algebra, geometry, and statistics can be easily developed in Scratch, the free, web-based programming environment from MIT. Give your students another entry point to mathematics, and get them integrating math and computing to model with mathematics and use appropriate tools strategically! No prior programming knowledge necessary.

Patrick Honner
@MrHonner
New York City Department of Education, Brooklyn

THURSDAY
69 A&E
Math Identity: The Key to Girls’ Math Success
Coaches/Leaders/Teacher Educators’ Session
The idea that math success is about an innate ability and that being feminine and good at math are mutually exclusive is a pernicious barrier to girls’ development of a positive math identity, a key factor related to their participation in STEM education and careers. This session will explore the what, how, and why of girls’ math identity.

Cheri Fancsali
New York University, New York
Maryann Stimmer
FHI 360, New York, New York
Meghan Groome
New York Academy of the Sciences, New York

Grand Hyatt San Antonio, Lonestar Ballroom E

70 A&E
Math Trauma: The Reality and the Opportunity
General Interest Session
The emerging evidence that extreme levels of “math anxiety” appear triggered by a trauma response-math trauma. Come learn about the latest research as well as tools for assessing your students and promoting healing in your classroom. Math trauma can lead to dropout and years of unproductive struggle. Help combat this phenomenon.

Kasi Allen
@math4justice
Lewis & Clark College, Portland, Oregon
Kemble Schnell
West Linn Wilsonville School District, Portland, Oregon

Grand Hyatt San Antonio, Travis AB

71 A&S
Mathematics Assessment in a Digital World
General Interest Session
For the first time, the 2017 Nation’s Report Card’s fourth- and eighth-grade math assessments are digitally based. This enables students to demonstrate important skills in problem solving and analytical thinking that are not as easily measured by paper-and-pencil. What are the implications of this groundbreaking shift? What is already known about DBA?

Linda Rosen
Change the Equation, Washington, D.C.

Grand Hyatt San Antonio, Lonestar Ballroom D

72 PROF
MOOC-Eds: Free Online Professional Development on Your Schedule
General Interest Session
Are you in need of content-focused PD that your school district doesn’t offer? Tired of missing class time for PD? Come learn about the free online PD called MOOC-Eds that focuses on the foundations of fractions, teaching statistics through data investigations, teaching mathematics with technology, and more!

Jennifer Lovett
Middle Tennessee State University, Murfreesboro
Theresa Gibson
North Carolina State University, Raleigh

Henry B. Gonzalez Convention Center, 205

73 A&E
Our Algebra 1 Gradebooks Hold the Key to Equity & Access: Assessing Proficiency without Percentages
8–10 Session
Grading policies are overlooked as a leading cause of inequity, because the ways they disadvantage students are unintentional and hard to detect. Learn principles for creating assessment systems that measure algebra 1 proficiency without relying on percentages. Hear how teachers developed new practices that improved achievement and differentiation.

Tim Hudson
@DocHudsonMath
DreamBox Learning, Bellevue, Washington

Grand Hyatt San Antonio, Republic ABC
9:30 A.M.—10:30 A.M.

**74 BUILD**
Success in Algebra Using Manipulatives!
6–8 Session
Discover how manipulatives can be used to help your students understand algebraic concepts such as integer operations, solving equations, polynomial expressions, and graphing. See how your students can benefit from a visual approach to algebra and learn how hands-on activities can help promote their understanding of algebraic concepts.

Kevin Dykema
@kdykema
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Mattawan Consolidated Schools, Michigan

Grand Hyatt San Antonio, Presidio ABC

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**75 TECH**
Teaching Geometry to Girls through Powerful Computer Programs
3–5 Session
Girls tend to show lower performance and participation, as well as less favorable dispositions, than boys in geometry and computer use. This session will share ideas for using powerful software, especially Geometer’s SketchPad and Terrapin Logo, to support girls’ geometry skills. A handout with instructional tasks and resources will be provided.

Heather Crawford-Ferre
State of Nevada Department of Education, Carson City, Nevada
Lynda Wiest
University of Nevada, Reno
Julie Henjum
Washoe County School District, Reno, Nevada

Grand Hyatt San Antonio, Texas Ballroom F

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**76 TLC**
The Problem of Word Problems: Supporting Student Access
3–5 Session
“Decontextualizing” is a critical math practice, but how do we support students in accessing the mathematics in a situation? Rather than ripping the math out of the context, we can use the story as a way INTO mathematical thinking. In this session, we will examine questioning strategies you can use to move students from stuck to sense making.

Jen Munson
Stanford University, California
Mary Trinkle
Ravenswood City School District, East Palo Alto, California

Henry B. Gonzalez Convention Center, 007D

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**77 A&E**
We Are Family: Ways African American Families Engage in Mathematics
6–8 Session
It has been documented that family engagement enhances student learning. We also know that different families engage with their mathematics students differently. Understanding how African American families engage with their student can provide a lens on how we can enhance our culturally responsive classrooms and thus increase equity and access.

Desha Williams
Kennesaw State University, Georgia
Chery Pappy
Champion Middle School, Stone Mountain, Georgia

Grand Hyatt San Antonio, Texas Ballroom F

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**78 A&E**
What Is in Your Lesson?
8–10 Session
Teachers are tasked to create lessons that include the CCSSM standards and the mathematics practices. But there are other standards to include. Too often students of African ancestry see no relevance in their lessons and see them as just doing some math. This presentation shows the salient features that would be included in a culturally relevant math lesson.

Kwame Anthony Scott
Retired, Chicago, Illinois

Grand Hyatt San Antonio, Lonestar Ballroom F
9:30 A.M.–10:30 A.M.

79 TECH
You CAN Do Blended Learning
6–8 Session
Blended learning can happen in your classroom with a few clicks of your mouse! Using tools that are readily available, this session will show you how to successfully implement blended learning in your classroom with minimal planning time. Teachers will leave this session ready to tackle the idea of blended learning in their own classrooms.

Kelly Barr
Gilmer County Schools, Glenville, West Virginia
Traci DeWall
Gilmer County Schools, Glenville, West Virginia

Henry B. Gonzalez Convention Center, 207B

80 TECH REFLECTION COVE
Math Task Makeover with Desmos Activity Builder
8–10 Workshop
Transform your classroom lessons with three Activity Builder veterans who will share best practices for building effective, ongoing math experiences. Whether you’ve used Activity Builder many times, or you’re new to the game, there will be something for everyone!

Robert Lochel
Hatboro-Horsham High School, Horsham, Pennsylvania
Michael Fenton
Desmos, San Francisco, California
Jedidiah Butler
Heritage High School, Perris Union High School District, Menifee, California

Henry B. Gonzalez Convention Center, 206B

80.1 EW
Unleash the Power of Game-Based Learning with Mangahigh
Coaches/Leaders/Teacher Educators’ Exhibitor Workshop
Discover how Mangahigh helps you build a true 21st-century classroom with interactive games and adaptive quizzes aligned to curriculum for K–10. In this session, you’ll learn ways to differentiate instruction and create an environment where each student is motivated to work at the best of their ability.

Mangahigh
London, United Kingdom

Henry B. Gonzalez Convention Center, 206A

80.2 EW
Building Sense-making for Solving Equations
6–8 Exhibitor Workshop
How can we help students “look before they leap” when solving equations? This discussion will explore helping students use intuition and sense making to develop elegant solution pathways. We will explore powerful, dynamic visuals that highlight important strategies for solving equations and their connections to the corresponding algebraic methods.

Texas Instruments
Dallas, Texas

Henry B. Gonzalez Convention Center, 206B

80.3 EW
Making Principles to Actions Come Alive with CPM Mathematics
8–10 Exhibitor Workshop
Let CPM show you how we incorporate the eight Mathematics Teaching Practices in your classroom. CPM provides rich mathematics curricula that are student centered and problem solving based. Experience multiple rich tasks, opportunities for student discourse, and concrete ways to build fluency from conceptual understanding that are embedded within the materials.

CPM Educational Program
Elk Grove, California

Henry B. Gonzalez Convention Center, 207A
For some students the path to algebra is smooth and straight. Most students, though, hit at least a few potholes along the way, and some seem to struggle to stay on the road at all. This session demonstrates how to get all students rolling forward, from filling in the inevitable potholes within the core program to paving alternative pathways.

Houghton Mifflin Harcourt
Round Rock, Texas

Henry B. Gonzalez Convention Center, 210AB

80.5
What’s New at Casio: Viewing Mathematics through a New Prizm (or Two!)
10–12 Exhibitor Workshop
The current rate of change with respect to technology, curriculum, standards, and requirements demands that we as leaders and teachers regularly re-evaluate. With the additions of CAS, 3D graphing, and Exam Mode to the Prizm platform, join Mike Reiners to learn how Casio continues to be the affordable, pedagogically sound choice for school handheld technology.

Casio
Dover, New Jersey

Henry B. Gonzalez Convention Center, 213AB

80.6
Meeting Individual Student Needs and Informing Classroom Practice with i-Ready Adaptive Technology
3–5 Exhibitor Workshop
Engage all math students and provide each with necessary opportunities to learn! Identify misconceptions and gaps and provide personalized learning. This session will share adaptive technology that assesses, delivers customized learning, and informs classroom instruction. Experience a technology that helps teachers ensure success for all learners.

Curriculum Associates
North Billerica, Massachusetts

Henry B. Gonzalez Convention Center, Exhibitor Workshop
Theater in Exhibit Hall 3/4
9:45 A.M.–11:00 A.M.

83  A&E  
Cultural Competence: Equity Success Using Differentiation Embedded with Culturally Relevant Pedagogy  
Coaches/Leaders/Teacher Educators’ Workshop  
Math teachers, especially in today’s diverse society, must have skill at teaching in a culturally diverse setting. As math educators, we enable each student to relate course content to his or her cultural context. Culturally relevant teaching has been proven to be an effective form of pedagogy for students of all racial and ethnic backgrounds.

Natalie Holliman  
@N_Holliman  
Little Rock School District, Arkansas  
Kelli Mack  
Little Rock School District, Arkansas  
Quintin Cain  
Little Rock School District, Arkansas  
Henry B. Gonzalez Convention Center, 007B

84  BUILD  
Developing and Assessing Addition Fact Fluency  
Pre-K–2 Workshop  
What does it really mean to be fluent with addition facts, and how is this idea reflected in CCSSM? Come explore how we can use strategies, games, and activities in meaningful ways to develop a trajectory for helping all students become fluent with addition facts, and consider ways to authentically assess fact fluency.

Gina Kling  
Western Michigan University and UChicago STEM Education, Kalamazoo, Michigan  
Grand Hyatt San Antonio, Texas Ballroom B

85  ASSESS  
Embedding Formative Assessment within an Instructional Routine  
8–10 Workshop  
The thoughtful use of formative assessment has been shown to improve student outcomes but can be challenging to integrate into practice. Come experience an engaging and flexible instructional routine and then unpack the use of formative assessment strategies embedded within the routine.

David Wees  
@davidwees  
New Visions for Public Schools, New York, New York  
Grand Hyatt San Antonio, Lonestar Ballroom B

86  TECH  
Embrace the Digital Age: Using Apps with Children’s Literature in Math  
Pre-K–2 Workshop  
Children’s literature can build great connections for mathematical concepts for elementary children. In this session, the presenters will share apps that can be used with popular children’s literature to help children make connections with important mathematics concepts.

Sandi Cooper  
@drcoopermath  
Baylor University, Waco, Texas  
Kylie Terry  
Baylor University, Waco, Texas  
Kaitlin Welsh  
Baylor University, Waco, Texas  
Henry B. Gonzalez Convention Center, 304A

87  BUILD  
Fluency with Functions through Multiple Representations  
8–10 Workshop  
Just as elementary students should be able to perform simple operations without a calculator, secondary students should be flexible with simple functions apart from a graphing calculator. Strategies like card sorts, foldables, manipulatives, and the Rule of Four can help students develop fluency with linear, exponential, and quadratic functions.

Victoria Miles  
@MsMilesMath  
Middleborough High School, Massachusetts  
Shephali Chokshi-Fox  
Fox Math Consulting, Sutton, Massachusetts  
Grand Hyatt San Antonio, Texas Ballroom E
GIVING MEANING TO SCATTER PLOTS & REGRESSION LINES
8–10 Workshop
Participants will actively use manipulatives and graphing calculators to explore activities through which students can enhance their skill in creating and interpreting scatter plots and regression lines, determining the appropriateness of multiple types of regression models, and identifying limitations on the use of such models in forecasting.

Michael Hardy
Saint Xavier University, Chicago, Illinois

Henry B. Gonzalez Convention Center, 217A

GUT INSTINCTS: DEVELOPING ALL STUDENTS’ MATHEMATICAL INTUITIONS
3–5 Workshop
We’ve long misunderstood mathematical intuition, assuming it’s innate rather than developed through high-quality learning experiences. As a result, students who haven’t yet had opportunities to refine their intuitions are often denied access to meaningful math. We’ll explore three teaching techniques that empower ALL students to grasp math intuitively.

Tracy Zager
@tracyzager
Stenhouse Publishers/Rollinsford Grade School, Portland, Maine

Grand Hyatt San Antonio, Texas Ballroom C

HOW MANY ELEPHANTS FIT ON THE MOON?
8–10 Workshop
Learn to pose your own ill-structured problems for use in your own classroom, and discover how to address these problems using two freely available mathematics technologies (WolframAlpha and Desmos). You will also learn how lesson development parallels the process of technology development and will be introduced to a platform for lesson study and sharing.

Christina Watts
Utah State University, Logan

Henry B. Gonzalez Convention Center, 304B

I-THINK: ENGAGING ALL STUDENTS IN PRODUCTIVE STRUGGLE USING METACOGNITIVE SUPPORTS
3–5 Workshop
In this session, math and special education teacher educators will engage you in the I-THINK problem-solving framework. Aligned to CCSS SMPs 1, 3, and 6, this framework supports struggling students in task analysis, solution strategy selection, self-regulation, and justifying solutions. We will discuss research to practice in grades 1–8 general education and RTI Tier II settings.

Sararose Lynch
Westminster College, New Wilmington, Pennsylvania
Jeremy Lynch
Slippery Rock University, Pennsylvania

Henry B. Gonzalez Convention Center, 302AB

MAKING FACT FLUENCY ASSESSMENTS MEANINGFUL
Pre-K–2 Workshop
Looking to assess fact fluency more effectively than with timed tests? We’ll focus on how to use homegrown comprehensive formative assessments to drive fact fluency instruction. Learn about our journey in this process, and leave with ideas for creating and implementing an effective fluency assessment practice in your classroom, school, or district.

Robin Moore
@rmoore628
Regional School District 6, Litchfield, Connecticut
Sara Baranauskas
Suffield Public Schools, Suffield, Connecticut

Henry B. Gonzalez Convention Center, 005
9:45 A.M.–11:00 A.M.

**94 A&E**
The Most Versatile Tool in the Elementary Mathematics Classroom: The Number Line!
3–5 Workshop
Explore the many ways a number line can represent mathematical thinking in the intermediate grades. Participants will engage in activities that use a number line for developing understanding of fractions, decimals, and whole numbers while connecting them to the eight teaching practices from *Principles to Actions*.

Connie Phillips Conroy
Howard County Public Schools, Ellicott City, Maryland
Denise Jamie Bogart
Howard County Public Schools, Columbia, Maryland

*Henry B. Gonzalez Convention Center, 006B*

**95 TLC**
Math with More Than One Right Answer
6–8 Workshop
The view that there is always one right answer in math limits mathematical discourse and causes anxiety. One plus one will always equal two, but we will explore engaging problems applicable to middle school and beyond where this is not the case, working on math that requires students to construct viable arguments and model with mathematics.

Lissie Mcalvey
The Nueva School, Hillsborough, California
Avery Pickford
The Nueva School, Hillsborough, California

*Henry B. Gonzalez Convention Center, 217C*

**96 A&E**
Middle School OER Curriculum with Built-In Supports for English Language Learners
6–8 Workshop
Illustrative Mathematics is writing middle school OER curriculum in partnership with the K–12 OER Collaborative. With help from a team of interdisciplinary experts, the curriculum materials have many built-in supports for English language learners. In this session, we will explore the philosophy and practical implementation of these supports.

Kristin Umland
Illustrative Mathematics, Tucson, Arizona

*Henry B. Gonzalez Convention Center, 224*

**97 NT**
Leveraging First-Year Teacher Experiences for Second-Year Growth
Coaches/Leaders/Teacher Educators’ Workshop
After a year of “firsts” you have many things to celebrate and may have things you want to work on. In this session, we will reflect together on your first year of teaching and leverage those experiences to begin preparing for next year. Participants will explore strategies and ideas for incorporating classroom management, lesson planning, and meaningful student discourse into mathematics instruction.

Delise Andrews
Lincoln Public Schools, Nebraska
Karla Bandemer
Lincoln Public Schools, Nebraska

*Grand Hyatt San Antonio, Texas Ballroom A*

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.
9:45 A.M.–11:00 A.M.

98 BUILD
Probability beyond Bunko: Can You Improve the Standard Die?
6–8 Workshop
How do we engage students to understand probability beyond simple tosses of coins and dice? Can you modify the standard die to beat your partner in a roll-off? Would you rather take the sum of three 4-sided dice or the sum of an 8-sided and 4-sided die? Experience classroom-tested, engaging lessons that scaffold and provide access for all learners.

Karajean Hyde
University of California, Irvine
Janna Canzone
University of California, Irvine

Henry B. Gonzalez Convention Center, 217B

99 "M"
STEM Gives Meaning to Mathematics
3–5 Workshop
Engineering design in elementary classrooms develops habits of mind that increase achievement in mathematics. Learn how an integrated engineering curriculum can provide application for measurement and data collection concepts while fostering development of the Standards for Mathematical Practice.

Lukas Hefty
Pinellas County Schools, St. Petersburg, Florida

Grand Hyatt San Antonio, Lonestar Ballroom A

100 PROF
Developing Number Sense in Emergent Bilingual Learners
Coaches/Leaders/Teacher Educators’ Workshop
Anchor charts, word walls, and sentence frames are a few strategies that teachers can use to support deep understanding of number sense for K–5 bilingual/ELLS. This session provides educators with an opportunity to learn mathematics in a Spanish bilingual lesson that models highly effective strategies, for bilingual/ELL’s mathematics success, as well as materials that can be used in the classroom on Monday!

Rocio Benedicto
New Mexico State University CORE, Las Cruces
Zaira Falliner
New Mexico State University CORE, Las Cruces

Grand Hyatt San Antonio, Texas Ballroom D

101 TECH
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 physical objects versus digital models and tools.

Carla Strickland
UChicago CEMSE, Chicago, Illinois
Catherine Donaldson

Henry B. Gonzalez Convention Center, 006D

Download the mobile conference app to search for sessions, create a schedule, network with attendees, and much more! Search “NCTM Annual Meeting” in the App Store and Google Play.
9:45 A.M.–11:00 A.M.

102 "M" Transform How You Think about Math and Molecules
10–12 Workshop
Looking to promote deeper understanding of transformational geometry? Take a look at Platonic solids and tilings of the plane through molecular geometry. Online and print resources from the UCLA Curtis Center summer institute will be given.

Michael Nakamaye
University of New Mexico, Albuquerque
Elyse McVerry
Saddleback Valley Unified School District, Mission Viejo, California
Henry B. Gonzalez Convention Center, 007C

103 BUILD Using Manipulatives to Deepen Understanding of CCSS Fraction Progressions
3–5 Workshop
Want to deepen your understanding of how the Common Core standards build the meaning of fraction? Come explore a variety of manipulatives to unpack key fraction concepts such as partitioning and iterating the whole, determining equal-size pieces, and modeling with different representations. Task resources will be shared.

Alison Marzocchi
California State University, Fullerton
Bridget Druken
California State University, Fullerton
Michelle Brye
California State University, Fullerton
Henry B. Gonzalez Convention Center, 304C

104 TLC Using Manipulatives to Support Students in Solving Challenging Word Problems
Pre-K–2 Workshop
Teaching students how to persevere in solving challenging math problems and how to engage in productive discourse begins in K–2. We will discuss how to support students’ development in those mathematics practices by having them use manipulatives to solve various types of addition and subtraction word problems with the unknown in all positions.

Karen Heinz
Rowan University, Glassboro, New Jersey
Henry B. Gonzalez Convention Center, 006C

105 BUILD What’s Your Story? Moving beyond Keywords!
3–5 Workshop
Students make sense of mathematics by exploring it in real-world contexts; therefore, it is imperative for them to be exposed to different types of word problems. In this session, participants will actively engage in problem-sorting activities designed to enhance their ability to support students in developing effective problem-solving skills.

Tashana Howse
@tdhowse_math
Georgia Gwinnett College, Lawrenceville, Georgia
Guy Barmoha
Broward County Schools, Fort Lauderdale, Florida
Lakesia Dupree
University of South Florida, Tampa
Henry B. Gonzalez Convention Center, 305

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

106 A&E
“We Are Mathematicians”: Building Mathematical Communities Based in Sense Making, Agency, and Joy
3–5 Session

How do we build communities of mathematicians in classrooms and throughout a school? This session explores how teachers, coaches, and students use problem solving, number-sense routines, and play to build communities in which everyone identifies as a mathematician and engages in mathematics as a joyful and empowering practice.

Kassia Omohundro Wedekind
@kassiaowedekind
Fairfax County Public Schools, Falls Church, Virginia
Mary Beth Dillane
Fairfax County Public Schools, Falls Church, Virginia

Henry B. Gonzalez Convention Center, 214B

107 A&E
A Model for Mathematical Argumentation: Making It Work in Your Classroom
6–8 Session

The Standards for Mathematical Practice highlight the need for students to construct mathematical arguments, communicate, and respond to the reasoning of others. In this session, we will present a practical four-part model to help promote argumentation in your classroom. Online math activities for coordinate geometry are included.

Teresa Lara-Meloy
SRI International, Menlo Park, California
Jennifer Knudsen
SRI Education, Austin, Texas
Harriette Stevens
Mathematics Education Group, San Francisco, California

Grand Hyatt San Antonio, Travis CD

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 website, www.nctm.org/met
• Call us at (703) 620-9840, ext. 2112
• Email us at exec@nctm.org

Please help us help teachers! Send your tax-deductible gift to MET, c/o NCTM, P.O. Box 75842, Baltimore, MD 21275-5842. Online donations also are welcome at www.nctm.org/donate. 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).
Houghton Mifflin Harcourt® is proud to introduce **Math Expressions**

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NSF-funded *Math Expressions* features a research-proven K–6 curriculum that encourages students to get hands-on with math—exploring, discussing, and demonstrating an understanding of key math concepts. Coming this fall, new digital components and professional support upgrades will provide teachers with a truly balanced classroom math solution.


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**NUMERACY COUNTS**

**FOLLOW OUR PATHWAY TO MATH ACHIEVEMENT**

Learn more about how your students can reach math proficiency: play games, meet authors, and win prizes along the way.

Booth #1024
11:00 A.M.–12:00 P.M.

108 TECH
Bringing Chrome Home—1:1, A New Ratio For Your Classroom
8–10 Session
You’re Invited! Come join in sharing my experiences with 1:1 devices as a facilitator for deeper understanding and active engagement in the math classroom. Attendees will leave the session with an array of best practices, anticipated challenges as well as solutions, and bountiful resources not only for students, but for you as a teacher as well.
Kelley Gould
Grand Hyatt San Antonio, Crockett AB

109 PROF
Are You Interested in Earning a Doctorate in Mathematics Education?

The speaker will discuss the shortage of doctorates in mathematics education and the opportunities in institutions of higher education. A range of different doctoral programs will be presented. Suggestions for choosing a doctoral program and for transitioning into a career in higher education will be discussed.
Robert Reys
University of Missouri, Columbia
Grand Hyatt San Antonio, Presidio ABC

110 BUILD
Boost Conceptual Understanding & Procedural Fluency with Rich Number Sense Tasks
6–8 Session
Would your students benefit from rich number sense tasks connected to ratios, proportions, expressions, and solving equations? Come participate in hands-on tasks that provide students with opportunities to use their own reasoning strategies and methods for solving problems that coherently build conceptual understanding and procedural fluency.
Andrew Stadel
@mr_stadel
Tustin Unified School District, California
Henry B. Gonzalez Convention Center, 301

111 PROF
Changing Minds: Coaching for a Growth Mindset in Math

Coaches/Leaders/Teacher Educators’ Session
Teachers’ identities as math learners and their beliefs about the nature of mathematics play a critical role in shaping learning opportunities given to students and students’ math mindsets. This session offers ideas and tools for using coaching as a vehicle to help teachers reflect on their unconscious beliefs and begin to adopt a growth mindset.
Sue Chapman
University of Houston-Clear Lake, League City, Texas
Grand Hyatt San Antonio, Republic ABC

112 A&E
Co-Teaching: Considerations and Practices to Ensure Success for All

Coaches/Leaders/Teacher Educators’ Session
With purposeful planning and implementation, co-teaching is a powerful approach in meeting the unique needs of all learners in inclusive mathematics classrooms. We describe a PD model and lessons learned from a collaborative project with general and special educators focused on co-teaching, differentiation, and high-quality mathematics tasks.
Kristin Harbour
University of Alabama, Tuscaloosa
Stefanie Livers
University of Alabama, Tuscaloosa
Nicolette Nalu
University of Alabama-AMSTI, Tuscaloosa
Henry B. Gonzalez Convention Center, 007D

CANCELED
11:00 A.M.–12:00 P.M.

113 PROF Connecting and Becoming Stronger Advocates through Affiliates

General Interest Session

The NCTM Affiliate Relations Committee supports affiliates in their individual and collective capacities to advocate for high-quality mathematics education. We respond to survey results and participants reflect on the strengths of their affiliate, and we develop one affiliate goal for the upcoming year and revisit their goals from the NCTM Leaders’ Conference.

Jean Lee
University of Indianapolis, Indiana
Jeremy Zelkowski
University of Alabama, Tuscaloosa
Jill Sumerlin
Tillamook School District #9, Oregon

Henry B. Gonzalez Convention Center, Stars at Night 1

114 “M” Did That Really Happen?

10–12 Session

We often see amazing scenes in viral videos and movies then ask ourselves if that really possible. Participants will receive class-ready modules based on online videos. The modules will contain class-ready worksheets, suggestions, and other materials required to successfully develop, analyze, and evaluate individual models in the classroom.

Charles Emenaker
University of Cincinnati Blue Ash College, Ohio
Gene Kramer
University of Cincinnati Blue Ash College, Ohio

Henry B. Gonzalez Convention Center, 207B

115 A&E Engaging All Learners through Project-Based Social Justice Mathematics (PB-SJM)

6–8 Session

This session will explore a PB-SJM framework that addresses Content Knowledge, Community Connections, Critical Inequity, and Change Agency. Participants will examine how PB-SJM was used in a middle school math classroom to engage students in meaningful math centered on societal inequities as well as ways to incorporate PB-SJM into their classroom.

Maggie McHugh
@mlmchugh
School District of La Crosse, Wisconsin
Lida Uribe-Flórez
NMSU, Las Cruces, New Mexico

Grand Hyatt San Antonio, Lonestar Ballroom C

116 TLC Geniuses Are Made Not Born: Fostering Productive Struggle and Growth Mindset in Mathematics

6–8 Session

Research is finding that talent alone cannot explain the genius phenomena and that intelligence can be altered. Join this session as we look at the impact of mindset on learning and explore resources and activities that BOOST brain power and foster and promote student motivation and productivity.

Cynthia (Cindy) Bryant
@mlmchugh
LearnBop, Springfield, Missouri

Grand Hyatt San Antonio, Texas Ballroom F

117 TLC Get Your Model On: Using 3-Act Tasks in the Elementary Classroom

Pre-K–2 Session

The term “model” is frequently misinterpreted as simply the use of manipulatives in math. This alone doesn’t satisfy the expectation of Standard for Mathematical Practice #4: Model with Mathematics. In this session, participants will develop an understanding of mathematical modeling through 3-act tasks.

Graham Fletcher
@gfletchy
Griffin-Spalding Schools, Georgia

Henry B. Gonzalez Convention Center, Hemisfair 2
11:00 A.M.–12:00 P.M.

118  TLC
Girls Mentoring Girls: How GEMS Is Changing the Lives of Many Girls
3–5 Session
GRISM is an organization formed by high school girls from the Seattle area. They have an annual meet called GEMS (Girls embrace math and science), which is open for girls from third to fifth grade. This year they had their third meet, with more than two hundred girls attending. Girls at the meets are teamed with other girls from other schools and grades.
Claudia Sibila
The Meridian School, Seattle, Washington

Grand Hyatt San Antonio, Crockett CD

119  PROF
How to Apply and Present at NCTM Conferences
General Interest Session
Interested in presenting at math education conferences? The speakers have presented around the world and served on the NCTM program committee, which is responsible for approving proposals. They’ll offer inside information, tips, and tricks for getting your session approved and for presenting it afterwards. Ask questions! Go to bit.ly/presentation-questions.

Dan Meyer
@ddmeyer
Desmos, San Francisco, California

Robert Kaplinsky
Downey USD, Long Beach, California

Henry B. Gonzalez Convention Center, Stars at Night 4

120  TECH
Introduce Function Concepts and Linear Functions Geometrically(!) with Web Sketchpad
8–10 Session
CCSSM expects students to understand transformations as functions. With Web Sketchpad, our algebra students exploited this edict: they used geometric transformations to vary variables; experience domain, range, and rate of change; and to connect their learning back to algebra. Bring a tablet or laptop. Leave with student-ready activities.

Scott Steketee

Daniel Scher
KCP Technologies, New York, New York

Henry B. Gonzalez Convention Center, 008AB

121  ASSESS
Learning from the Crowd, Teaching One Student at a Time
3–5 Session
When adding \( \frac{1}{3} \) and \( \frac{1}{4} \), how often do students say it’s \( \frac{1}{7} \), \( \frac{3}{4} \), or something else entirely, and how are they thinking about it? With open-ended, digital assessments, a wider distribution of student understanding can be explored. More importantly, this data can be leveraged to scalably test various interventional approaches for different students.

Zachary Wissner-Gross
@xaqwg
Amplify Education, Brooklyn, New York

Drew Corley
Amplify Education, Raleigh, North Carolina

Lauren Whitley
Amplify Education, Raleigh, North Carolina

Henry B. Gonzalez Convention Center, 214A

Use #NCTManuual to stay connected with other attendees on Twitter, Facebook, and Instagram.
11:00 A.M.–12:00 P.M.

122 BUILD
Lessons for Today: Applying Reflections from Decades of Mathematics Education to Our Setting
General Interest Session

Today’s issues and controversies in mathematics education have been cyclical and seemingly intractable throughout history. Join me in reflecting—from before the “New Math,” to back-to-basics (repeated frequently), to NCTM Standards, the Math Wars, the National Math Panel, and now CCSSM. What can we do to break the cycle?

Henry Kepner
Past President, National Council of Teachers of Mathematics, Reston, Virginia; University of Wisconsin-Milwaukee

Henry B. Gonzalez Convention Center, 221

123 BUILD
Navigating the Delicate Pathway between Conceptual Understanding and Procedural Fluency
Pre-K–2 Session

We know there needs to be a balance between conceptual understanding and procedural fluency, but how and when do we transition students between those seemingly different ideas? Let’s examine some research-based strategies on how we can use student thinking to balance the delicate interplay between these critical aspects of rigor.

Ryan Dent
@4ryandent
Idaho Regional Math Center/Lewis-Clark State College, Lewiston
Kristian Quirocho
Lake Elsinore Unified School District, California

Grand Hyatt San Antonio, Lonestar Ballroom E

124 A&E
Planning for Equitable Mathematics Teaching: Tips and Suggestions for New Teachers
General Interest Session

This session features strategies for planning equitable mathematics lessons that include posing purposeful questions to encourage sense making and using exit tickets to increase access and participation for all learners. Early career teachers will be guest speakers in this session as they share about using an equity sticky note for planning lessons.

Imani Goffney
University of Maryland, College Park

Grand Hyatt San Antonio, Bowie ABC

125 PROF REFLECTION COVE
Professionalism: Building a Culture by Creating Time and Space
General Interest Session

In this session, we will make connections across the grade bands where appropriate to discuss professionalism. We use vignettes as descriptions highlighting critical aspects of the areas and embedding the range of productive and unproductive beliefs that affect professionalism. We will discuss next steps and critical actions.

Robert Q. Berry III
@robertqberry
President-Elect, National Council of Teachers of Mathematics, Reston, Virginia; University of Virginia, Charlottesville

Henry B. Gonzalez Convention Center, Hemisfair 3

126 ASSESS
Standards-Based Assessment: An Easy-to-Use SBA Quiz System
10–12 Session

In this session, I will explain my SBA (Standards-Based Assessment) Quiz system (most of which I learned from another teacher). I have found it to be a great way to do formative assessment. I will describe the features of this system that make it effective and easy to use—and how it has raised my students’ understanding and scores on exams.

James Olsen
@DrOlsen314
Western Illinois University, Macomb

Grand Hyatt San Antonio, Travis AB
11:00 A.M.–12:00 P.M.

127 **TECH**
Strategic Use of Technology Tools for Statistics in High School Math Courses

8–10 Session
Experience activities that you can do with students, both with and without technology, involving statistical representations, measures of spread and variability, scatterplots, regression, sampling, and simulations. We will feature a variety of apps, software, and websites that provide visual and dynamic representations of statistics concepts.

Andres Marti
SFUSD, San Francisco, California
Elizabeth DeCarli
SFUSD, San Francisco, California

*Henry B. Gonzalez Convention Center, 214C*

128 **TLC**
Supporting Students as They Work with Bar Models

General Interest Session
Bar models (also called strip or tape diagrams) are a powerful visual tool for representing and solving math problems. But they can be challenging for students. Come to this hands-on session to explore a variety of strategies for scaffolding students as they learn to effectively work with bar models. Familiarity with bar models is assumed.

Sue McMillen
SUNY Buffalo State, New York
Jodelle Magner
SUNY Buffalo State, New York

*Grand Hyatt San Antonio, Lonestar Ballroom F*

129 **ASSESS**
Testing Your Students vs. Testing All Students

Coaches/Leaders/Teacher Educators’ Session
With all the negative press lately regarding assessment, it’s hard to get excited about writing test questions. But as we consider the implications of high-stakes testing, how can we ensure that our tests are solid? Learn some strategies used in larger-scaled assessments that help to turn good questions into great questions!

Shona Ruiz Diaz
Educational Testing Service, Princeton, New Jersey
Michelle Worthington
Educational Testing Service, Princeton, New Jersey

*Grand Hyatt San Antonio, Lonestar Ballroom D*

130 **“M”**
The DaVinci Club: An After-School STEAM Program for Students At-Risk

3–5 Session
The DaVinci Club is an after-school club that integrates reading with STEAM. The club allows elementary students from an economically disadvantaged and culturally diverse school to engage in book discussions and complete self-chosen projects in the areas of technology, math, science, and the arts. Sample projects will be shared.

Mercedes Tichenor
Stetson University, Deland, Florida
Kathy Piechura
Stetson University, Deland, Florida
Elizabeth Heins
Stetson University, Deland, Florida

*Henry B. Gonzalez Convention Center, 217D*

131 **TLC**
The Hidden Treasures in Student Misconceptions

Pre-K–2 Session
Teachers can use students’ misconceptions to facilitate rich mathematical discourse. Therefore, we will highlight how teachers can seize the opportunities presented in students’ errors to make mathematical connections and promote conceptual understanding. In this way, misconceptions can unearth hidden treasures.

Lakesia Dupree
University of South Florida, Tampa
Ruthmae Sears
University of South Florida, Tampa

*Henry B. Gonzalez Convention Center, 303*
132  TLC
The Redesign Common Core SAT: Getting Our Students Ready
8–10 Session
The Redesign of the SAT is Common Corebased. This session participants will hear ideas how to incorporate New SAT concepts into algebra, geometry, and algebra 2 without losing time in our packed curriculums.
Kimberly Epps
Oceanside School District, New York
Grand Hyatt San Antonio, Crockett CD

133  TECH
Classroom Resources for NCTM Members
General Interest Session
As busy teachers, it can be hard to find the best resources for your classroom. NCTM offers members a wealth of high-quality resources from apps and online games to lesson plans and complete lesson arcs. Come learn about NCTM’s online classroom resource collections.
Derek Pipkorn
Mequon-Thiensville School District, Mequon, Wisconsin
AnnMarie Varlotta
Howard County Public School System, Ellicott City, Maryland
Max Ray-Riek
The Math Forum at NCTM, Reston, Virginia
Henry B. Gonzalez Convention Center, 225

134  BUILD
Three Critical Components for Building Bridges between Concepts and Procedures
General Interest Session
Concepts and procedures are most valuable when they are connected. Engage in experiences designed to bridge concepts and procedures. Explore three critical components demonstrated as essential for connecting concepts and procedures in K–grade 12. Make sense of the three components through tasks, classroom video, and discussion.
Juli Dixon
University of Central Florida, Orlando
Henry B. Gonzalez Convention Center, 225

135  TLC
“Noticing and Wondering” as a Vehicle to Understanding the Problem
General Interest Session
The practices of noticing and wondering can help all students generate mathematical ideas and make connections between them. Noticing and wondering pave the way for the development of other problem-solving strategies and support a classroom culture that gives every student a way to contribute mathematically and that treats math as a creative process.
Annie Fetter
@MFAnnie
The Math Forum at NCTM, Reston, Virginia
Henry B. Gonzalez Convention Center, Hemisfair 1
11:00 A.M.–12:00 P.M.

**135.1**
**Mathspace—Why You’ll Never Grade Math Assignments Again. Seriously. (BYOD!)**

*General Interest 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 to try award-winning Mathspace live, and ask about a free trial!

Mathspace
New York, New York

_Henry B. Gonzalez Convention Center, 206A_

**135.2**
**Experience Hands-On Equations and Hands-On Equations FRACTIONS . . . Dr. Borenson’s Newest Invention!**

*6–8 Exhibitor Workshop*

We will review the key strategies of Hands-On Equations, the innovative program that has enabled students in third grade and up to easily solve equations such as \(4x + 3 = 3x + 9\) in just three lessons. We will then provide a taste of Hands-On Equations Fractions, and we will show how to solve fractional equations concretely.

Borenson & Associates
Allentown, Pennsylvania

_Henry B. Gonzalez Convention Center, 206B_

**135.3**
**Personalizing Learning in the Math Classroom**

*General Interest Exhibitor Workshop*

Janet Pittock, VP of Curriculum at McGraw-Hill Education, discusses the role of adaptive technology in personalizing learning in the math classroom. Using Stanford University research and best practices, she will provide tools for selecting the right mix of materials and software, as well as tips for implementation and classroom management.

McGraw Hill Education
Columbus, Ohio

_Henry B. Gonzalez Convention Center, 207A_

**135.4**
**Looking at Upside-Down Classrooms: Turning Every Student into a Powerful Problem Solver**

*General Interest Exhibitor Workshop*

One way to engage students in constructive struggle is to turn teaching upside down. Instead of teaching a procedure and then giving problems, consider giving a good problem and using students’ struggle and discourse to set the stage for learning. We will use videos from across the grades to discuss how real teachers do this in their classrooms.

Houghton Mifflin Harcourt
Round Rock, Texas

_Henry B. Gonzalez Convention Center, 210AB_

**135.5**
**Parents Count! A Bedtime Math Partnership with School Districts to Build Math Skills at Home**

*General Interest Exhibitor Workshop*

Bedtime Math is excited to be partnering with school districts across the country on Parents Count, a new initiative that uses our app to foster both parental engagement and early math skills. Partner districts receive communications support and data on app usage within their district. Come hear how to help even more kids learn to love math!

Bedtime Math Foundation
Summit, New Jersey

_Henry B. Gonzalez Convention Center, 212AB_

**135.6**
**What We Can Learn (and Use) from Video Game Designers to Make Math Irresistible**

*General Interest Exhibitor Workshop*

Learn simple strategies to help change student mindsets, spark curiosity, and create a culture where students persevere. Many students are inhibited by the fear of getting wrong answers and low grades. Using video game design psychology and concepts, teachers can increase student interest and decrease anxiety for successful math content mastery.

McGraw-Hill Education
Columbus, Ohio

_Henry B. Gonzalez Convention Center Exhibitor Workshop Theater in Exhibit Hall 3/4_
136  A&E
Building Reading Comprehension in Math Using Read Aloud Think Aloud

General Interest Burst
Reading comprehension is vital to student’s success in math. Participants will learn how to use RA/TA to teach reading comprehension in the math classroom. RA/TA strategies will be explicitly modeled to demonstrate how these strategies help with math comprehension, and student work samples will be shared with participants.

Jeremiah Barrett
Holyoke Public Schools, Massachusetts

Henry B. Gonzalez Convention Center, 302AB

137  BUILD
Computational Fluency with Multiplication—What’s the Fuss?

3–5 Burst
Computational fluency is the ability to apply an understanding of the operations to accurately, efficiently, and flexibly work with basic facts. Participants will learn about what research says are the optimal strategies for developing computational fluency with multiplication. They will leave with several methods and activities ready to be applied in the classroom.

Bethany Lloyd
Wilmington Public Schools, Massachusetts
Jessica de la Cruz
Assumption College, Worcester, Massachusetts

Henry B. Gonzalez Convention Center, 005

138  TLC
Do You “Read” Math? YES! . . . through Literature

6–8 Burst
Interesting literature is a natural hook for young adult learners who find math more engaging when embedded in real-world contexts. Learn how successful math teachers provide opportunities for students to engage in productive struggle as they solve the everyday math dilemmas of characters that they identify with in the text.

Liza Cope
Delta State University, Cleveland, Mississippi
Leslie Griffin
Delta State University, Cleveland, Mississippi

Grand Hyatt San Antonio, Lonestar Ballroom B

139  ASSESS
Formative Assessment for Learning in a Precalculus Class: Helping Students Develop a Growth Mindset

10–12 Burst
Formative assessment is a key element in the math classroom. In this session, participants will learn about the principles underlying effective formative assessment as well as specific strategies. In addition, participants will learn how to use formative assessment not only to assist in planning but also to help students develop a growth mindset.

Erica Slate Young
Appalachian State University, Boone, North Carolina

Henry B. Gonzalez Convention Center, 006B

140  TECH
Google Maps and Desmos for Solving Systems of Linear Inequalities

8–10 Burst
This session will highlight a 5E lesson implemented using Google Maps for solving systems of linear inequalities. We will incorporate Desmos to support student understanding, and we will demonstrate how to embed images generated by Google Maps into Desmos. Methods for distributing and collecting student work will also be presented.

Colleen Eddy
University of North Texas, Denton
Cheyenne Green
Sherman Independent School District, Texas
Sarah Pratt
University of North Texas, Denton

Henry B. Gonzalez Convention Center, 007B

141  BUILD
How to Get the Most Out of Short Writing Tasks

Higher Education Burst
Writing makes students’ thinking visible to us. Let’s explore what can make short writing tasks effective in promoting students’ deeper understanding of mathematical ideas and providing important information to teachers. Example tasks, some student work, and ideas you can use will be shared.

Susan Gay
University of Kansas, Lawrence
Ingrid Peterson
University of Kansas, Lawrence

Henry B. Gonzalez Convention Center, 007A
11:30 A.M.–12:00 P.M.

142 ASSESS
Just the FACTs: Formative Assessment Classroom Techniques
6–8 Burst
Classrooms with a formative assessment focus lead to greater student understanding. Participants will learn about a variety of formative assessment techniques where teachers can use the student information they gather to inform their teaching.
Micah Stohlmann
University of Nevada, Las Vegas
Henry B. Gonzalez Convention Center, 304B

143 TLC
Making Mathematical Modeling Manageable with Co-Teaching
3–5 Burst
We will showcase two elementary teachers’ work to engage students in mathematical modeling tasks. Mathematical modeling can greatly improve understanding, but one obstacle is that students’ mathematical understanding, thought processes, and learning styles vary, making management difficult. Come see how teaming up can manage structural complexities.
Jihyun Hwang
University of Iowa, Iowa City
Tracy Jarrett
Mount Pleasant Community School District, Iowa
Stephanie Nudd
Mount Pleasant Community School District, Iowa
Henry B. Gonzalez Convention Center, 305

144 PROF
Math Buddies: A Multigrade Co-Teaching Experience to Promote Student Mentorship
6–8 Burst
Math Buddies unites teachers and students from multiple grades. Experienced problem solvers teach novices about Polya’s 4 phases and the importance of explaining your thinking verbally using CueThink’s problem-solving platform. The use of technology, cross-grade teacher collaboration, and peer tutoring strengthened students’ conceptual understanding.
Sarita Spillert
CueThink, North Reading, Massachusetts
Adrienne Norris
Natick Public Schools, Massachusetts
Henry B. Gonzalez Convention Center, 006A

145 PROF
Math Journal Club for Teachers: Developing Professional Learning Network
Burst
How can you create professional networks for teachers in rural areas? We started an online Math Journal Club to discuss NCTM journal articles on teaching strategies and key topics in junior high school math. At this session, we’ll share teacher feedback, discuss video clips from the online meetings, and analyze what worked and what didn’t!
Megan Snow
Tri-County Regional School Board, Yarmouth, Nova Scotia
Irina Lyublinskaya
College of Staten Island, New York
Henry B. Gonzalez Convention Center, 304C

2017 Regional Conferences
Orlando • October 18–20
Chicago • November 29–December 1
146 On-Demand Learning

General Interest Burst

Our presentation will describe the teacher-created course called Math Personalized Learning Plan. Math PLP covers the algebra 1, geometry, and algebra 2 curriculum and is based off the one-room schoolhouse idea. We will expose participants to an innovative model that can be modified for their classrooms.

Maddie Backes
Liberty Public Schools, Missouri
Susan Link
Liberty Public Schools, Missouri

Henry B. Gonzalez Convention Center, 006D

147 Say This, Don’t Say That

3–5 Burst

Join us as we explore the shifts in vocabulary and instruction present in today’s mathematics classroom. Focus will be on progressive vocabulary utilization, authentic mathematical language, and the rationale behind shifts. Find out how to avoid misconceptions and reteaching caused by ineffective vocabulary choices.

Amy Zuber Seguin
School District of the Menomonie Area, Wisconsin
Michelle Dupree
School District of the Menomonie Area, Wisconsin

Grand Hyatt San Antonio, Lonestar Ballroom A

148 Sequencing Series in Calculus

10–12 Burst

Students often miss connections that can lead to understanding series more fully. Building on tangent line approximations, students can calculate quadratic approximations, laying the groundwork for higher order Taylor polynomial approximations. Investigating approximations early and often can be integral in providing a framework for success.

Josh Berberian
The Shipley School, Bryn Mawr, Pennsylvania

Henry B. Gonzalez Convention Center, 007C

149 Strategies for Providing Effective Written Feedback in Mathematics

General Interest Burst

Research indicates that providing effective written feedback to your students can greatly impact student learning. This session will describe the characteristics of effective feedback and strategies that go beyond marking student work as “right or wrong” and, instead, writing statements that push student thinking forward in productive ways.

Tony Thompson
East Carolina University, Greenville, North Carolina
Kwaku Adu-Gyamfi
East Carolina University, Greenville, North Carolina

Henry B. Gonzalez Convention Center, 217C

150 Technology Tools to Enhance Your Math Class

3–5 Burst

Having the technology is not enough. For the technology to be effective in math class, there has to be quality content. Learn about online resources that are effective for student instruction; conceptual understanding and problem-solving strategies; and assessment. Tools and resources that support everyday instruction and assessment will be shared.

Christopher Coyne
Marshall Cavendish Education, Tarrytown, New York

Henry B. Gonzalez Convention Center, 304A

151 Understanding Fraction Division: Don’t Just Flip and Multiply!

6–8 Burst

Join us to learn how the operation of division is the same for whole numbers, decimals, and fractions. We will explore a visual model and use it to solve applications to build a solid understanding of fraction division.

Barbara Boschmans
Northern Arizona University, Flagstaff
Brian Beaudrie
Northern Arizona University, Flagstaff

Henry B. Gonzalez Convention Center, 224
Developing Literate Mathematicians: A Guide for Integrating Language and Literacy Instruction into Secondary Mathematics
BY WENDY WARD HOFER
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.
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Putting Essential Understanding of Geometry and Measurement into Practice in Grades 3–5
BY KATHRYN CHVAL, JOHN LANNIN, AND DUSTY JONES
KATHRYN CHVAL, VOLUME EDITOR
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.
©2016, Stock #14439

DON’T MISS!
More Lessons Learned from Research, Volume 1
EDITED BY EDWARD A. SILVER
Helps to link classroom teachers to all that original research has to offer
©2015, Stock #14117

Problem Solving in All Seasons, Grades 3–5
BY KIM MARKWORTH, JENNI MCCOOL, AND JENNIFER KOSIAK
Holidays and seasonal activities offer perfect backdrops for mathematical tasks that can be related to other topics and themes in the classroom. This book delivers thirty-six appealing, real-world mathematical tasks, arranged in grade-level order, to engage young learners in problems tied to the Common Core and designed to allow children to participate in the Common Core Standards for Mathematical Practice. Each task includes a complete implementation guide, and handouts and ancillary materials can be accessed online. This is your all-in-one practical handbook for problem solving in the primary years.
©2016, Stock #14809

DON’T MISS!
Problem Solving in All Seasons, Pre-K–Grade 2
BY KIM MARKWORTH, JENNI MCCOOL, AND JENNIFER KOSIAK
©2015, Stock #14808

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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.

152 BUILD
Units of Study: Understanding the Limitations of Isolated Learning

Burst
Yearly plans based on units of study have been developed to ensure all mathematics outcomes are addressed throughout the year. However, such an approach to instruction has limitations and may jeopardize student mathematical understanding. Learn about the limitations associated with units of study, and how such planning can isolate learning.

David Costello
@dr_costello
Department of Education, Early Learning and Culture, Summerside, Prince Edward Island, Canada

Henry B. Gonzalez Convention Center, 217A

153 TLC
Unwrapping Your Lessons: Generating Curiosity & Problem Solving

Pre-K–2 Burst
Feeling stuck in the grind of daily planning and instruction? Engage in collaborative discussions to spark fresh energy and curiosity in students. We will share routines for unwrapping lessons to create entry points for all students. Walk away with strategies for increasing the cognitive demand of lessons without starting from scratch.

Devin Anderson
@devin_anderson
Gahanna-Jefferson Public Schools, Ohio
Renee Snyder
Teaching & Learning Collaborative, Worthington, Ohio
Andrea Mulisano
Gahanna-Jefferson Public Schools, Ohio

Henry B. Gonzalez Convention Center, 214D

154 TLC
Using Learning Progressions to Find a “Place” for Place Value

Pre-K–2 Burst
Struggling to find intentional ways to support place value across the year? Learn how learning progressions can be used to plan lessons that enhance student mathematical understanding. Specific strategies will be shared to inspire teachers to work with students and foster investigation. Leave with ideas that encourage all students to continue along a path of deeper understanding.

Jamie Duncan
@jamiedunc3
Lake Elsinore Unified School District, California
Devin Anderson
Gahanna-Jefferson Public Schools, Ohio
Andrea Mulisano
Gahanna-Jefferson Public Schools, Ohio

Henry B. Gonzalez Convention Center, 004

155 TLC
Utilizing Random Number Sheets to Carry Out Simulations Aligning with CCSS

6–8 Burst
The Common Core State Standards (CCSS) require using simulation in teaching and learning probability and statistics. For example, 7.SP.C.8.C: “use simulations to generate frequencies for compound events.” This presentation shows how to use random number sheets to conduct simulations aligning with CCSS. Detailed activities will be shared.

Lina DeVaul
University of Nevada, Las Vegas, Henderson
Amy Adkins
University of Nevada, Las Vegas
Travis Olson
University of Nevada, Las Vegas

Henry B. Gonzalez Convention Center, 006C
11:30 A.M.–12:00 P.M.

156 **BUILD**
What Makes Residuals So Special?
10–12 Burst
What are residuals and why do I need them? When determining a best fit for data, why not just use \( r \), or \( r^2 \), or \( R^2 \)? Why are residuals important? What can they tell me that I don’t already know? In this session, we will explore data sets that help you understand the importance of residuals.

Sharon Taylor
Georgia Southern University, Statesboro, Georgia

**Henry B. Gonzalez Convention Center, 217B**

157 **BUILD**
Where’s the Math?
General Interest Burst
A researcher once observed: “In U.S. lessons, there are students and there is the teacher. I have trouble finding the mathematics.” The presence of procedures and numbers does not a math education make. Doing math is an exhilarating, satisfying adventure that too few students experience. Learn strategies that enable real math thinking to thrive.

Zack Miller
@zmill415
Summit Public Schools, Daly City, California

**Grand Hyatt San Antonio, Texas Ballroom A**

158 **BUILD**
Wrangling Ratios
6–8 Burst
This session will focus on building conceptual understanding of ratios using hands-on activities. We will also examine alternative ways to visualize and solve problems involving ratios using strip diagrams.

Eileen Faulkenberry
@efaulkenberry
Tarleton State University, Stephenville, Texas
Melanie Fields
Texas A&M University-Commerce

**Grand Hyatt San Antonio, Texas Ballroom B**

12:30 P.M.–1:00 P.M.

159 **BUILD**
Beyond Linear: Relatable Problems That Lead to a Deep Understanding of Quadratic Functions
10–12 Burst
Dive into quadratics with real-world contexts! Work through problems that put students in a “quadratic” frame of mind, even if they have no experience with quadratic functions. Learn how the context can serve as a foundation for deep understanding. Leave with ideas you can implement in your classroom.

Carl Oliver
City-As-School, New York, New York

**Henry B. Gonzalez Convention Center, 006B**

160 **TLC**
Connecting Geometry, Functions, and Data—with Modeling
10–12 Burst
Want productive struggle? Try modeling. In these mini-investigations, we will see the whole cycle: students measure geometric figures, plot measurements as data, find functions to act as models, and connect those models to the original geometrical context. Free online tools make it practical. We’ll also discuss assessment using real student work.

Tim Erickson
@eeps
Epistemological Engineering, Oakland, California

**Henry B. Gonzalez Convention Center, 007C**

161 **PROF**
Designing and Teaching Mathematics Courses for EC-6 Preservice Teachers
Higher Education Burst
As EC-6 mathematics curricula change, preservice mathematics courses must be updated to reflect the content that future teachers will be expected to deliver. This session will review the structure of the mathematics content and strategies used in courses for EC-6 preservice teachers and how they meet state and national mathematics standards.

Winifred Mallam
Texas Woman’s University, Denton

**Henry B. Gonzalez Convention Center, 006C**
162 TECH Designing GeoGebra Applets to Maximize Student Engagement
10–12 Burst
GeoGebra is a free and powerful tool teachers and students can use to explore various mathematical ideas. In this presentation, we highlight how GeoGebra files can be created and shared to minimize distractions and maximize engagement with mathematical ideas. We describe the general pedagogical principles behind specific applets.

Teo Paoletti
Montclair State University, New Jersey
Ceire Monahan
Montclair State University, New Jersey
Madhavi Vishnubhotla
Montclair State University, New Jersey

Henry B. Gonzalez Convention Center, 304A

163 A&E Engaging Students in Mathematics with Culturally Responsive Stories
3–5 Burst
What makes a story culturally responsive? Come find out and then listen to recent research on using these stories to engage students in multicultural classrooms. Participants will experience the evaluation process with several examples and are given resources for creating their own library of culturally responsive stories for mathematics.

Amy Corp
Texas A&M Commerce, Corsicana
Dittika Gupta
Midwestern State University, Wichita Falls, Texas

Henry B. Gonzalez Convention Center, 304C

164 BUILD 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, Earth City, Missouri

Henry B. Gonzalez Convention Center, 004

165 TLC Give Your Classes a Global Perspective
General Interest Burst
The mathematics of the Colosseum and the Sydney Opera House. The lighting of the Olympic torch. Discussing international issues using mathematics. Students need to be aware of the world around them, and this burst will provide examples of simple ways of adding a global perspective to your regular lessons.

James Roznowski
Delta College, University Center, Missouri

Henry B. Gonzalez Convention Center, 302AB

166 TECH Increase Your Students’ Mathematical Communication with a Writing Checklist and Google Classroom
6–8 Burst
Learn how to create online writing activities and use peer-to-peer and instructor feedback to improve conceptual understanding through a student-centered writing checklist. Three writing components are stressed: correct answer, correct mathematical reasoning, and complete explanation. Sample work from a unit on solving equations will be shared.

Andrea Lohse
Cherry Creek School District, Aurora, Colorado

Henry B. Gonzalez Convention Center, 007B
12:30 P.M.–1:00 P.M.

167 TLC
Let’s Be Detectives: The Search for Rules, Patterns, and Understanding with SMP 7 & 8 in the Early Years
Pre-K–2 Burst
Come and learn what structure and regularity in repeated reasoning looks like in the early childhood math classroom. After the sharing of specific activities, tasks, and student work, you will leave this burst with a clear understanding of SMP 7 & 8 as well as routines and activities you can start using tomorrow!

Susan Looney
@looneymath
Looney Math Consulting, North Easton, Massachusetts
Molly Vokey
Looney Math Consulting, North Easton, Massachusetts

Henry B. Gonzalez Convention Center, 224

168 ASSESS
Math Mini-Assessments: Quality, Components, and Use Cases
3–5 Burst
Engage with mini-assessments that weave together the instructional shifts and criteria for high-quality assessment. These free resources can provide a snapshot of student progress through grade level content. Each assessment is designed to measure students’ procedural skill and fluency, conceptual understanding, or application of content.

Astrid Fossum
@AstridFossum
Student Achievement Partners, Brooklyn, New York

Henry B. Gonzalez Convention Center, 224

169 BUILD
Multistep Word Problem Solution Patterns of First and Second Graders
Pre-K–2 Burst
Students who have developed understanding of mathematics conceptually do not need unconnected methods to solve multistep word problems, even before being formally taught. From data collected from students in the first and second grade, solution patterns and thought processes of students while solving multistep word problems will be explored.

Makini Campbell-Sutherland
University of Central Florida, Orlando
Katie Harshman
University of Central Florida, Orlando

Henry B. Gonzalez Convention Center, 005

170 BUILD
Number Sense: Foundations for Deep Mathematical Understanding
General Interest Burst
Number sense is the foundation for all mathematical understanding. But, really, what is number sense? This session will present a framework for understanding number sense and its various components. Embedded in this discussion will be a summary of number sense research and instructional strategies geared to developing students’ number sense.

Jessica Shumway
@JessicaShumway
Utah State University, Logan

Grand Hyatt San Antonio, Texas Ballroom B

171 A&E
Parent University
6–8 Burst
How many times do you hear parents say, “I would love to help my child with math, but it doesn’t look like how I learned it?” Parent University is a program of biweekly classes developed to teach parents the math concepts and strategies needed to help their children succeed. Parents learn upcoming content in their child’s class from the teacher.

Derek Fialkiewicz
Brian and Teri Cram Middle School, North Las Vegas, Nevada

Grand Hyatt San Antonio, Lonestar Ballroom A
172 BUILD
Promoting Classroom Discourse through Open Middle Problems

General Interest Burst
Who is doing the math in our class? Who is doing the talking? In this session, we’ll get students talking about problems, not telling answers. Bring a troublesome lesson along, and we’ll transform those standard problems into opportunities to explore student thinking and deepen student learning.

Bryan Anderson
@Anderson02B
First City School, Bemidji, Minnesota

Henry B. Gonzalez Convention Center, 217B

173 TLC
Questioning Strategies to Deepen Mathematical Understandings

General Interest Burst
Students learn more when they are the ones talking, explaining, and teaching. Learn questioning strategies that will encourage your students to communicate with you and with one another, and you will see their mathematical understandings deepen.

Kari Maurer
@KariMaurer1
Round Rock ISD, Texas

Grand Hyatt San Antonio, Texas Ballroom A

174 A&E
Quick Quantitative Literacy

General Interest Burst
After we briefly define quantitative literacy and discuss its importance in today’s world, participants will partake in several activities designed to develop the quantitative reasoning abilities of them and their students. The activities are fun, fast, and designed to help all who do them view “typical” numbers from a very different perspective!

Brian Beaudrie
Northern Arizona University, Flagstaff
Barbara Boschmans
Northern Arizona University, Flagstaff

Henry B. Gonzalez Convention Center, 214D

175 TLC
Revoicing: What Do Your Students Know?

10–12 Burst
Revoicing student ideas can stifle classroom discourse or it can enhance it. Come watch a brief video of a lesson and participate in a lively discussion about enhancing mathematical discourse. Leave with practical tips you can use on Monday!

S. Leigh Nataro
@mathteacher24
Moravian Academy Upper School, Bethlehem, Pennsylvania

Henry B. Gonzalez Convention Center, 217A

176 TECH
Seven Ways ROCKSTAR Math Teachers Use YouTube

10–12 Burst
This session will demonstrate how to use and create videos to enhance mathematics instruction through a series of YouTube videos created by the presenter and additional YouTube channels and videos. The session will also consider a variety of effective strategies for integrating web-based video clips into the secondary mathematics curriculum.

Tinashe Blanchet
@learnlabnola
The Learning Laboratory New Orleans, Inc., Louisiana
Yvelyne Germain-McCarthy
University of New Orleans, Louisiana

Henry B. Gonzalez Convention Center, 304B

177 PROF
Stuck on a Professional Island? Let Social Media Be Your Boat

Burst
Feeling isolated by choice or circumstance? In this session, we will provide resources and outlets that you can utilize to build your own boat and sail off your island. Learn to use social media, education websites, and an instructional coach to meaningfully collaborate with people and build a PLN inside and outside the walls of your school.

Tracy Pattat
@tracypattat
Clear Creek ISD, League City, Texas
Sara Bordelon
Clear Creek ISD, League City, Texas

Henry B. Gonzalez Convention Center, 006D
12:30 P.M.–1:00 P.M.

178 BUILD
Supporting Students’ Development of Mathematical Thinking

General Interest Burst
Mathematical thinking is central to doing mathematics. How can we help students to develop and use it to learn mathematics with deep understanding? This session will address ways that teachers can support students in developing mathematical thinking through inquiry-based, mathematical pattern tasks for building conceptual understanding.

Olive Chapman
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Calgary, Alberta, Canada

Henry B. Gonzalez Convention Center, 305

179 M
The Architecture of Thomas Jefferson: Integrating Math, Science, and History

8–10 Burst
We use Jefferson’s drawings as a springboard into our interdisciplinary curriculum that combines geometry, environmental science, and U.S. history. The lessons ask students to analyze the geometry present in classic architecture, relate it to familiar structures, and take a Google Earth tour of some of the first buildings to dot the colonial landscape.

Beverly Heigre
Notre Dame High School, San Jose, California
Lee Pruett
Notre Dame High School, San Jose, California

Henry B. Gonzalez Convention Center, 007A

180 A&E
Vocabulary: The Reciprocal Relationship between Mathematics and Literacy

6–8 Burst
Discover how to better engage all students in vocabulary acquisition as it relates to mathematics. Participants will engage in rich discussion as well as multiple hands-on activities that can be immediately implemented into the mathematics classroom and enhance overall student learning for all students.

Karen DiBella
University of Tennessee at Martin
Kimberly Williams
University of Tennessee at Martin

Henry B. Gonzalez Convention Center, 006A

181 TLC
Why Is That Wrong? Using Mistakes to Build Meaning in Math Class

General Interest Burst
Talking about students’ errors and why they are wrong can help students develop correct solution strategies and sound ideas. We will address the research on the relationship between mistakes and learning and offer strategies for using mistakes as instructional tools. Common misconceptions about error analysis will also be discussed.

Nancy Anderson
Milton Academy, Massachusetts
Sandra Correia
Milton Academy, Massachusetts

Grand Hyatt San Antonio, Lonestar Ballroom B

12:30 P.M.–1:30 P.M.

182 BUILD
Build Conceptual Understanding Using a Clothesline

6–8 Session
Explore how using a clothesline as a number line can help students learn grade-level content while strengthening their number sense. Learn how to consistently use this simple yet dynamic tool, which will help deepen students’ conceptual understanding, connect different math concepts, and increase student discourse.

Daniel Luevanos
@danluevanos
San Marcos Unified School District, California

Grand Hyatt San Antonio, Crockett AB
BIG IDEAS MATH
BY RON LARSON AND LAURIE BOSWELL
YOUR COMPLETE SOLUTION FOR MIDDLE SCHOOL AND HIGH SCHOOL MATHEMATICS

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- Increases student engagement and inquiry
- Balances discovery learning and scaffolded instruction
- Includes dynamic technology with automatically graded online homework and assessments

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877-552-7766
BigIdeasLearning.com
12:30 P.M.–1:30 P.M.

183 A&E Connecting Representations: A Routine for Reasoning for ALL Students
6–8 Session
We'll address challenges and opportunities in the SMPs, and we'll model a robust instructional routine that fosters the math practices in all students. We will then unpack the supports that are designed for English language learners and students with learning disabilities. Participants will leave with concrete strategies to develop SMPs in ALL students.

Amy Lucenta
Math Consultant, Natick, Massachusetts
Grace Kelemanik
Kelemanik Consulting, Natick, Massachusetts

Henry B. Gonzalez Convention Center, Hemisfair 3

184 ASSESS Does Technology Help with Any of This?
General Interest Session
Laptops, iPads, Chromebooks, BYOD. As our school’s technology has evolved, so has our process for determining where, when, what technology we use. Find out what our process looks like now; what tech, apps, and more we use or don’t use and why; and how we do all of this to meet our daily goals of collaboration, teamwork, and problem solving.

Shawn Trotter
@307Trot
PCSD #6, Cody, Wyoming
Kelly Phelan
PCSD #6, Cody, Wyoming

Henry B. Gonzalez Convention Center, 205

185 A&E REFLECTION COVE
Don’t Underestimate Your Students: Differentiate Successfully by Asking Richer Questions
General Interest Session
The questions that teachers ask make all the difference! Participants will explore mathematical question styles that not only provide entry points for all students but also allow for high ceilings, ensuring that all students, from those who struggle to those who don’t, are engaged in meaningful mathematical thinking.

Marian Small
University of New Brunswick, Fredericton, New Brunswick, Canada

Henry B. Gonzalez Convention Center, Hemisfair 2

186 A&E ELLs Using Linguistic Capital to Create Equitable Learning Opportunities in an Online Math Course
Research Session
In this study, ELLs discuss how making meaning of mathematical vocabulary and explanations are aided by their bi-cultural capital. We show how effective online environments allow ELLs to utilize their bi-cultural assets to enhance math understanding and to provide equitable access to math instruction. Authentic digital practices will be discussed.

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

Henry B. Gonzalez Convention Center, 217D

187 A&E Engaging Activities and Strategies to Spark Numeric Fluency and Mathematical Reasoning
3–5 Session
Besides improving students’ numeric competency, these strategies promote greater sense making and participation. Experience effective ways to differentiate instruction and efficiently implement the Standards for Mathematical Practice. While enhancing mathematical reasoning, the handout activities improve number and operation sense.

Leigh Childs
San Diego County Office of Education, California

Henry B. Gonzalez Convention Center, 007D
12:30 P.M.–1:30 P.M.

188 A&E
Engaging the English Language Learner to Grasp Growing Sequences
6–8 Session
Support language development and productive struggle, and motivate the English language learner in algebraic thinking by examining growing pattern tasks through well-planned interrelated social and analytic scaffolding. Simultaneously engaging in mathematical discourse focused on the key practices of argumentation, structure, and regularity.

José Francisco Sala García
@JoseFSala
IES Santa María d'Eivissa, Ibiza, Balearic Islands
Grand Hyatt San Antonio, Presidio ABC

189 TECH
Enhancing Calculus with Modeling and Technology
10–12 Session
Modeling problems help engage students in learning and reinforcing important calculus concepts. Technology such as GeoGebra and spreadsheets provide students with the power to understand these problems, develop models, and see calculus in action. Classroom-tested problems and solutions will be shared.

Cheryl Gann
North Carolina School of Science and Mathematics, Durham
Henry B. Gonzalez Convention Center, 214C

190 A&E
Getting Mathematical Understanding to SOAR!
General Interest Session
We will analyze a student’s responses to a SOAR mathematics interview and hypothesize possible “next best” learning opportunities based on a learning pathway. We will revisit the student after several more learning opportunities looking for more evidence of understanding and discuss the potential benefit of additional learning opportunities.

Kristin Klingensmith
University of Pittsburgh, Pennsylvania
Victoria Bill
University of Pittsburgh, Gibsonia, Pennsylvania
Henry B. Gonzalez Convention Center, 221

191 “M”
Mathematics of Bees
10–12 Session
Bees use very sophisticated thinking for surviving. This presentation will illustrate applications of discrete mathematics topics, such as trigonometry, higher dimensional geometries, and Steiner Points to the lives of bees. The connections between mathematics and bees’ methods for finding food and building hives will be discussed.

Thomas Leslie Newsome III
Guilford County Schools, Greensboro, North Carolina
Grand Hyatt San Antonio, Travis AB

192 A&E
Coaches/Leaders/Teacher Educators’ Session
Dr. Daryl Rock, the former principal of Benjamin Banneker Academy in Brooklyn, will detail how he used student support to achieve a 98% high school graduation rate for African American students. Furthermore, he will describe how those support systems are used successfully in the URock Math after-school program.

Daryl Rock
Rock Academic Services, Brooklyn, New York
Grand Hyatt San Antonio, Lonestar Ballroom D

193 A&E
If You Build It: Creating a Schoolwide Math Community
Coaches/Leaders/Teacher Educators’ Session
When creating a math community at a school, teachers and leaders need to look beyond the classroom walls. Learn how one school built and fostered community through family math nights, inviting families into the math classroom during the school day, special schoolwide math events, and community partnerships.

Kristen Mangus
@kristenlmangus
Howard County Public School System, Columbia, MD
Henry B. Gonzalez Convention Center, 303
12:30 P.M.–1:30 P.M.

194 **PROF**
**Mathematical Mindsets: Creating a New Future for Math Teachers and Learners**

*General Interest Session*
New discoveries in brain science are both amazing and at times surprising. They help us understand why so many students—and perhaps you—haven’t developed the connections with math that are possible and truly liberating. Come and learn what we can say and do with students to ignite new math pathways, creating classrooms that are full of excited, engaged students. Meet and greet following session.

**Jo Boaler**
Stanford University/Co-Founder Youcubed, Stanford, California

Henry B. Gonzalez Convention Center, Lila Cockrell Theatre

195 **PROF**
**Making the Case for Elementary Mathematics Coaches**

*Coaches/Leaders/Teacher Educators’ Session*
Elementary math coaches are to provide school-based professional support spanning math content, instructional approaches, and interpretation of student understanding. Come interpret data describing how coaches spent their time as we discuss implications. Learn of research findings connecting the work and activity of coaches to student achievement.

**Patricia Campbell**
University of Maryland, College Park

Grand Hyatt San Antonio, Republic ABC

196 **TLC**
**Mathematical Practices: Making Complex Mathematics Accessible to Every Student**

*3–5 Session*
Participants will examine specific instructional practices that support students in doing the complex mathematical work involved in engaging in mathematical practices. These teaching practices make it possible for teachers to unpack the mathematical work in ways that give all students access to challenging ideas, without reducing the complexity.

**Nicole Garcia**
University of Michigan, Ann Arbor

**Meghan Shaughnessy**
University of Michigan, Ann Arbor

Henry B. Gonzalez Convention Center, 214B

197 **TLC**
**Mistakes Are Expected, Respected, and INSPECTED! How Do We Inspect Mistakes Productively?**

*General Interest Session*
Many teachers are changing their minds about the role of mistakes in learning. This session goes beyond setting up a safe classroom environment. Strategies will be shared for highlighting mistakes as a TOOL for making connections to mathematical structure. Don’t correct mistakes! Figure out why they make sense and how they can help deepen learning!

**Erica Burnison**
Davis Joint Unified School District, California

Grand Hyatt San Antonio, Travis CD

198 **BUILD**
**More Than Meets the “Line”**

*8–10 Session*
Finding the equation for the line of best fit is just the beginning. Why do we always stop working on a best fit problem when we find an equation? Should we care about the slope and $y$-intercept? Let’s explore the value of determine the line of best fit and what it tells us when analyzing and interpreting data in context.

**Kelly Edenfield**
@CLKedenfield
Carnegie Learning, Pittsburgh, Pennsylvania

**Janet Tomlinson**
Carnegie Learning, Inc, Pittsburgh, Pennsylvania

Grand Hyatt San Antonio, Lonestar Ballroom F
12:30 P.M.–1:30 P.M.

199 PROF
More Than Resources: The Internet and Deliberate Practice
General Interest Session
Social media has made it easier than ever to share high-quality resources; Visual Patterns, Estimation 180, and three-act tasks are just a few examples. While sharing resources is useful, this session will focus on using free Internet-based resources to foster deliberate, reflective practice and develop skills that make us better teachers.

Dylan Kane
@math8_teacher
High Mountain Institute, Leadville, Colorado
Henry B. Gonzalez Convention Center, 008AB

200 TLC
Non-Routine Problems to Promote Persistence, Creativity, and Positive Dispositions
6–8 Session
We will explore the use of non-routine problems to engage students and help them become better problem solvers. The problems align with middle school content and Common Core practice standards. Participants will receive several problems that promote productive struggle, creativity, and positive dispositions. Student work will be shared.

Hoyun Cho
Capital University, Columbus, Ohio
Gary Lawrence
Mustard Seed School, Hoboken, New Jersey
Grand Hyatt San Antonio, Lonestar Ballroom E

201 BUILD
Numberless Word Problems in the Elementary Grades
Pre-K–2 Session
How can we develop conceptual understanding of the underlying structures of word problems to help students become proficient at solving them? Take out the numbers! In this session, we’ll share a simple yet effective instructional routine that scaffolds student understanding of word problem types and promotes sense making prior to computation.

Brian Bushart
@bstockus
Round Rock Independent School District, Texas
Regina Payne
Round Rock Independent School District, Texas
Grand Hyatt San Antonio, Texas Ballroom F

202 TECH REFLECTION COVE
Principles for Building and Using Effective Digital Tasks
General Interest Session
What do the most powerful digital math tasks have in common? What teacher moves allow students to get the most out of any lesson? In this session, we’ll consider answers to these questions and use the Desmos Activity Builder as a lens for exploring the intersection of computers, teaching, and math.

Michael Fenton
@mjfenton
Desmos, San Francisco, California
Henry B. Gonzalez Convention Center, 301

203 "M"
Simple Machines Design Challenge for Middle School Science and Math Students
6–8 Session
This challenge is an interdisciplinary group project where students investigate the history and physics of simple machines; design a new machine; and construct, test, and evaluate peers’ designs. It provides students with the opportunity to incorporate inquiry, equations, construction, and graphical representations all in one unit.

Anna Delia
Hawken School, Lyndhurst, Ohio
Kimberly Brandt
Hawken School, Lyndhurst, Ohio
Grand Hyatt San Antonio, Crockett CD
12:30 P.M.–1:30 P.M.

10–12 Session
We will explore how to engage the AP Statistics learners in topics of social justice and critical theory, how to find resources, and how to incorporate these ideas of justice into the classroom and curriculum without losing a focus on rigor necessary for the exams.
Glenn Waddell  
University of Nevada, Reno  
Megan Schmidt  
St. Francis High School, Minnesota
Grand Hyatt San Antonio, Lonestar Ballroom C

205  TLC  The Advanced Algebra/Finance Connection: A Perfect 3rd- or 4th-Year Math Course
10–12 Session
Learn ways to use financial applications and activities in an advanced algebra course with only algebra 1 as a prerequisite. The math will be explored in the contexts of discretionary expenses, banking, credit, auto ownership, employment, taxes, housing, investing, entrepreneurship, retirement, and budgeting. Handouts will be distributed.
Richard Sgroi  
Bedford Central Schools, New York  
Robert Gerver  
North Shore Schools, Glen Head, New York
Henry B. Gonzalez Convention Center, Hemisfair 1

206  “M”  Using Design Thinking to Drive STEM PBL
10–12 Session
You will experience how math, science, and technology teachers put students in the driver’s seat through a human-centered design project. Participants will step in and out of the design-thinking process to understand how student empathy and curiosity can drive learning, while integrating multiple disciplines and addressing national learning standards.
Zach Strother  
Mount Vernon Presbyteri School, Atlanta, Georgia  
Robin Mathews  
Mount Vernon Presbyterian School, Atlanta, Georgia  
T.J. Edwards  
Mount Vernon Presbyterian School, Atlanta, Georgia
Grand Hyatt San Antonio, Bowie ABC

207  ASSESS  Using MTMS in the Classroom
6–8 Session
An editorial panel member will demonstrate various ways that Mathematics Teaching in the Middle School can be used by middle school teachers. Come find how feature articles and departments in this NCTM resource can be used to enhance your teaching, your understanding of mathematics, and effective use of formative assessment strategies.
Terry Wyberg  
University of Minnesota, Lakeville
Henry B. Gonzalez Convention Center, 214A

208  BUILD  What Are Statistical Models, and Why Do I Need Them?
10–12 Session
Mathematical models connect math to the physical world. Statistical models serve the same purpose, and they provide a more thorough description of the behavior of the data under study. Learn how math models describe the structure of a relationship, and how statistical models make them more thorough. Examples, activities, and resources will be provided.
Stephen Miller  
Winchester Thurston School, Pittsburgh, Pennsylvania
Henry B. Gonzalez Convention Center, 207B
12:30 P.M.–1:30 P.M.

209  BUILD
What Is Multiplication and How Should We Teach It?
3–5 Workshop
American teachers commonly introduce multiplication by first looking at positive integers, and they introduce it as “repeated addition.” Professional mathematicians often complain that this definition is wrong (even for positive integers). What is the correct definition, and how can teachers better introduce the concept?

Keith Devlin  
@profkeithdevlin  
Stanford University, California

Henry B. Gonzalez Convention Center, 225

209.1 EW
Strategies for Managing Small Groups with an Equity Stance
General Interest Exhibitor Workshop
How do we manage mathematical discourse with an equity stance? Small groups create safe environments for students and provide teachers with the opportunity to have more productive interactions. In this session, explore various strategies to engage all students during teacher-led and student-led small group time.

Renaissance Learning  
Wisconsin Rapids, Wisconsin

Henry B. Gonzalez Convention Center Exhibitor Workshop  
Theater in Exhibit Hall 3/4

1:30 P.M.–2:45 P.M.

210  BUILD
“HELP! My Students Are Counting on Their Fingers!”: The Truth about Fluency and How to Achieve It
3–5 Workshop
Fingers play a critical role in early numeracy. Are you thinking “Okay, but why are my students STILL using their fingers?” Why do kids get stuck in the finger zone? How can you move them out of it? What is fluency and how is it related to fingers? Learn strategies that emancipate kids from fingers and reveal that there is more to math than counting!

Alison Mello  
@alisonmellomath  
Foxborough Public Schools, Massachusetts

Henry B. Gonzalez Convention Center, 006A

211  TLC
A Problem of Pace: Tortilla Chips vs. Picante Sauce
6–8 Workshop
Dip into contextualized problems involving estimation, volume, proportional reasoning, and using San Antonio’s very own math manipulative, the tortilla chip. Take part in productive math talk by exploring participants’ strategies. Together, we will unpack the decisions and teacher moves behind the design and implementation of such tasks.

Chris Hunter  
Surrey Schools, Surrey, British Columbia, Canada

Grand Hyatt San Antonio, Texas Ballroom D

212  BUILD
Beyond Drill and Practice: Games and Rich Tasks to Teach, Engage, and Develop Mathematical Thinking
3–5 Workshop
Has preparation for high stakes testing removed the joy of learning mathematics from your instruction? Let’s look at some of my favorite games and tasks and how to use them incorporating Principles to Actions’ effective teaching practices and the CCSSM mathematical practices to get kids excited about doing mathematics (and learning along the way!).

Linda Gojak  
@lindagojak  
Past President, National Council of Teachers of Mathematics, Reston, Virginia; I Do Math LLC, Willowick, Ohio

Grand Hyatt San Antonio, Texas Ballroom E

213  BUILD
Break It Down: Decomposition across Mathematical Domains
3–5 Workshop
Developing a solid understanding of part-whole relationships is essential to mathematical proficiency. Let’s take a look at this big idea as it progresses throughout multiple domains in grades 3, 4, and 5. Explore with games, activities, and teacher practices that will help strengthen your students’ understanding of decomposition.

Dennis McDonald  
Howard County Public School System, Ellicott City, Maryland  
Claudia Eckstrom  
Howard County Public School System, Ellicott City, Maryland

Grand Hyatt San Antonio, Lonestar Ballroom A
PARENT PANEL SESSION
• A Conversation about Mathematics with Latin@ Parents (Conversando con padres y madres)
• Crystal Kalinec-Craig and Marta Civil
• Teachers will learn from parents how they can best support students’ learning of mathematics. Padres y madres compartirán consejos con la audiencia sobre cómo apoyar a sus hijos/as en la escuela así como sus propias experiencias con las matemáticas. The session will include a conversation between the parents and the audience.
• Key Phrases
  – Conversando con padres y madres
  – Talking about mathematics with parents
  – Padres y madres y matemáticas
  – Latin@ parents and mathematics

ELEMENTARY WORKSHOP
• Developing Number Sense in Emergent Bilingual Learners
• Rocío Benedicto and Zaira Falliner
• Anchor Charts, Word Walls, and Sentence Frames are a few strategies that teachers can use to support deep understanding of number sense for K–5 bilingual/ELLs. This session provides educators with an opportunity to learn mathematics in a Spanish bilingual lesson that models highly effective strategies, for Bilingual/ELL’s mathematics success, as well as materials that can be used in the classroom on Monday!
• Key phrases:
  – Number sense for the K–5 bilingual/ELL students
  – Strategies for K–5 bilingual/ELL students
  – Making math accessible to every learner in the K–5 classroom
  – ELA strategies in the bilingual math classroom
  – Estrategias Bilingües para la enseñanza de matemáticas
  – Matemáticas en el aula de primaria

MIDDLE/HIGH SCHOOL WORKSHOP
• Las Matemáticas en Nuestras Aulas: Bilingual Strategies in Secondary Classrooms
• M. Alejandra Sorto and Rachel S. Bower
• Experience the use of Spanish and English languages as resources to make mathematics accessible to emerging bilingual students while keeping tasks at a high level of cognitive demand. Las facilitadoras modelarán las estrategias didácticas basadas en ejemplos reales de aulas de clases en temas matemáticos de secundaria como ser razones y proporciones, porcentajes, geometría, entre otros.
• Key phrases:
  – Las Matemáticas en Nuestras Aulas
  – Bilingual strategies
  – Ejemplos reales de aulas de clase
  – Examples of real classrooms
  – Porcentajes
  – Proporciones

*All three of the multilingual sessions are presented by TODOS: Mathematics for ALL, an NCTM Affiliate-At-Large.
1:30 P.M.–2:45 P.M.

214 **A&E**
**Calculated Change: Social Justice in the Math Classroom**

8–10 Workshop
Would you like to put more activism into your math classroom? We will explore meaningful, relevant questions in math class to impact student learning and create experiences that will follow students throughout their lives. Participants will learn how to help students become equipped to understand the challenges they will face in the future.

Amanda Riske
@akariske
THINK Global School, New York, New York

David Peabody
University Prep Academy, Seattle, Washington

**Henry B. Gonzalez Convention Center, 007C**

215 **BUILD**
**Crane Crazy with Transformations**

6–8 Workshop
Are your students not remembering the rules you teach them about transformations? Give students ownership to these rules by allowing them the opportunity to investigate, collaborate, and utilize the appropriate tools to experimentally verify the properties of transformations. Come learn how to integrate literacy and origami to teach transformations.

Rebecca Hurst
Olde Towne Middle School, Ridgeland, Mississippi

Chellie Scwhantes
Olde Towne Middle School, Ridgeland, Mississippi

**Henry B. Gonzalez Convention Center, 007A**

216 **TLC**
**Dare to Dive Into Data**

6–8 Workshop
Dive into activities that provide opportunities to collect, organize, represent, and interpret data. Attendees will engage in hands-on activities that promote understanding of data with an emphasis on data representation and identifying measures of center and variability. Classroom-ready activities will be provided.

Susan Troutman
Rice University, Houston, Texas

Carolyn White
Rice University, Houston, Texas

**Henry B. Gonzalez Convention Center, 004**

217 **BUILD**
**Deepen Understanding by Connecting Representations**

3–5 Workshop
Let’s do math together and identify important mathematical connections between our approaches and representations. Participants will learn practical tips for planning lessons that leverage rich, relevant tasks and the connections among student approaches to solving real-world problems by collaboratively developing an eye for these connections.

Jaimee Massie
@jaimeemassie
Eugene School District 4J, Oregon

Meg Hearn
LearnZillion, Washington, D.C.

**Henry B. Gonzalez Convention Center, 217B**

218 **BUILD**
**Exploring the Mathematics of Fractals**

10–12 Workshop
The construction of fractals in the classroom is a fun and interesting activity. In this workshop, we will extend the activity to examine mathematics that goes along with these constructions including, length, area, volume, and dimension. We will generate recursive and explicit formulae to help us count observations in the constructions.

Glen Richgels
Bemidji State University, Minnesota

Amber Severson
Southwest Texas Junior College, Eagle Pass

Erin Richgels
St. Croix Prep Academy, Minnesota

**Henry B. Gonzalez Convention Center, 217A**
1:30 P.M.–2:45 P.M.

219  BUILD
Financial Literacy in the Primary Grades: The Importance of Investing in the Future Early!
Pre-K–2 Workshop
Financial literacy is an important life skill, yet how are we fostering understanding in our youngest students? Participants will have the opportunity to actively engage in tasks that help build a foundation for financial literacy in the primary classroom through the incorporation of mathematical standards and practices all relating to real life.

Lindsay Gold
@lindsayanngold
University of Dayton, Ohio
Derek Sturgill
Ohio University, Athens, Ohio
John Ashurst
T3 National Instructor, Baxter, Kentucky

Henry B. Gonzalez Convention Center, 305

220  BUILD
Get Strategic: A Thoughtful Progression of Addition and Subtraction Strategies
Pre-K–2 Workshop
Understanding computational strategies is essential for students’ mathematical development in becoming flexible and efficient thinkers. In this session, participants will learn how the meaningful progression of strategies allows students to develop new approaches to computation and build a deeper understanding of number.

Susan Jensen
Howard County Public Schools, Ellicott City, Maryland
Deborah Owen
Howard County Public Schools, Ellicott City, Maryland

Henry B. Gonzalez Convention Center, 006C

221  NT
Essential Ingredients for Student Engagement: Environment, Culture, and Math Tasks
Coaches/Leaders/Teacher Educators’ Workshop
Do you ever wonder what you can do to maximize your students’ engagement in math? Join us as we explore how you can leverage your classroom environment, culture, and math tasks to bring a joy of math and deep understanding to your students’ math learning. Through classroom video and artifacts, we will discuss and reflect on high-impact practices.

Kathy Ernst
Mathematics Consultant and Coach, West Brattleboro, Vermont
Katie Jacobsen
The Prosper Valley School, Pomfret, Vermont

Grand Hyatt San Antonio, Texas Ballroom B
222 BUILD


6–8 Workshop

Experience the MoMath Rosenthal Prize lesson; we’ll stand together and let coin flips lead us forward or back. See how investigating this Random Walk leads students to deep understanding and fluency with probability. Walk away with a series of lessons that reach each student and that and meet the probability and statistics standard, in grades 6–8 and beyond.

Ralph Pantozi
Twitter: @mathillustrated
Kent Place School, Summit, New Jersey

Henry B. Gonzalez Convention Center, 302AB

223 BUILD

Primary Math Games to Excite Learners Who Are Struggling

3–5 Workshop

Math games can interest and excite learners who are struggling! This engaging hands-on session focuses on number and operations, algebraic thinking, fractions, geometry, and statistics motivational concept games to increase student participation, understanding, and achievement.

Ted Hull
Consultant/Author, LCM, Texas
Don Balka
Retired, Saint Mary’s College, Notre Dame, Indiana

Henry B. Gonzalez Convention Center, 006B

224 A&E

Promoting Equity and Access: Using Children’s Literature to Provide a Powerful Context for Learning

Pre-K–2 Workshop

The session highlights the richness that children’s literature brings to mathematics instruction. We identify the necessity for equity and access, connect literature to the essential standards, and provide sample lesson plans for meaningful mathematics for all students. We highlight characters that are multicultural, exceptional, and female.

Stefanie Livers
University of Alabama, Tuscaloosa
Karen Karp
Johns Hopkins University, Baltimore, Maryland

Grand Hyatt San Antonio, Texas Ballroom C

225 BUILD

Proportional Reasoning: The Building Blocks of Linear Thinking

6–8 Workshop

Not all linear relationships are proportional, but all involve proportionality. What learning contributes to this understanding? Our charge from NCTM is to engage students in making connections among representations to deepen understanding of concepts and procedures. Come explore what that looks like with proportionality related to linearity.

Whitney Evans
Twitter: @WhitBaylor
Plano ISD, Texas
Grace Ann McKay
Denton Independent School District, Texas

Henry B. Gonzalez Convention Center, 007B

Be a speaker! Submit your proposal now for the 2018 Annual Meeting & Exposition at NCTM.org/speak. Deadline is May 1.
226 BUILD
Raisins, Ropes, and a Whole Lot More: Six Activities to Open the Door!

10–12 Workshop
During this fast-paced workshop, you will engage in hands-on activities intended to open the door to specific mathematics content and processes. Content spans several core topics in grades 9–12, and we focus on several mathematical teaching practices. Try these activities and take with you ideas to adopt, adapt, and implement in your classroom!

Roger Day
Tami Martin
Illinois State University, Normal, Illinois

Henry B. Gonzalez Convention Center, 224

227 TLC
Rich Tasks as Landmarks for Students to Use in Navigating Their Mathematical Learning Journey

8–10 Workshop
Explore how to maximize the value of rich tasks by using them as student reference points in making sense of topics at hand while building connections to the broader math landscape. Examine the creation and curation of public records of student thinking to support students in orienting their learning and charting paths between prior and new understandings.

Peg Cagle
@pegcagle
LAUSD, Los Angeles, California

Henry B. Gonzalez Convention Center, 217C

228 BUILD
Teaching Elementary Math through Game-Based Manipulatives

Pre-K–2 Workshop
This presentation focuses on a new approach to teaching elementary mathematics through tangible number blocks. Each number block scales in height to represent its value. This simple system for visual comparisons creates a tangible number line where nearly all elementary math problems can be done through exciting games and challenges.

David Skaggs
@sumblox
SumBlox Group, Paradise, Utah
Jennifer Bond
Walled Lake Consolidated Schools, Michigan
Laura Reina
Utah State University, Logan

Grand Hyatt San Antonio, Lonestar Ballroom B

229 BUILD
The Calculus of Corvettes Workshop

10–12 Workshop
A non-routine calculus task using data from a drag racing facility will be the focus of this problem-solving workshop. Participants will explore how this task provides flexible learning opportunities through mathematical modeling with technology to deepen students’ understanding of calculus. Bring Desmos, Excel, and/or a graphing calculator.

Jaclyn Murawska
Saint Xavier University, Chicago, Illinois
Keith Nabb
University of Wisconsin-River Falls

Henry B. Gonzalez Convention Center, 304B

NCTM Central, located in the Exhibit Hall, has activities, lessons, sample journals, information about grant funding, and more—stop by!
230 TLC
Using Rich Tasks to Develop Problem-Solving Habits of Mind
3–5 Workshop
Students are often fed a diet of word problems but rarely encounter tasks that develop deep mathematical reasoning and problem-solving habits of mind. In this session, we’ll explore rich, non-routine tasks to develop key problem-solving strategies (managing information, working backwards) and habits of mind (monitoring one’s emotions, persistence).

Sonal Malpani
Metamorphosis Teaching Learning Communities, New York, New York
Michael Cassaro
Metamorphosis Teaching Learning Communities, New York, New York
Antonia Cameron
Metamorphosis Teaching Learning Communities, New York, New York

Grand Hyatt San Antonio, Texas Ballroom A

231 BUILD
Visual Tools; When, Where and How 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 Rogers
@clakars
Math Solutions, Sausalito, California
Sandra Coulson
Math Solutions, Sausalito, California

Henry B. Gonzalez Convention Center, 005

232 TECH
Visualizing the Area Formula Dynamically: Why Length Times Width?
3–5 Workshop
We introduce an innovative way of teaching and learning measurement, one that we call Dynamic Measurement (DYME), which focuses on the relation between area measurement and multiplication. We present tasks designed for engaging students in DYME experiences and discuss how DYME can be used for assisting students in thinking about area multiplicatively.

Debasmita Basu
Montclair State University, New Jersey
Madhavi Vishnubhotla
Montclair State University, New Jersey
Nicole Panorkou
Montclair State University, New Jersey

Henry B. Gonzalez Convention Center, 304A

233 PROF
What Do You Notice? What You NOTICE Affects How You Teach
Coaches/Leaders/Teacher Educators’ Workshop
As teachers, we only see what we know to look for. What should you pay attention to? How do you really know if students are learning? Where do you look? What do you see? What does it mean? What decisions are made because of what you see? In this session, we will discuss the implications of professional noticing and use video to hone our skills.

Lori Hamada
@lorihamada
AIMS Center for Math & Science Education, Fresno, California
Richard Thiessen
AIMS Center for Math & Science Education, Fresno, California
Deb Porcarelli
AIMS Center for Math and Science Education, Fresno, California

Henry B. Gonzalez Convention Center, 006D
1:30 P.M.–2:45 P.M.

234 TLC
Who Thinks, Learns! The Top 5 Strategies Used to Engage High School Students in Critical Thinking
10–12 Workshop

Critical thinking with high school students is possible! By experiencing rich tasks, we shall explore several strategies that develop the intellectual engagement of our students thru productive struggling. Together we shall create our list of top 5 strategies and implement them in our classrooms next week through the rich tasks that we experienced!

Jules Bonin-Ducharme
@jboninducharme
CFORP and Ministry of Education of Ontario Canada, Ottawa, Canada

Henry B. Gonzalez Convention Center, 304C

2:00 P.M.–3:00 P.M.

235 TLC
A Landscape of Learning for Early Geometry and Some Related Sequences for Development
Pre-K–2 Session

This session presents a learning trajectory for early geometry based on research on infants’ early recognition of distance and turns and the ability to discriminate shapes. Classroom video and two instructional sequences will be shared. The sequences were field tested for K-grade 1 and are based on the coordination of navigation and shape recognition.

Susanna Stossel
@susannastossel
Beauvoir, the National Cathedral Elementary School, Washington, D.C.
Melanie Lago
Beauvoir, the National Cathedral Elementary School, Washington, D.C.
Cathy Fosnot
New Perspectives Online, New London, Connecticut

Henry B. Gonzalez Convention Center, 217D

236 TLC
Bit by Bit, Putting It Together: Composite Area Activity and Coherent Standards
6–8 Session

Put your knowledge of composite area together, bit by bit. Participate in this action-packed activity to solve the cost of planting seed in a field. Be motivated to encourage student participation through looking up prices on-line and using a virtual GeoBoard. Learning progressions and standard will be emphasized. Come see our portable IWB.

Deana Deichert
Montgomery County Community College, Pottstown, Pennsylvania
Tashana Howse
Daytona State College, Florida
Mercedes Turner
Full Sail University, Orlando, Florida

Henry B. Gonzalez Convention Center, 214C

237 PROF
Building Teacher Leadership: A Collaborative Approach
Coaches/Leaders/Teacher Educators’ Session

Creating a culture of learning is an essential component that empowers teachers to examine their instructional practice. Using a data collection tool as a key talking point, this session highlights how a math team transformed their classrooms into a learning environment that created a core shift in daily instruction to include effective strategies.

Sadie Estrella
@wahedahbug
Illustrative Mathematics, Hana, Hawaii
Judy Keeney
Central District, Rancho Cucamonga, California

Grand Hyatt San Antonio, Lonestar Ballroom D
2:00 P.M.–3:00 P.M.

238 A&E
Developing a Growth Mindset and a Mathematics Discourse Community in a Primary ELL Classroom
Pre-K–2 Session
How do you get a primary classroom of ELLs to engage in discourse? How do you get them to recognize what constitutes smartness in mathematics? Through a case study of Mario, you will hear about the strategies and tools that were used to engage ELLs and specifically move Mario from a non-talker to one who proudly shares his “learning mistakes.”
Socorro Tapetillo
Chandler Unified School District, Arizona
Nora Ramirez
TODOS: Mathematics for ALL, Tempe, Arizona

Grand Hyatt San Antonio, Republic ABC

239 TLC
Differentiating for All Learners through Menus of Challenging Mathematical Tasks
3–5 Session
Do you struggle with differentiating in math? In this session, we explore Math Menus, collections of high cognitive demand tasks that engage all students in rich mathematics and the Standards for Mathematical Practice. We will discuss how to successfully implement menus in your classroom to apply, deepen, and extend students’ understanding.
Kim Markworth
Western Washington University, Bellingham, Washington
Janie Overman
Bellingham Public Schools, Washington

Grand Hyatt San Antonio, Travis CD

240 TLC
Exploring Progression of Mathematical Modeling from Elementary to High School
General Interest Session
Explore the progression of modeling in elementary, middle, and high school grades by engaging in tasks designed to promote the relevance and scope of mathematics. Discover different frameworks for teaching and creating modeling opportunities for K–12 students.
Aline Abassian
University of Central Florida, Orlando
Farshid Safi
University of Central Florida, Orlando

Grand Hyatt San Antonio, Travis AB

241 “M”
Fostering Computational Thinking Skills through Coding and Digital Making
6–8 Session
By fostering computational thinking skills, we can help our students to become effective thinkers and problem solvers. Join me as we investigate how coding and digital making can help nurture computational thinking skills in our students to enhance their understanding of math ideas.
Lisa Floyd
@lisaannefloyd
Western University, Thames Valley District School Board, London, Ontario, Canada

Henry B. Gonzalez Convention Center, 214A

242 ASSESS
Got GAFE? Using Free Google Apps for Education to Increase Students’ Understanding
10–12 Session
If your school is, or is going to be, a GAFE school, unleash the power of Google to increase students’ understanding every day! Discover how to give every student a voice in the classroom without increasing your workload. Create a formative assessment that grades itself and provides useful, detailed feedback to both the teacher and student.
Sara Edwards
@sara_sedwards
Webb City R-7 High School, Missouri

Henry B. Gonzalez Convention Center, 207B
2:00 P.M.—3:00 P.M.

243 TLC
Incredible Math Tasks!—Catalyst for Effective Formative Assessment

General Interest Session
In this hands-on session, we will explore how to use worthwhile math tasks as catalyst for gathering evidence of learning. Examine student work and videos to explore how tasks, paired with the NCTM Teacher Practices and questions, promote student engagement in the Standards for Mathematical Practice. Leave with 200+ tasks you can use Monday morning!

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

Henry B. Gonzalez Convention Center, 221

244 TLC
Inquiry-Based Learning: What Do I Ask Next?

8–10 Session
Questioning is a powerful tool used as a guide to promote students’ mathematical understanding. Inquiry-based learning relies on questioning to advance students’ thinking, but teachers are often left with generic questions in pre-designed lesson plans. Questioning strategies that harness the full potential of inquiry will be examined.

Kristin Hartland
Middle Tennessee State University, Murfreesboro
Matthew Duncan
Middle Tennessee State University, Murfreesboro
Melanie Haupt
Smyrna High School, Murfreesboro, Tennessee

Grand Hyatt San Antonio, Texas Ballroom F

245 BUILD
Jump-Start Your K–2 Math Class with Engaging Number Routines

Pre-K–2 Session
Students with strong number sense are often able to think and reason about numbers in a more strategic and flexible way. Help students build this sense by giving them opportunities to engage in mathematical discourse daily. Learn how to jump-start your math block with engaging number routines that will strengthen number sense for all learners.

Michele Glenn
Howard County Public Schools, Ellicott City, Maryland
Kathleen Carter
Howard County Public Schools, Ellicott City, Maryland

Henry B. Gonzalez Convention Center, 007D

246 BUILD
Learning Slope via Rate Not Rote

6–8 Session
Being able to recite the slope formula is not good enough. During this session, we examine concepts of rate, unit rate, and the constant of proportionality as they relate to slope. Specifically, that the slope of a proportional relationship is equal to the unit rate. Further, we will model how to use slope triangles to derive the slope formula.

Stefanie Hassan
Eureka Math, Washington, D.C.

Henry B. Gonzalez Convention Center, 303

247 A&E
Let’s Engage Elementary Students in Social Justice Issues to Make Mathematics Real!

General Interest Session
A university professor and participants will share strategies employing social justice contexts such as recycling, poverty, nutrition, lotteries, and crime to teach mathematics to elementary students. Urban and suburban perspectives will be revealed through video, lesson plans, artifacts, and discussion.

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

Grand Hyatt San Antonio, Lonestar Ballroom F
Introducing

A new K–5 intervention program

Bridges Intervention provides targeted instruction and support, addressing Tier 2 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
2:00 P.M.–3:00 P.M.

248 **ASSESS**
Let’s Raise the Rigor: Questioning Strategies in Mathematics
6–8 Session
Discover how students can construct a stronger understanding of mathematics through challenging questions and tasks so they will be college and career ready! Transform your classroom to a rigorous learning environment where students interpret, analyze, think, and write using the Depth of Knowledge model (Webb, 1997; 2005).

Kimberly Williams
University of Tennessee at Martin
Karen DiBella
University of Tennessee at Martin

**Henry B. Gonzalez Convention Center, Hemisfair 2**

249 **TLC**
Mathematics Lessons as Stories: Engaging Learners with Plot Twists
3–5 Session
Teachers regularly observe students’ aesthetic reactions to literature, but how often are moments of surprise or intrigue evident in math classrooms? This presentation will explain how the Math Story Framework was used to plan and teach a grade 5 volume lesson with a plot twist. It will show participants how to use it as a planning tool.

Laura Ryan
Shrewsbury Public Schools, Massachusetts
Leslie Dietiker
Boston University, Massachusetts

**Grand Hyatt San Antonio, Lonestar Ballroom E**

250 **TLC**
Mathematics Teacher Development in Finland: Lessons Learned from a Joint U.S.-Finnish Workshop
Coaches/Leaders/Teacher Educators’ Session
Mathematics educators from the U.S. and Finland gathered in Helsinki, Finland, for two days to learn about major initiatives and challenges in each countries’ educational system and how preservice teacher preparation and in-service/teacher development efforts address or are affected by them. We share insights and learnings from the exchange.

Janine Remillard
@JanineRemillard
University of Pennsylvania, Philadelphia
John Staley
Baltimore County Public School, Towson, Maryland
Katie Hendrickson
Code.org, Seattle, Washington

**Henry B. Gonzalez Convention Center, Stars at Night 4**

251 **BUILD**
Middle School Mathematical Misconceptions and How to Help Students
6–8 Session
Knowing the mathematical misconceptions and common errors middle school students sometimes make may help teachers improve student learning. This interactive session provides suggested actions teachers can use to address selected misconceptions.

Ruth Harbin Miles
Mary Baldwin University, Staunton, Virginia
Lois Williams
Mary Baldwin University, Staunton, Virginia

**Henry B. Gonzalez Convention Center, Hemisfair 3**

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**2017 Innov8 Conference,**
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Visit NCTM Central and join your peers in the math education community exploring new resources, renew your NCTM membership, shop the latest titles in the Bookstore, learn about grant funding through the Mathematics Education Trust, connect with colleagues in the Networking Lounge, and explore fun math activities in the Math Corner.
255  **BUILD**
Proficiency Level of Mathematics Language Comprehension in Word Problems

8–10 Session

English language is the language of instruction but a second language in Nigeria, and most mathematical terms do not have direct meaning in students’ mother tongue. This study focuses on the proficiency level of pupils in the interpretation and application of word problems in mathematics considering their mother tongue.

Cecilia Ekwueme
University of Calabar, Calabar Cross River State, Nigeria

Gladys Charles-Ogan
University of Port Harcourt, Rivers State, Nigeria

Grand Hyatt San Antonio, Crockett CD

256  **ASSESS**
Taking Action: PtA Tools for High-Leverage Mathematics Teaching in Elementary Education

General Interest Session

Engage in activities showcasing the effective teaching practices in *Principles to Actions*. This session features the new NCTM book *Taking Action: Implementing Effective Mathematics Teaching Practices in Pre-K–5*. Each high-leverage practice is studied through elementary classroom artifacts, including discussing rich tasks, analyzing narrative and video cases, and analyzing samples of student work.

DeAnn Huinker
University of Wisconsin–Milwaukee

Victoria Bill
University of Pittsburgh, Pennsylvania

Henry B. Gonzalez Convention Center, Hemisfair 1

257  **TECH**
The Role of Digital Technology in Classrooms across the World: What Can We Learn?

10–12 Session

Math educators from around the world are using digital technology to innovate mathematics instruction. Attendees at the quadrennial International Congress on Mathematics Education (ICME) in Germany highlight a few of these uses, with special emphasis on the use of mathematics technology internationally and its promise for mathematics teaching.

M. Kathleen Heid
Penn State University, University Park, Pennsylvania

Woong Lim
University of New Mexico, Albuquerque

Tinashe Blanchet
The Learning Laboratory Inc., New Orleans, Louisiana

Henry B. Gonzalez Convention Center, 008AB

258  **BUILD**
Time’s Up on Timed Tests . . . How to Teach Multiplication Facts for Understanding

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 Hilty
Staff Development for Educators, Peterborough, New Hampshire

Eliza Thomas
Staff Development for Educators, Peterborough, New Hampshire

Henry B. Gonzalez Convention Center, 225

Plan now for the 2018 NCTM Annual Meeting & Exposition in Washington, D.C. • April 25–28
2:00 P.M.–3:00 P.M.

259 **TECH**
Unraveling Whole Numbers and Fractions on the Number Line
3–5 Session
Learn four strategies to make successful, targeted number line lessons that bridge the gap between concrete and abstract. Use free online tools and cheap household items to build number sense in fractions and whole numbers operations. The presenters have analyzed hundreds of number line activities and will share practical classroom strategies.

Arjan Khalsa
Conceptua Math, San Rafael, California
Julie McNamara
Cal State East Bay, Hayward, California

Henry B. Gonzalez Convention Center, 301

260 **“M”**
Using the Poisson Distribution to Make Real-World Decisions
10–12 Session
Many decision-making contexts in the real-world involve uncertainty about one or more aspects of the decision. Many times, a probability distribution can be used to model this uncertainty. Participants will learn how the Poisson distribution can be used to make real-world decisions that yield the greatest probability of a favorable outcome.

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

Grand Hyatt San Antonio, Crockett AB

261 **BUILD**
Visual Models to Solve Routine Word and Non-Routine Algebraic Problems: Lessons from Singapore
General Interest Session
Many students struggle with word problems, whether in elementary grades with a variety of whole number and fraction operations or the middle grades with ratio, proportion, and algebraic problems. This session will demonstrate how visual models help students see mathematical relationships and solve even the most complex problems and applications.

Andrew Clark
@andywonders
Retired, Portland Public Schools, Oregon

Grand Hyatt San Antonio, Presidio ABC

262 **BUILD**
Wait . . . We Didn’t Do an Example Like THAT!
10–12 Session
Students tend to be very good at studying, memorizing steps, and doing rote calculus. But what happens when you ask them to think about a concept they’ve learned at a much deeper level? I will use specific examples from my own classroom experience that lead to deeper student understanding of critical topics in calculus.

Paul Battaglia
@PaulBattaglia
Manasquan School District, New Jersey

Henry B. Gonzalez Convention Center, 205

263 **A&E**
What Are They Thinking? Individual Diagnosis/ Intervention in Elementary Mathematics
Coaches/Leaders/Teacher Educators’ Session
Longwood University has implemented intensive training in the Individual Assessment for Data Driven Intervention in Mathematics (IADDIM) model for elementary preservice teachers. We will share students’ work samples, as well as data that support growth in preservice teachers’ content knowledge, PCK, and self-efficacy in teaching mathematics.

Jodie Brinkmann
Longwood University, Farmville, Virginia
Patricia Hastings
Longwood University, Farmville, Virginia

Grand Hyatt San Antonio, Bowie ABC
2:00 P.M.–3:00 P.M.

263.1 **Mathspace—Why You’ll Never Grade Math Assignments Again. Seriously. (BYOD!)**

General Interest 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 to try award-winning Mathspace live, and ask about a free trial!

Mathspace
New York, New York

Henry B. Gonzalez Convention Center, 206A

263.2 **10 Minutes of Code**

General Interest Exhibitor Workshop

Want to get your students interested in coding? This hands-on session introduces you to the basics of coding on your TI graphing calculator 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 use in class right away.

Texas Instruments
Dallas, Texas

Henry B. Gonzalez Convention Center, 206B

263.3 **AP Calculus Panel: Part 1**

10–12 Exhibitor Workshop

A panel led by chief reader Stephen Davis—and including Ben Hedrick from the College Board and others—will discuss and answer questions about the 2016 reading and the new format for the 2017 exams. A Q&A session will follow. This is the first part of a two-part session; see also the session titled AP Calculus Panel: Part 2.

Bedford, Freeman & Worth Publishers
New York, New York

Henry B. Gonzalez Convention Center, 207A

263.4 **HP Prime: Mathematics Education Technology on All Platforms!**

10–12 Exhibitor Workshop

Get acquainted with HP Prime: the app-based, full-color graphing calculator. HP Prime is also available as software on Mac and PC as well as Android/iOS/Win10 phones/tablets. All versions have multi-touch, gesture-driven user interfaces (for example, pinch to zoom on a graph) and more. You’ll receive a free copy of the software after the workshop.

HP Inc.
San Diego, California

Henry B. Gonzalez Convention Center, 212AB

263.5 **Crazy 8s Club: Help Kids Get Fired Up about Math!**

3–5 Exhibitor Workshop

Crazy 8s is a hands-on, after-school math club with awesome activities like Glow-in-the-Dark Geometry and Toilet Paper Olympics. We provide free club kits, with directions and materials needed to run eight weekly sessions for up to sixteen kids in grades K–2 or 3–5. Join us to get hands-on experience running Crazy 8s activities!

Bedtime Math Foundation
Summit, New Jersey

Henry B. Gonzalez Convention Center, 213AB

263.6 **BCA Math 20-60-20 Method: Reaching Each Student in the Classroom**

Pre-K–2 Exhibitor Workshop

Develop solid foundational skills in logic, comprehension, reasoning, and spatial awareness for 21st century learning. Coupled with the 20-60-20 method in whole class guided instruction, these lessons reach each child of all levels. In this workshop, you will find materials for intellectual development for four- and five-year-olds and the program’s method of delivery.

Japan Math
Inverness, Illinois

Henry B. Gonzalez Convention Center, Exhibitor Workshop
Theater in Exhibit Hall 3/4
2:00 P.M.–3:00 P.M.

263.7  EW
A Math Coach for Every Teacher: Exploring Math in Practice
3–5 Exhibitor Workshop
Imagine the power of every elementary teacher having unlimited access to a math coach. Meet Math in Practice: a grade-by-grade professional learning resource written by teachers, for teachers. Learn how this comprehensive series provides key content knowledge, a wealth of classroom-tested activities and centers, formative assessment support, and more.

Houghton Mifflin Harcourt
Round Rock, Texas

Henry B. Gonzalez Convention Center, 210AB

3:15 P.M.–4:30 P.M.

264  BUILD
Analyzing Variation Can Help Us to Make Estimates and Decisions: It’s More Than Just a Random Thing
8–10 Workshop
The field of statistics arose because there is variability everywhere in our lives—in population characteristics, in measurements, in sampling, whenever and wherever data are produced or collected. Participants will explore patterns in variability in data (both given and that they produce) to make decisions and estimates under uncertainty.

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

Grand Hyatt San Antonio, Lonestar Ballroom A

266  BUILD
Developing an Understanding of the Number Line through Measurement Concepts
Pre-K–2 Workshop
The number line is a ubiquitous counting tool often used to compare and compute with numbers. In this session, we will consider often overlooked measurement concepts, such as generalized units of volume, mass and length, and how they provide a foundation for the number line critical to its use as a mathematical tool.

Seanyelle Yagi
University of Hawaii at Manoa, Honolulu
Fay Zenigami
University of Hawaii, Curriculum Research & Development Group, Honolulu
Linda Venenciano
University of Hawaii at Manoa, Honolulu

Grand Hyatt San Antonio, Texas Ballroom D

267  BUILD
Early Number Operations: Important Understandings for All K–2 Students
Pre-K–2 Workshop
Situations that help students’ build early number operations will be explored. Participants will examine student solution strategies with the goal of understanding how student reasoning of operations progresses.

Kathleen Lynch-Davis
Coastal Carolina University, Wilkesboro, North Carolina
Chrystral Dean
Appalachian State University, Boone, North Carolina
Diana Moss
Appalachian State University, Boone, North Carolina

Henry B. Gonzalez Convention Center, 305
Visit NCTM Central in San Antonio—Get What You Need from Your NCTM Membership

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**
- Learn about grants and awards for mathematics educators and students

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

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS | WWW.NCTM.ORG
3:15 P.M.–4:30 P.M.

268 BUILD Exercising the Meaning of Division with Story Contexts, as a Transition from Whole Numbers to Fractions
3–5 Workshop
We will explore various meanings of division and how they are exemplified through the use of story contexts, first with whole numbers, and then we will consider modifications needed to work with fractions. We will examine the connections across the story situation, the number sentences, and a variety of visual representations.

Virginia Bastable
Mount Holyoke College, South Hadley, Massachusetts
Grand Hyatt San Antonio, Lonestar Ballroom B

269 TLC Executive Function: What Is It? Why Should Mathematics Teachers Care?
Pre-K–2 Workshop
Frustration, disruptive behavior, and shying away from challenges are a few of the harmful side effects when intentional targeting of the development of executive function is absent from PK–3 math instruction. What is EF? What does it look like? How can YOU help students develop these skills? Join us to explore the “how” and “why” of EF!

David Barry
Boston Public Schools, Massachusetts
Karen Anderson
Stonehill College, Easton, Massachusetts
Henry B. Gonzalez Convention Center, 007A

NCTM Central, located in the Exhibit Hall, has activities, lessons, sample journals, information about grant funding, and more—stop by!

270 BUILD Food for Thought: Hands-on and Edible Geometry Using Formulas
6–8 Workshop
Deepen students’ knowledge of area, circumference, volume, and surface area with hands-on activities from this session. Some activities even have tasty treats. Use circular paper folding and make pop-up prisms to bridge from two-dimensional to three-dimensional geometry. Leave with many activities to use in your classes on Monday.

Dee Ann Wilson
@DeeAnnMathLady
Expanding Horizons in Education, LLC, Umatilla, Florida
Henry B. Gonzalez Convention Center, 006C

271 A&E ELLs, Fractions and Lemonade: Do I Have What It Takes?
3–5 Workshop
Experience a lesson that aims to foster critical thinking, collaboration, creativity, and communication in a fifth-grade math classroom. Additionally, you will learn ways to ensure that your culturally and linguistically diverse learners have access to rigorous content instruction as well as opportunities to develop academic language.

Wendy Farr
Arizona State University, Tempe
Silvia Aparicio
Arizona State University, Tempe
Jenni Birrell
Arizona State University, Tempe
Henry B. Gonzalez Convention Center, 006A
3:15 P.M.—4:30 P.M.

272 TECH

Incorporating Multiple Tools in Geometric Constructions

8–10 Workshop

Geometric constructions can be created with a variety of tools and methods to provide a visual representation of geometric concepts. Participants will use a Mira, patty paper, and GeoGebra to construct triangle centers. The incorporation of multiple tools emphasizes the relations among ideas and helps learners understand the concepts.

Ewelina McBroom
Southeast Missouri State University, Cape Girardeau, Maryland

Henry B. Gonzalez Convention Center, 304B

273 A&E

Making It Happen: Engaging All Students, Especially Those Who “Hate” Math

8–10 Workshop

For too many students, mathematics means confusion, failure, heartache, and feeling like a “dummy.” Rather than risk failure or looking dumb, they simply choose not to “play” the game of school. In this workshop, participants will learn to use strategies of an equity pedagogy framework for engaging all students, especially those who “hate” math.

Pamela Seda
@pamseda1
DeKalb County School District, Decatur, Georgia
Kasele Mshinda
Atlanta Public Schools, Georgia

Henry B. Gonzalez Convention Center, 302AB

274 BUILD

Making Sense of Addition & Subtraction through Children’s Literature

Pre-K–2 Workshop

Revisit favorite children’s books and discover new titles with an eye towards addition and subtraction structures. Deepen student understanding of these rich operations by placing them in a variety of familiar contexts and using multiple representations to build connections. Learn strategies for using literature to engage students with mathematics.

Sara Moore
@saradelanomoore
SDM Learning, Kent, Ohio
William Bintz
Kent State University, Ohio

Henry B. Gonzalez Convention Center, 005

275 TECH

Mathematical Action Technologies: Moving beyond the Hype of Flipping, Clickers, and IWBs

10–12 Workshop

As described in Principles to Actions, mathematical action technologies engage students in “doing” mathematics, building mathematical practices. Participants will explore their potential for transforming the high school mathematics classroom in contexts from algebra, geometry, and statistics. Participants are encouraged to bring their own devices!

W. Gary Martin
@wgarym
Auburn University, Alabama

Henry B. Gonzalez Convention Center, 007C

New to teaching? Get answers to pivotal questions and to the concerns of new and soon-to-be teachers through the New Teacher Strand.
276 BUILD
Minecraft Math: Making Geometry and Measurement Come Alive
6–8 Workshop
Learn how to incorporate the popular game, Minecraft, into volume and surface area lessons the students will enjoy and remember. Participants will be challenged to explore the mathematics of cubes, rectangular prisms, and cylinders using manipulatives and nets. Attendees will leave with templates to bring back to their classrooms.

Kim Moore
Texas A & M University-Corpus Christi
Faye Bruun
Texas A & M University-Corpus Christi
Christine Price
Corpus Christi Independent School District, Texas

Henry B. Gonzalez Convention Center, 217B

277 TLC
Modeling: Teaching It Right!
10–12 Workshop
Modeling, if taught correctly, is one of the most effective tools in student learning. It requires creating “scenarios” that “beg” a problem-solving situation and just the right amount of teacher guidance for students to be successful. Learn hands-on about the nuts-and-bolts of creating, using, and teaching with models that truly help students learn.

David Ewing
University of Central Missouri, Warrenton, Missouri

Henry B. Gonzalez Convention Center, 224

278 NT
Finding Your Heart for Teaching: What Professionals Do!
Coaches/Leaders/Teacher Educators’ Workshop
Twelve percent of all teachers are in their first or second year of teaching! If that is you, come join this inspirational session! The vision for mathematics is evolving with more rigorous content and practice standards bringing new expectations for K–12 mathematics teachers. Come explore four significant shifts new teachers are expected to make as they join this great profession!

Mona Toncheff
National Council of Supervisors of Mathematics, Phoenix, Arizona
Tim Kanold
The Center for Teaching and Learning Mathematics, Chicago, Illinois

Grand Hyatt San Antonio, Texas Ballroom A

279 "M"
Next Generation Science Standards: Doing the Science Means Doing the Math
6–8 Workshop
A study comparing the expectations of the Next Generation Science Standards and the NAEP Math Framework revealed that the math expectations in the NGSS are greater than expected. In this hands-on session, we will work through sample tasks, explore “math rich” science expectations, and examine implications for middle school STEM collaboration.

Will Johnston
@wtadj1
American Institutes for Research, Washington, D.C.
Kim Gattis
American Institutes for Research, Washington, D.C.
Alka Arora
American Institutes for Research, Washington, D.C.

Henry B. Gonzalez Convention Center, 004

Thank you to the Program Committee members. Your time and dedication made this year’s Annual Meeting a huge success!
3:15 P.M.—4:30 P.M.

280 **TECH**

**Paper Airplane Meets Technology**

6–8 Workshop

After constructing a paper airplane, participants will estimate the distance flown and time aloft their planes will achieve. They will then fly their planes, recording distance and time aloft, and then use the TI-Nspire navigator system to evaluate their data. Finally, participants will learn how when this lesson is used in the classroom setting learning comes alive.

**William Luke**
Central Texas College, Fort Hood, Texas

**Gregory Luke**
Temple High School, Texas

*Henry B. Gonzalez Convention Center, 006D*

281 **BUILD**

**Partner Games for Perfect Practice: Engaging, Thoughtful, and Productive**

Pre-K–2 Workshop

Participants will engage in game play to learn about meaningful practice and formative assessment provided by games. Participants will see video of children playing and see how they share their thinking and numerical reasoning. Participants will leave with an ideas for effective practice.

**Patsy Kanter**
Self-Employed, New Orleans, Louisiana

**Donna Long**
Houghton Mifflin Harcourt, Boston, Massachusetts

*Grand Hyatt San Antonio, Texas Ballroom E*

282 **“M”**

**Polar, Parametric, and Rectangular Graphs . . . Really See the Connection!**

10–12 Workshop

Making connections between polar, parametric, and rectangular equations can be challenging when only using paper and pencil. In this session, participants explore equations by completing activities using manipulative, calculators, and video clips that prepare students for future math courses. Activities and projects will be shared!

**Deedee Henderson**
Oxford City Schools, Alabama

*Henry B. Gonzalez Convention Center, 217C*

283 **TLC**

**Questions, Discourse, and Productive Struggle: Integrating Three Effective Teaching Practices**

8–10 Workshop

Questioning, mathematics discourse, and productive struggle are important components of mathematics classrooms that support reasoning and sense making. In this session, we will use mathematical tasks, video clips, written cases, and student work to investigate how teachers can prepare for and support deep student thinking and engagement.

**Mike Steele**
@mdsteele47
University of Wisconsin-Milwaukee

*Henry B. Gonzalez Convention Center, 217A*

284 **TLC**

**Structuring Mathematical Tasks to Engage Students in Productive Struggle**

3–5 Workshop

How do you support students while doing challenging tasks? Do they work hard or give up? We will explore ways to structure tasks to engage your students in productive struggle and deepen their mathematical understanding. Redefine the role that effort and struggle play in learning mathematics and discuss strategies to build student perseverance.

**Christine Roberts**
@tcoechristine
Tulare County Office of Education, Visalia, California

**Nicholas Lopez**
Dinuba Unified School District, California

*Grand Hyatt San Antonio, Texas Ballroom C*

285 **BUILD**

**Students’ Understanding of Fractions--Too Important for Teaching Halfway!**

3–5 Workshop

In this session, participants will engage in a problem-solving activity containing operations on fractions. They will then participate in the share out of these strategies. At the conclusion, participants will be familiar with the trajectory to which students progress in developing understanding of fractions and/or operations on fractions.

**Lynne Nielsen**
@lynnel0nielsen
Louisiana Tech University, Ruston, Louisiana

*Henry B. Gonzalez Convention Center, 304C*
Las Matemáticas en Nuestras Aulas: Bilingual Strategies in Secondary Classrooms

Coaches/Leaders/Teacher Educators’ Workshop

In this workshop, participants will have the opportunity to experience the use of Spanish and English languages as resources to make mathematics accessible to emerging bilingual students while keeping tasks at a high level of cognitive demand. Las facilitadoras modelarán las estrategias didácticas basadas en ejemplos reales de aulas de clases en temas matemáticos de secundaria como ser razones y proporciones, porcentajes, geometría, entre otros.

M. Alejandra Sorto
Texas State University, San Marcos
Rachel S. Bower
Texas State University, San Marcos

Grand Hyatt San Antonio, Texas Ballroom B

Virtual Cookies: Free Virtual Resources to Increase Participation, Discussion, and Collaboration

6–8 Workshop

Learn how to use virtual tools that increase participation, discussion, and collaboration in any classroom type or grade level. Virtual Cookies explored include: Poll Everywhere, Kahoot, Quizizz, Socrative, Plickers, Padlet, Wikispaces, Bubbl.us, Desmos, and Google Drive. Bring an electronic device.

Kristy Litster
Utah State University, Logan
Christina Watts
Utah State University, Logan

Henry B. Gonzalez Convention Center, 304A

Henry B. Gonzalez Convention Center, 006B

The Winning Equation: How to Get More Students to Love Math

General Interest Session

The Winning Equation: How to Get More Students to Love Math

General Interest Session

John Urschel is a 6-foot-3, 305-pound offensive lineman for the Baltimore Ravens and a published mathematician. Join him as he shares his journey of where a love of math has taken him and where it can take your students. Urschel, who is currently pursuing his PhD in applied mathematics at M.I.T., will show how math extends far beyond the confines of the classroom and into everyday life. Get in the game!

John Urschel, the brawny offensive lineman for the Baltimore Ravens, is using his brains to single-handedly crush “dumb jock” stereotypes. He holds a master’s degree in mathematics from Penn State and is currently studying for his PhD in applied mathematics at M.I.T. In 2014, he co-authored a paper entitled “A Cascadic Multigrid Algorithm for Computing the Fiedler Vector of Graph Laplacians” that was published in the Journal of Computational Mathematics.

John Urschel
@JohnCUrschel
Baltimore Ravens, Baltimore, Maryland

Henry B. Gonzalez Convention Center, Lila Cockrell Theatre
3:30 P.M.—4:30 P.M.

289.1 Exhibit
Use Technology to Support Observational Assessments in K–Grade 5
Coaches/Leaders/Teacher Educators’ Exhibitor Workshop
Have you seen SCOUT? This new observational assessment app lets you Capture! Tag! Find! in real time. Learn how to use this new app to capture performance, make notes, and access assessments to support Ongoing Assessments and Assessment Checklists in Investigations 3.

Pearson Learning Services
Chandler, Arizona

Henry B. Gonzalez Convention Center, 206B

289.2 Exhibit
AP Calculus Panel: Part 2
10–12 Exhibitor Workshop
A panel led by chief reader Stephen Davis—and including Ben Hedrick from the College Board and others—will discuss and answer questions about the 2016 reading and the new format for the 2017 exams. A Q&A session will follow. This is the second part of a two-part session; see also the session titled AP Calculus Panel: Part 1.

Bedford, Freeman & Worth Publishers
New York, New York

Henry B. Gonzalez Convention Center, 207A

5:00 P.M.—6:30 P.M.

290 Tech
ShadowCon V3.0
General Interest Session
This year’s ShadowCon will once again highlight some of NCTM’s best speakers, on topics as diverse as academic language and technological integration. Once again, the goal of ShadowCon is to expand access to and extend your engagement with their ideas. So each speaker’s 10-minute talk will serve as a preview for a free ten-week online course. You won’t want to miss this kick-off. The event is organized and hosted by Dan Meyer, Mike Flynn, and Zachary Champagne.

Henry B. Gonzalez Convention Center, Hemisfair 2
AUTHENTIC, PRACTICAL RESOURCES FOR TEACHERS

Creating STEM Lessons for Your Curriculum
Jo Anne Vasquez
Michael Comer
Joel Villegas

Routines for Reasoning
Fostering the Mathematical Practices at School
Grace Kelemanik
Amy Lucenta
Susan Janssen Creighton

But Why Does It Work?
Mathematical Argument in the Elementary Classroom
Susan Jo Russell
Deborah Schifter
Reva Kasman
Virginia Bastable
Traci Higgins

Visit Heinemann at Booth 1024 for Special Discounts
THURSDAY, APRIL 6TH

11 AM–12 PM  LOOKING AT UPRSIDE-DOWN CLASSROOMS
Cathy Seeley, Author
NCTM Exhibitor Workshop Area

1:30–2:45 PM  VISUAL TOOLS: WHEN, WHERE, AND HOW TO HELP STUDENTS ACHIEVE NUMBER SENSE
Lisa Rogers
Convention Center, 005

2–3 PM  UNRAVELING WHOLE NUMBERS AND FRACTIONS ON THE NUMBER LINE
Julie McNamara, Author
Convention Center 301

FRIDAY, APRIL 7TH

11 AM–12 PM  MIDDLE SCHOOL NUMBER TALKS: SHIFTING THE CLASSROOM CULTURE
Sherry Parrish & Ann Dominick, Authors
Convention Center 221

12:30–1:30 PM  THE ANSWER STILL MATTERS
Cathy Seeley, Author
Bowie A/B/C

12:30–1:30 PM  NOTICING THE NUMBERS: STUDENTS USING COMPUTATION STRATEGIES
Patty Clark & Mary Mitchell
Convention Center 214B

1:30–2:45 PM  I'M GAME! ARE YOU?
Diane Reynolds & Sandra Coulson
Convention Center, 305

SATURDAY, APRIL 8TH

8–9 AM  THE HeART OF COACHING: ASKING PURPOSEFUL QUESTIONS
Mary Mitchell & Brenda Konicke
Grand Hyatt, Lonestar Ballroom F

8–9 AM  MATH WORKSHOP: GUIDED MATH & BEYOND
Jennifer Lemp, Author
Grand Hyatt, Lonestar Ballroom C

11 AM–12 PM  SET YOUR SIGHTS HIGH: TEACHING ARITHMETIC WITH AN ALGEBRAIC LENS
Amy Mayfield & LuAnn Weynand
Grand Hyatt, Ballroom F

11 AM–12 PM  I ASKED A QUESTION, NOW WHAT?
Genni Steele & Mary Mitchell
Convention Center, 301

NEW! Raffle Prize Drawings
Thursday & Friday: Noon, 3, & 5 PM
Saturday: Noon

for tasty menus, dessert and more!
HIGHLIGHTS

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REGISTRATION HOURS
7:00 a.m.–5:00 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.
Adopting New Math Books? Start by Selecting an Effect Textbook Analysis Toolkit to Inform Your Work!

General Interest Session

Explore the recently updated NCSM/NCTM Curriculum Analysis Toolkit for evaluating instructional materials and new supporting resources: Look For guides to focus reviewers on critical textbook features and Textbook Analysis Professional Learning Activities to build a shared vision of effective textbook design among members of review committees.

Valerie Mills
Oakland Schools, Waterford, Michigan

Diane Briars
Past President, National Council of Teachers of Mathematics, Reston, Virginia; Pittsburgh, Pennsylvania

Henry B. Gonzalez Convention Center, 214B

Extracting Rich Mathematical Problems from a Real-World Context

6–8 Session

In this presentation, you will learn about a milking parlor, a carousel that helps farmers milk cows efficiently. This context provides a wonderful opportunity to explore ideas in geometry, proportional reasoning, and rates. After solving open-ended problems, you will have time to develop additional problems for use in your classroom.

Erin Moss
Millersville University of Pennsylvania

Grand Hyatt San Antonio, Bowie ABC

Algebra: Why It Is Destroying America

General Interest Session

Students aren’t failing algebra. Algebra is failing students! We will discuss how the typical algebra courses are harming not just individual students, but society and the economy as well. We’ll share data and discuss ways to make algebra instruction and assessment work for students and society.

Patrick Callahan
Callahan Consulting, Coronado, California

Grand Hyatt San Antonio, Travis CD

All the Things Kids Learn When We’re Trying to Teach Them Math

General Interest Session

Sure, students need to count, convert, and calculate, but we also want them to persevere, use technology, and love math. While we try to do it all, some kids fall behind and think they’re not good at math. Let’s examine some unintended consequences of instruction, and explore strategies that foster the skills and habits that help students thrive.

Patrick Vennebush
@pvennebush
Discovery Education, Silver Spring, Maryland

Henry B. Gonzalez Convention Center, 301

Changing the Rhythm of Math Class: Using Educational Songs to Cultivate Learning and Community

General Interest Session

We’ll discuss (and demo!) best practices (informed in part by our NSF grants) for creating and using educational songs for grades 8–14 mathematics/statistics. We address perceived barriers and hesitations by sharing low-risk, high bang-for-the-buck strategies, resources, and tips for finding, writing, and using songs aligned to learning objectives.

Lawrence Lesser
University of Texas at El Paso (UTEP), Texas

Dennis Pearl
Pennsylvania State University, University Park

John Weber
Perimeter College at Georgia State University, Clarkston

Henry B. Gonzalez Convention Center, 214C
8:00 A.M.–9:00 A.M.

296  A&E  Classroom Structures for Differentiation: Ensuring Deep Mathematical Thinking for All
General Interest Session

Supporting students with diverse backgrounds is challenging. Starting with a broad overview of research, we will explore structures I use to ensure every student can engage with the content and practices. Examples include student-posed problems; low-floor high-ceiling projects; practice, pushing, pondering homework; and standards-based assessments.

Avery Pickford
@woutgeo
The Nueva School, Hillsborough, California

Grand Hyatt San Antonio, Travis AB

297  PROF  Collaboration: The Key to Innovation
Coaches/Leaders/Teacher Educators’ Session

How do we hold ourselves and each other accountable for the success of every student? Create collaborative structures, K–12! Collaboration is messy, challenging, and rife with conflict, but it is essential for personal and collective growth! We’ll share details of how to create K–12 collaborative structures that empower teachers to learn and lead.

Sarah Caban
@csarahj
RSU #38, Readfield, Maine
Nancy Harriman
RSU #38, Readfield, Maine
Abby Shink
RSU #38, Readfield, Maine

Grand Hyatt San Antonio, Lonestar Ballroom D

298  PROF  Curricular Reasoning: Making Sense of Standards to Improve Student Performance
General Interest Session

Learning happens as students interact with the content. Before this can happen, teachers must make sense of the curriculum to adapt and supplement it to meet students’ needs, meet goals, and achieve GLEs. In this session, teachers will participate in activities that model the processes that will allow them to modify the content they teach.

Mercedes Sotillo Turner
Full Sail University, Winter Park, Florida
Tashana Howse
Georgia Gwinnett College, Lawrenceville

Grand Hyatt San Antonio, Crockett CD

CANCELED

Teachers: give your high school students the opportunity to participate in a real-world, futuristic scholarship competition with driverless cars!

Visit Booth 843 to learn more and you could win a math grant for your school.

Modeling the Future Challenge
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“M” in STEM/STEAM

PROF  Professionalism: Learning Together as Teachers

TECH  Tools and Technology

TLC  Teaching, Learning, & Curriculum
299 Asses
Dynamic vs. Static Assessment: A Growth-Mindset Perspective
3–5 Session
Assessment should inform teaching. It should be continuous, pick up data on mathematical growth and development, and provide information about the “zone of proximal development.” This session will examine powerful ways to craft formative assessments to provide teaching implications that ensure resulting positive growth mindsets in learners.

Cathy Fosnot
Janan Hamm
Mathematics in the City, CCNY, New York
Henry B. Gonzalez Convention Center, Hemisfair 1

300 A&E
El Chapo and Geometry: Using Current Events to Teach Proofs
10–12 Session
What does El Chapo have to do with geometry? You will learn how high school students learned how to write geometry proofs using current events. Teachers will see how students were able to write an argument regarding a current event of their choosing and mimic that process and master writing geometry proofs.

Erin Talley
Cobb County Schools, Marietta, Georgia
Miranda Sanders
Cobb County Schools, Marietta, Georgia
Jennifer Glendenning
Cobb County Schools, Marietta, Georgia
Grand Hyatt San Antonio, Lonestar Ballroom E

301 Asses
Five Ways to Integrate Assessment into Instructional Practice
6–8 Session
This session will share how Illustrative Mathematics has integrated assessments into our grades 6–8 curriculum, which will come out for first use in the 2017–2018 school year. Let’s together take advantage of this era of real-time feedback, innovative frameworks for formative assessment, and tasks that combine content and mathematical practice.

Kristin Umland
Illustrative Mathematics, Tucson, Arizona
Henry B. Gonzalez Convention Center, 214A

302 Reflection Cove
From Arithmetic to Algebra—and Beyond
General Interest Session
How can elementary grades teachers prepare students for success in algebra? How can teachers in middle and high school take advantage of those early investments to help their students? In this talk, I’ll share ideas for teaching and assessing the progression from arithmetic to algebra, the central pillar of any college- and career-ready curriculum.

Jason Zimba
Student Achievement Partners, New York, New York
Henry B. Gonzalez Convention Center, Hemisfair 3

303 Build
Improving Young Children’s Communication and Representation of Mathematics
Pre-K–2 Session
What does math communication and representation look like in early childhood? What communication strategies do young learners use when engaging in problem solving? We will examine classroom video and student work to explore teaching moves that advance children’s communication and representation of mathematics.

Stephanie Vega
Washoe County School District, Sparks, Nevada
Heather Crawford-Ferre
Nevada Department of Education, Carson City
Henry B. Gonzalez Convention Center, 008AB
8:00 A.M.–9:00 A.M.

304 BUILD
Investigating Sixth-Grade Students’ Conceptions of Geometric Shapes
6–8 Session
Participants will be engaged in discussing sixth-grade students’ (mis)conceptions of polygons by analyzing short videos from a research study. Participants will be asked to reflect on these videos and share how they address these misconceptions in classroom. Later, math activities that were designed during this research project will be shared.

Zulfiye Zeybek
Gazi Osman Pasa University, Turkey

Ersa Balgalmis
Gaziosmanpasa University, Turkey

Makbule Gozde Didis
Gaziosmanpasa University, Turkey

305 TECH
Linear Equations: New Insights Gained through Dynamic Technology
10–12 Session
While simple in structure, linear equations have incredibly diverse and powerful uses and interpretations, from pattern description to regression to transformations. Dynamic technology provides “hot” links between representations (graphic, symbolic, tabular) of a linear equation and its defining parameters through sliders can reveal new insights.

Thomas Dick
Oregon State University, Corvallis

Wade Ellis
Retired, West Valley College, San Jose, California

306 TLC
Math Talk M.V.P’s (Most Valuable Points): Setting the Stage for Successful Math Talk
3–5 Session
Fostering a safe and productive math talk community in which students are the sense makers and teachers are the facilitators is not always as easy as it sounds. Where does one begin? Utilizing research and best practices with practical elementary experience, you will get practical tips to increase student explaining, questioning, and justifying.

Shannon Kiebler
Empower Consulting, Littleton, Colorado

307 BUILD
On the Money: Integrating 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 savings and credit.

Susan Peters
University of Louisville, Kentucky

Jennifer Bay-Williams
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Louisville, Kentucky

Maggie McGatha
University of Louisville, Kentucky

308 ASSESS
Promoting the Standards for Mathematical Practice with Effective Questioning Strategies
6–8 Session
Questioning is an art and “good” questions are the primary tool of effective teachers. How can we promote the Standards for Mathematical Practice through our questioning? In this interactive session, participants will reflect on their own practice and will explore strategies to refine their own questioning.

Judy Buck
@jcurranbuck
Mathematics Education Consultant, Derry, New Hampshire

Grand Hyatt San Antonio, Texas Ballroom F
8:00 A.M.–9:00 A.M.

309  TLC
Sharing Thinking to Promote Discussion
8–10 Session
How can different answers, student misconceptions, and errors be used to promote mathematical discussions, exploration, and more in-depth learning? In a student role, participants will explore student thinking and experience ways to help students share their work by modeling the five practices for orchestrating productive mathematics discussions.

Barbara Lynch
@stelladuma
Lakewood City Schools, Ohio

Grand Hyatt San Antonio, Lonestar Ballroom F

310  PROF
Surviving and Thriving in Your Math Classroom!
10–12 Session
John is in his third year of teaching secondary mathematics, while his father, Dan, is in his 35th year. They will share thoughts on how professional growth is a career-long endeavor as well as sharing practical ideas for use in the grades 7–12 classroom.

Daniel Brahier
Bowling Green State University, Ohio
John Brahier
Saint Ursula Academy, Toledo, Ohio

Grand Hyatt San Antonio, Republic ABC

312  BUILD
The Nimble Number Line: A Sense-Making Tool that Builds Coherence across Grades
8–10 Session
A number line is a powerful tool that builds coherence. It bridges concepts and procedures, promotes fluency with operations, and increases number sense. When viewed as nimble, the number line makes irrational numbers, the coordinate and the complex plane come alive for students. Are you ready to walk on the wild side of the nimble number line?

Wendy DenBesten
@denbestenmath
GreatMinds, Washington, D.C.

Grand Hyatt San Antonio, Lonestar Ballroom C

313  A&E
A Conversation about Mathematics with Latina/o Parents: Conversando con padres y madres
General Interest Session
In this panel, teachers will learn from parents how they can best support students’ learning of mathematics. Parents will share their own experiences as doers of mathematics. Padres y madres compartirán consejos con la audiencia sobre cómo apoyar a sus hijos/as en la escuela así como sus propias experiencias con las matemáticas. The session will include a conversation between the parents and the audience.

Crystal Kalinec-Craig
University of Texas at San Antonio
Marta Civil
University of Arizona, Tucson

Henry B. Gonzalez Convention Center, Lila Cockrell Theatre

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314 BUILD REFLECTION COVE
Visualizing Concepts: The Gateway to Understanding
General Interest Session
Interactive dynamic images can help students develop a mental image of a mathematical idea and how ideas connect. Visual images establish a foundation for student thinking about topics such as comparing ratios, mean as fair share, “covering” terms to find a solution, linking mobiles to equations and support the transfer of ideas in later contexts.

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

Henry B. Gonzalez Convention Center, 217D

315 BUILD
What Does Domain Have To Do with It?
8–10 Session
Why is domain important? Why do I have to teach it? Why do students have trouble with this concept? And, then there is the range. The participants in this session will learn some strategies for helping students understand and master this important concept in algebra and beyond. Help your students be masters of the domain (and the range)!

Clifton Wingard
Delta State University, Cleveland, Mississippi

Grand Hyatt San Antonio, Crockett AB

316 BUILD
What Is an Infinite Series and Why Should I Care?
10–12 Session
What is an infinite series and why are they important? Students work with them, but do they understand what the things ARE? Combine history with arithmetic, analysis, technology, and symbolic representation to develop a visceral understanding of what a series is and why they are ever so cool, including the tricky ideas of error and convergence.

Ruth Miller
@rm11235813
Greenhills School, Ann Arbor, Michigan

Grand Hyatt San Antonio, Presidio ABC

317 BUILD
Writing to Illuminate Mathematical Thinking
3–5 Session
How can writing support students’ mathematical thinking? How can we include writing in the math classroom? We will identify different purposes of mathematical writing, along with an assortment of formats. Then we will explore several engaging teaching strategies for classroom implementation and examine samples of students’ work.

Linda Dacey
Lesley University, Cambridge, Massachusetts

Henry B. Gonzalez Convention Center, 225

317.1 BUILD
Young Math Legends
General Interest Session
Imagine if your students could meet the legends of mathematics—when they were kids themselves. From the creators of Flatland and Flatland 2: Sphereland comes this exciting new series that will introduce amazing figures including Fibonacci, Gauss, and many more to help motivate students to learn about their discoveries.

Dano Johnson
Sphere World Productions, Austin, Texas
Seth Caplan
Sphere World Productions, Austin, Texas

Henry B. Gonzalez Convention Center, Hemisfair 2

317.2 CW
A Blueprint for Early Learning Success in Math!
Pre-K–2 Exhibitor Workshop
Discover a true “Blueprint” for early learning success in math. Experience the most engaging online mathematics program ever designed using state-of-the-art technology, research-based instructional methodologies, and captivating songs and animations. Bring your own tablet device, and you too can experience Blueprint’s online world.

Reasoning Mind
Houston, Texas

Henry B. Gonzalez Convention Center, 207A
Making Sense of Mathematics for Teaching: The TQE Process

General Interest Exhibitor Workshop

In this interactive exhibitor session, Dr. Juli Dixon allows participants to experience how selecting the correct tasks and engaging with them as teams of learners is crucial preparation to make sense of mathematics for teaching. This session is a must for teachers, supervisors, and administrators seeking increased K–12 mathematics achievement.

Houghton Mifflin Harcourt
Round Rock, Texas

Henry B. Gonzalez Convention Center, 210AB

Early Learning Integration: How to Bring the Math Classroom to Life through Literacy

Pre-K–2 Exhibitor Workshop

In this engaging session, you will step into the early childhood classroom and see how simple it is to teach mathematical concepts through the literacy lens. Alongside talking about the counting principles and relative position of number, you will also be immersed in an environment that welcomes discourse and fun!

ORIGO Education
Earth City, Missouri

Henry B. Gonzalez Convention Center, 212AB

Watertank Math: Adding and Subtracting with a New Visual and Contextual Approach

6–8 Exhibitor Workshop

This session will help educators look at adding and subtracting in a new way. Learn how to visually represent all four operations: addition, subtraction, adding a negative, and subtracting a negative. Watertank Math provides a great scaffolding process to begin as early as kindergarten and to transition through elementary and secondary levels.

Nasco
Fort Atkinson, Wisconsin

Henry B. Gonzalez Convention Center, 213AB

A Monumental Task: Connecting Washington, D.C., across the Curriculum

6–8 Workshop

Imagine your students have been contracted by Washington, D.C., officials to design and create a new monument. They will draw on their knowledge of American figures and events to create a proposal that details their vision, rationale, and LEED Certified design drawn using SketchUp, culminating in a narrated Google Earth tour and a constructed scale model.

Kimberly Brandt
@KimB720
Hawken School, Lyndhurst, Ohio

Henry B. Gonzalez Convention Center, 007B

Acquiring Math as a Second Language through Reading, Writing, and ELL Strategies

6–8 Workshop

Participants will engage in vocabulary, reading, and writing strategies and activities that promote the idea of math literacy. Using literacy strategies to build comprehension, teachers can create an environment where all students, especially English language learners, can gain a deeper understanding of mathematical concepts.

Rodrigo Portillo
Socorro Independent School District, El Paso, Texas

Henry B. Gonzalez Convention Center, 006D
Activities to Connect the Mathematical Practices for AP Calculus in Your Classroom
10–12 Workshop
The redesigned AP Calculus curricular framework puts Mathematical Practices (MPACs) in the forefront. We will focus on connecting concepts, using multiple representations, and communicating mathematical ideas through group activities. Activities will include a search for f (using f’), honeycomb volume, and a tangent line walk.

Karen Hyers
@keyhers
Tartan High School, Oakdale, Minnesota

Grand Hyatt San Antonio, Texas Ballroom D

Algebra in Exercise
8–10 Workshop
We will discuss the algebra involved in exercise. We will look at maximum heart rates, target heart rate ranges during exercise, and recovery rates after exercise. Participants will work together to determine the type of function, if any, represented by these data, write a corresponding equation, and create graphs to show their conclusions.

Paul Kelley
@paulkelley
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Anoka High School, Minnesota

Henry B. Gonzalez Convention Center, 217B

BBA: Appreciating the Masterpiece of Mathematics
8–10 Workshop
This session will engage participants in meaningful algebra activities involving equations and various types of functions.

Aminah Eddings
Little Rock School District, Arkansas
Tonjuna Iverson
Little Rock School District, Arkansas

Henry B. Gonzalez Convention Center, 006A

Coaching for Equity: Using a Racial Equity Lens to Facilitate Coaching Conversations
Coaches/Leaders/Teacher Educators’ Workshop
This session will focus on using a racial equity lens to coaching conversations. Through reflection and dialogue, we will build capacity to facilitate difficult conversations on race and equity in math instruction. Participants will have the opportunity to plan a coaching conversation with an equity lens through mock scenarios.

Rebecca Horwitz
The Level Playing Field Institute, Oakland, California
Geneva Europa
Aspire Public Schools, Oakland, California
Veronica Ernandes
Aspire Public Schools, Los Angeles, California

Grand Hyatt San Antonio, Texas Ballroom E

Construction Junction, What’s Your Function?
8–10 Workshop
Constructions are the foundation for all geometry, motivate proof schema, and provide rich connections between shapes studied. Experience thought-provoking constructions that move student thinking beyond the basic constructions to deep relationships. Constructions, either low or high tech, are tactile ways for students to develop connections.

Brian Shay
@MrBrianShay
Canyon Crest Academy, San Dieguito Union High School District, San Diego, California

Henry B. Gonzalez Convention Center, 304B

CANCELED
Math for Life.
A solid foundation for a brighter future.

World-Leading Math Curriculum from Japan

Japan Math is a powerful and proven approach to learning mathematics.

- **Efficient and Effective Curriculum** - New concepts are presented in association with concepts learned previously. Japan Math students efficiently learn each topic once and sufficiently understand concepts.

- **Problem Solving for Deeper Understanding** - Using Japan Math, students try problems and find solutions on their own. The teacher then reviews the solutions with the students and provides feedback. This unique process reinforces a deeper understanding of math concepts.

- **Developing the Will and Skill to Use Math** - Japan Math aims to foster the will and skill to use mathematics in everyday life.

Visit our website to request a free sample.

Block sets available

www.japan-math.com
8:00 A.M.–9:15 A.M.

325 PROF
Find Your Inner Author—Write for Mathematics Teacher!
10–12 Workshop
Do you have an idea you’d like to share? An article you’d like to write? Department editors from NCTM’s Mathematics Teacher have tips to get you started. Discuss your ideas with editors of “Mathematical Lens,” “The Back Page,” and “Calendar.” You can leave this workshop with an outline or rough draft in hand. Don’t delay—write today!
Margaret Coffey
Fairfax County Public Schools, Alexandria, Virginia
Ron Lancaster
University of Toronto, Toronto, Ontario, Canada
Roger Day
Henry B. Gonzalez Convention Center, 302AB

326 BUILD
High-Impact Games and Meaningful Mathematical Dialog
3–5 Workshop
High-quality games are a powerful way to engage young minds, develop understanding of multiplication, and encourage problem solving and mathematical discourse. Participants play and analyze games designed to deepen students’ conceptions related to multiplication and identify strategies leading to mathematical discourse. Participants play and analyze games designed to deepen students’ conceptions related to multiplication and identify strategies leading to meaningful dialog in the classroom.
Elizabeth Cape
University of Illinois at Chicago
Sandra Niemiera
University of Illinois at Chicago
Jennifer Leimberer
University of Illinois at Chicago
Henry B. Gonzalez Convention Center, 302AB

327 ASSESS
Icons Do It: Using Targeted Feedback on Written Work to Support Student Learning
6–8 Workshop
Skilled teachers use evidence of students’ understanding to inform their decisions and support students’ learning. But sometimes this can seem complex or time-consuming. We’ll practice using a strategy to rapidly give students written feedback (on homework, exit tickets, etc.) that delivers maximum learning impact with minimum teacher effort.
Sendhil Revuluri
@revuluri
VGA Consulting, Chicago, Illinois
Henry B. Gonzalez Convention Center, 006B

328 BUILD
Improving Discourse in the Classroom While Engaging Children with Literature
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 Lynch
Walden University, Leesburg, Virginia
Mel Griffin
Walden University, College Station, Texas
Grand Hyatt San Antonio, Lonestar Ballroom B

329 BUILD
Just Give Me the Facts—But with Understanding Rather Than Gimmicks!
Pre-K–2 Workshop
Fluency is more than memorization of isolated basic 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 easy-to-make visual aids and games that help students to master the basic addition and subtraction facts—with understanding.
James Burnett
ORIGO Education, St. Charles, Missouri
Henry B. Gonzalez Convention Center, 224
8:00 A.M.–9:15 A.M.

**330** TLC
*Let’s Get Write to It: Implementing Mathematical Writing*

3–5 Workshop

Are you interested in implementing mathematical writing but unsure of where to start? Come learn about new recommendations for elementary mathematical writing. Partake in hands-on activities and discussions to identify practical ways to implement and support students writing mathematically.

*Madelyn Colonnese*
University of Connecticut, Storrs

*Tutita Casa*
University of Connecticut, Storrs

*Henry B. Gonzalez Convention Center, 305*

**331** BUILD
*Making Sense of Cents*

Pre-K–2 Workshop

This session will focus on a specific model for helping students make sense of coin values. First, we will discuss why students struggle when identifying and using coins. Then, we will focus on how to create and use an easy-to-make model for coin values. We will use the model as we explore how to make money concepts more tangible for students.

*Lisa Brooks*
University of Central Florida, Orlando

*Grand Hyatt San Antonio, Lonestar Ballroom A*

**332** BUILD
*Modeling like an Engineer*

8–10 Workshop

The engineering design process is an excellent way to help students work through difficult challenges by breaking it up into small steps to complete. The speaker will address how to engage students into solving their difficult challenge utilizing the engineering design process and model their solution with tables, graphs, and equations.

*Thomas Haas*
Norwood City School District, Ohio

*Henry B. Gonzalez Convention Center, 007A*

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**333** NT
*Teaching Mathematical Behaviors: Successful Classroom Management for Math Teachers*

Coaches/Leaders/Teacher Educators’ Workshop

Effective mathematics teachers develop positive participation in class, rather than focus on misbehavior. Engage in strategies to identify, clarify, and teach specific mathematical behaviors that will help you create your classroom where students are productively engaged with mathematics and with each other. Based on NCTM’s *Success from the Start*.

*Rob Wieman*
Rowan University, Glassboro, New Jersey

*Grand Hyatt San Antonio, Texas Ballroom A*

**334** TLC
*Open Educational Resources: Designing a Middle School Curriculum*

6–8 Workshop

Illustrative Mathematics in partnership with the K12 OER Collaborative is writing a complete curriculum for grades 6–8 mathematics. The curriculum is mathematically coherent and attuned the daily classroom needs of teachers. Participants will have a chance to work with the lesson plans and teacher supports.

*Katherine Nowak*
Illustrative Mathematics, Charlottesville, Virginia

*Ashli Black*
Illustrative Mathematics, Tucson, Arizona

*Bill McCallum*
Illustrative Mathematics, Tucson, Arizona

*Henry B. Gonzalez Convention Center, 304A*

**335** A&E
*Principles to Actions & Interventions: High-Quality Mathematics Education for ALL Students*

Pre-K–2 Workshop

Learn how to establish clear goals and focus learning, use tasks to nurture reasoning and problem solving and help your students make connections among mathematical ideas. Create an intervention environment that facilitates discourse, with genuine questioning and builds fluency through a conceptual understanding. Apply the research, take action!

*Pia Hansen*
Math Learning Center, Salem, Oregon

*Grand Hyatt San Antonio, Texas Ballroom C*
8:00 A.M.–9:15 A.M.

**336 BUILD**

**Putting a Positive Spin on Negative Numbers**

6–8 Workshop

No need to fear negative numbers! During this session, a variety of kinesthetic, tactile, and visual games will be shared. Activities include simulated mini golf, Bingo, an integer ops line dance, Jeopardy, Concentration, and a Cauldron card game. Attendees will receive a CD with an electronic version of all activities and more!

**Shelley Hunter**
Carleton North High School, Florenceville-Bristol, New Brunswick, Canada

**Henry B. Gonzalez Convention Center, 217A**

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**337 TLC**

**Selecting Quality Mathematics Tasks to Mine the Gap in Student Understanding**

3–5 Workshop

Need a task? Just “Google It.” But is it a quality task? In this session, participants will identify the characteristics of high-quality mathematics tasks. Participants will also investigate misconceptions and incomplete understandings that occur when students work with these tasks. Activities and resources will be shared.

**John SanGiovanni**
@JohnSanGiovanni
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Howard County Public School System, Ellicott City, Maryland

Grand Hyatt San Antonio, Texas Ballroom B

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**338 TLC**

**Smarter Together! Getting All Students Participating in Challenging Mathematics**

3–5 Workshop

Most classrooms have students who are reluctant to engage in mathematics tasks along with students who are over-eager and tend to take over. In this hands-on session, we will explore tasks and strategies for helping students engage in mathematics tasks in ways that encourages the participation and learning of everyone.

**Marcy Wood**
University of Arizona, Tucson

**Henry B. Gonzalez Convention Center, 217C**

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**339 BUILD**

**Sticky Situations: Investigating and Understanding the Common Computation Situation Tables**

3–5 Workshop

How can we assist students in cognitively engaging in solving word problems? This session explores the structure of the Common Computation Situations (tables 1 and 2 in CCSSM) by interacting with various tools in processing the 24 situation subtypes. Participants will leave with ideas to help students truly understand the structure of math situations.

**Debbie Thompson**
Wichita Public Schools, Kansas

**Lynette Sharlow**
Wichita Public Schools, Kansas

**Henry B. Gonzalez Convention Center, 006C**

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**340 BUILD**

**The Clothesline: The Master Number Sense Maker**

8–10 Workshop

Make student numeracy visible with this dynamic number line. Enhance students’ proportional reasoning, while deepening their conceptual understanding of variables and equations. Represent statistical measures in a whole new way. From ratios and statistics to algebra and geometry, this manipulable tool will blow your mind—I promise.

**Chris Shore**
@MathProjects
Temecula Valley USD, California

**Henry B. Gonzalez Convention Center, 304C**
8:00 A.M.–9:15 A.M.

341 TECH
Transformational Geometry via GeoGebra: Animated Explorations
10–12 Workshop
Make transformations come alive with GeoGebra; learn to use sliders, matrices, and complex numbers to demonstrate the concepts of similarity and congruence using animation. Presenters will share premade files and projects to illustrate these ideas in the classroom. Bring your device with GeoGebra to follow the activities.

Roberto Soto
California State University, Fullerton
Armando Martinez-Cruz
California State University, Fullerton

Henry B. Gonzalez Convention Center, 007C

342 BUILD
Take a Chance
6–8 Workshop
Come join us as we race plunger horses, play ping-pong, and toss tacks around the room, all in the name of probability. Workshop participants will engage in hands-on activities designed to both introduce and reinforce probability concepts found in CCSSM. Enjoy the activities, then take home classroom-ready materials.

Janet Shiver
Central Washington University, Ellensburg
Teri Willard
Central Washington University, Ellensburg

Henry B. Gonzalez Convention Center, 005

9:30 A.M.–10:30 A.M.

343 A&E
Instruction on Algebra-Readiness Topics for Middle School RTI Tier 2 Students with Difficulties
General Interest Session
This session focuses on instruction on algebra-readiness topics for middle school students with mathematics difficulties in Tier 2. Information on instructional design and progress monitoring will be featured. Practices that contribute to misconceptions will be examined with guidance for mathematics teachers on how to avoid “rules that expire.”

Diane Bryant
University of Texas at Austin, The Meadows Center for Preventing Educational Risk
Barbara Dougherty
University of Missouri, Columbia
Karen Karp
Johns Hopkins University, Baltimore, Maryland

Henry B. Gonzalez Convention Center, Hemisfair 3

344 BUILD
A Whole New World: Powerful High School Math Talks
8–10 Session
How can we build a classroom environment where high school students can’t wait to share their thinking? Learn how math talks can be used in high school with high school content to engage students in thinking and talking about math and to build number sense. Participate in math talks, hear classroom tips, and leave with math talks for your students.

Rayna Krevitsky
Pocatello/Chubbuck School District No. 25, Pocatello, Idaho
Jason Libberton
Idaho Regional Mathematics Centers, Pocatello

Grand Hyatt San Antonio, Travis AB

Don’t miss the Closing Session on Saturday afternoon with featured speaker Simon Singh, science writer and broadcaster.
345 BUILD
AMTE’s Standards for Preparing Mathematics Teachers: A New Vision for New Teachers
General Interest Session
The Association of Mathematics Teacher Educators (AMTE) is producing standards for preparing well-started beginning teachers. AMTE President Randy Philipp will share major points from the standards document and lead a discussion about what new teachers need to know about mathematics, about teaching and learning, and about issues of equity.
Randolph Philipp
@jstaley06
San Diego State University, California
Grand Hyatt San Antonio, Presidio ABC

346 TLC
An International Perspective on Modeling: Implications for What We Teach
General Interest Session
How do you make mathematics more meaningful and relevant for students? Modeling! During this session we will share activities, strategies, and research from around the world on modeling. The session will highlight perspectives from mathematics educators and researchers presented at the 2016 ICME conference in Hamburg, Germany.
John Staley
Baltimore County Public School, Towson, Maryland
Kyndall Brown
University of California, Los Angeles
Katie Hendrickson
Code.org, Seattle, Washington
Henry B. Gonzalez Convention Center, 221

347 A&E
Beyond Caring for the Mathematics: Building Caring Mathematical Relationships with Students
3–5 Session
Math can produce feelings of anxiety and inadequacy. In focusing on math learning, we often overlook relational dimensions of instruction. The session will support teachers in identifying ways students are framed mathematically, examining classroom interactions, and strategizing ways to build strong relationships with underserved students.
Dan Battey
@DanBattey
Rutgers University, New Brunswick, New Jersey
Henry B. Gonzalez Convention Center, 214B

348 ASSESS
Blurring the Lines between Instruction and Assessment
General Interest Session
Join us as we explore how assessment and instruction can intersect in the elementary classroom by investigating examples of what formative assessment looks like. We will accomplish this by exploring mathematical ideas as learners as well as viewing video of classrooms where the lines between instruction and assessment are blurred.
Zachary Champagne
@zakchamp
Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), Tallahassee
Henry B. Gonzalez Convention Center, 205

Explore the Exhibit Hall for the latest educational resources.
9:30 A.M.–10:30 A.M.

**349 BUILD**

**Building a STEM-tastic Transdisciplinary Program**

3–5 Session

This session demonstrates how STEM practices directly support Common Core mathematics standards, and it employs transdisciplinary learning using “real world” engineering design challenges and project/problem based learning. This program makes use of informational reading and argumentative writing while taking advantage of collaborative learning opportunities.

Veronica Wilson-Seville
@vseville44
Atlanta Public Schools, Georgia

Bobby Allen
Atlanta Public Schools, Georgia

Winona Jones-Archie
Atlanta Public Schools, Georgia

Henry B. Gonzalez Convention Center, 214C

**350 TECH**

**Personalized Learning in Your Blended Tech Mathematics Classroom**

3–5 Session

Many talented teachers, both new and experienced, are finding themselves empowered by—and excited to use—technology-driven instruction in their classrooms. In this informative session, strategies will be shared with teachers and instructional leaders on how to effectively implement personalized lessons with blended tech in their math classrooms.

Kara Granger
Educational Consultant, Chicago, Illinois

Henry B. Gonzalez Convention Center, 303

**351 PROF**

Coaching toward the *Principles to Actions* Effective Teaching Practices

Coaches/Leaders/Teacher Educators’ Session

NCTM’s *Principles to Actions* describes eight effective teaching practices. This session will explore a collection of tools and strategies that coaches can use to support teachers in making connections between effective teaching practices and students’ opportunities to demonstrate the CCSS Standards for Mathematical Practice.

Maggie McGatha
@mcgatha
University of Louisville, Kentucky

Grand Hyatt San Antonio, Lonestar Ballroom C

**352 PROF**

Coaching with Intention

Coaches/Leaders/Teacher Educators’ Session

Participants will analyze a coach-teacher discussion and name moves used to engage in a deep and specific conversation of mathematics and pedagogy. Assuming the role of coach, teacher, and observer, participants will make use of the coaching moves in discussing and planning a lesson.

Victoria Bill
University of Pittsburgh, Gibsonia, Pennsylvania

Laurie Speranzo
Institute for Learning, Pittsburgh, Pennsylvania

Henry B. Gonzalez Convention Center, 214A

**353 TLC**

Creating a Language-Rich Math Class

3–5 Session

A language-rich math class is an exciting place. Students describe their thinking, defend answers, and discuss math ideas. Join this interactive session as we examine practical strategies for building a language-rich math class. Particular attention will be given to introducing language and to structuring activities to make them language-rich.

Sandy Atkins
@creatingahas
Creating AHAs, LLC, Saint Petersburg, Florida

Grand Hyatt San Antonio, Crockett AB
9:30 A.M.–10:30 A.M.

354  TLC
Cultivating Mathematical Affections through Service Learning
10–12 Session
This session will examine the benefits of service-learning projects in mathematics. Service-learning projects engage students in integrating their conceptual understanding of math with the practical functioning of their local community. Ultimately students gain deeper content knowledge and a deeper appreciation for the role math plays in society.

Joshua Wilkerson
@josh_wilkerson
Regents School of Austin, Texas

Grand Hyatt San Antonio, Crockett CD

355  TLC
Equal Opportunities for All Students in Mathematics: Choosing a Curriculum
Coaches/Leaders/Teacher Educators’ Session
Curriculum materials play a key role in how classroom instruction is enacted. Selection of a strong program is critical for ensuring consistent, equitable access to quality learning opportunities. We share a district’s strategy for engaging stakeholders (parents, classroom and resource teachers, administrators) in a curriculum selection process.

Julie Kreizel
Lincoln Public Schools, Nebraska
Delise Andrews
Lincoln Public Schools, Nebraska

Grand Hyatt San Antonio, Bowie ABC

356  A&E
Equity and Computer-Assisted Instruction in High School Mathematics
10–12 Session
We share how five high school mathematics leaders view computer-assisted instruction (CAI) and its use to promote equity at diverse schools in their district. While CAI has historically been used for credit recovery and interventions for struggling learners, pilot studies are now underway in the district to use CAI to promote mathematical learning.

Richard Kitchen
University of Denver, Colorado
Ken Jensen
Aurora Public Schools, Colorado

Henry B. Gonzalez Convention Center, 301

357  ASSESS
Even Einstein Struggled: Motivating Students to Learn Math and Science
General Interest Session
Reasons for difference in academic performance range from school resources to social cognitive ability. Recent research suggests that students’ understanding of how to succeed provides powerful explanation for this variation. I will discuss how high school students can succeed by learning about the struggles and failed experiments of great scientists.

Xiaodong Lin is a professor at Teachers College, Columbia University, where she studies the impact of different learning environments, instructional activities, and new media on students’ motivation to learn and solve challenging problems. Her work has also earned her several awards, including being selected as the Carnegie Scholar by the Carnegie Corporation of New York and receiving the American Educational Research Association (AERA) Early Career and Outstanding Research awards. She has been named the Yellow River Scholar by the Chinese government, and she is currently serving on the expert advisory board of the Organization of Economic Cooperation and Development (OECD) for the EDUCATION 2030 Initiative.

Xiaodong Lin-Siegler
Teachers College, Columbia University, New York, New York

Henry B. Gonzalez Convention Center, 225
9:30 A.M.–10:30 A.M.

358 BUILD
FUNdamentals of Inverse FUNctions
10–12 Session
Come explore inverse functions. Develop the concept of inverses through hands-on activities and Desmos Activity Builder. Teachers will actively participate in lessons on inverse functions while focusing on using the Standards for Mathematical Practice. Experience inquiry-based, learner-centered, collaborative activities.

Christine Larson
@CLL2718
South Dakota State University, Brookings
Sharon Vestal
South Dakota State University, Brookings

Henry B. Gonzalez Convention Center, 008AB

359 PROF REFLECTION COVE
Heartprint: Transforming the Power of Teacher Collaboration to Become a Fully Formed Professional!
General Interest Session
Your heartprint is the distinctive impression and marked impact you leave on others—your students and colleagues, as seasons unfold. Words such as love, warmth, wisdom, equity, unity, and covenantal relationships become relevant. Fully formed teachers are open to influence, and become relationally intelligent—every day! It’s heart check time!

Timothy Kanold
@tkanold
Center for Mathematics Teaching and Learning, Chicago, Illinois

Henry B. Gonzalez Convention Center, Hemisfair 2

360 ASSESS
Leveraging Rich Math Tasks as Opportunities for Assessment
Pre-K–2 Session
Rich tasks are an authentic alternative to the traditional “stop and assess” approach to assessment. As a result of rich tasks having multiple entry points, many misconceptions can be surfaced. Learn to capitalize on this approach. Analyze a case study, and participate in a rich task to explore a process for narrowing the focus for data collection.

Tawny Malone
@tawny_malone
Evergreen Public Schools, Vancouver, Washington
Sarah Marshall
Henry County Board of Education, McDonough, Georgia

Grand Hyatt San Antonio, Texas Ballroom F

361 BUILD
More, Fewer: Add or Subtract? I Am So Confused!
Pre-K–2 Session
Young students continue to struggle with story problems. If students are encouraged to visually represent the context rather than directly choosing a corresponding operation, they will be more successful in solving problems. In this session, you will learn how to help students construct models to make sense of different contextual situations.

Jana Estes
Boise State University, Idaho
Amber Van Vooren
Boise State University, Idaho

Grand Hyatt San Antonio, Lonestar Ballroom F

362 ASSESS
Organizing & Compiling a Usable Assessment Database in the Classroom: Paperless Daily Assessment
General Interest Session
Formative and summative classroom assessment is equally important for both teachers and students. This session will teach participants how to create, maintain, analyze, and provide useful data for teachers and productive feedback to students. In the technology age we live in, the session will focus on utilizing TI-Navigator and other wireless technologies.

Jeremy Zelkowski
University of Alabama, Tuscaloosa

Henry B. Gonzalez Convention Center, 207B
NCTM knows that teachers are busy, and finding the perfect resource to improve your lesson can be frustrating. That’s why we search our archives of journal articles, Illuminations lessons and interactives, Math Forum Problems of the Week, and the many other member benefits to bring you topical featured resources in your grade band each month.

Learn about new resources, tips, and ideas to share with each and every one of your students. We’ll keep you informed in your member-only e-newsletter, Summing Up, and social media. Be sure to join the conversation using #NCTMresources in your posts so that we can collaborate and learn from one another.

Make the most of your NCTM membership! Visit nctm.org/crcc today for tomorrow’s engaging math lesson.
363  TECH

REFLECTION COVE
Pixar in a Box: Theory and Practice
General Interest Session

Pixar in a Box (pixarinabox.org) is a collaboration between Pixar Animation Studios and Khan Academy. It is a free online resource intended to show students how concepts they are learning in school play a crucial role in the creation of Pixar movies. Each Pixar in a Box lesson focuses on a creative challenge faced by Pixar artists and then shows how math, science, art, and humanities concepts are used to address that challenge. In this talk, we will demonstrate how PIAB is structured to engage middle to high school students using interactive lessons that they can do in or outside of the classroom. We will also discuss our partnership with Khan Academy and the development principles we used to inspire students to discover their creative potential. Educator William Gowsell will share his experience of using PIAB in the classroom and the feedback he has received from his students.

Tony DeRose
Senior Scientist, Pixar Animation Studios
William Gowsell
Teacher and Math Lead, Catholic District School Board of Eastern Ontario

Henry B. Gonzalez Convention Center, Hemisfair 1

364  TLC

Productive Math Discussions Don’t Happen by Accident!
General Interest Session

There is an art to organizing productive math discussions. We will analyze two sequences of student work that could be used during a math discussion and consider how each sequence of work could be used to “problematize” the discussion. We will analyze how problematizing the discussion advances student learning toward the mathematical goals.

Laurie Speranzo
Institute for Learning, University of Pittsburgh, Quincy, Massachusetts
Kristin Klingensmith
University of Pittsburgh, Pennsylvania

Grand Hyatt San Antonio, Republic ABC

365  ASSESS

Reflections from the Redesigned SAT Test Development Committee
General Interest Session

March 2016 was the first administration of a redesigned SAT. Subject matter experts in mathematics began reviewing new questions in 2013 and continue to review hundreds of new questions yearly. In this presentation, SMEs will share their experiences and impressions from their participation as reviewers for the College Board. There will be time for questions and answers at the end of the presentation.

William Trapp
College Board, New York, New York
Luke Wilcox
Kentwood Public Schools, Michigan

Grand Hyatt San Antonio, Travis CD

366  TECH

Reimagining Curriculum-Based Mathematics Tasks with Technology
8–10 Session

Technology can transform mathematics teaching and learning. But where do you find tasks to fit your mathematical goals, or the time to add them to your lesson? One option is to start with the tasks you are already using! Bring your digital devices and join along as we use technology to re-envision tasks from printed curriculum materials.

Amanda Thomas
University of Nebraska–Lincoln
Alden Edson
Michigan State University, East Lansing

Henry B. Gonzalez Convention Center, 217D

367  TLC

Student Errors, Mistakes, Wrong Answers—OPPORTUNITY RETHINK!
10–12 Session

Student errors in your class? Though our brains grow from making errors, how can teachers help students embrace errors as powerful ways to enable explicit refinements in thinking? This presentation offers insights and practical strategies for teachers that want to turn errors into great opportunities for student learning.

Vicki Lyons
Lone Peak High School, Highland, Utah

Grand Hyatt San Antonio, Lonestar Ballroom E
9:30 A.M.–10:30 A.M.

368  A&E
Talk Number to Me: The Ratio Table
3–5 Session
The ratio table is a powerful tool for young students to shift from additive thinking to multiplicative, master the distributive property, partial products/quotients, and proportional reasoning by exploring real-world problems, crafting multiple solutions within contexts, and providing proofs of students’ own thinking.

Christina Lincoln-Moore
@virtuouscm
LAUSD, Los Angeles, California

Grand Hyatt San Antonio, Lonestar Ballroom D

369  “M”
Think, Sketch, Print: 3D Printing in Algebra and Geometry
8–10 Session
Capture the excitement of algebra and geometry and make connections by using 3D printing in the classroom. Engage students in problem-based challenges that develop an in-depth understanding of geometric relationships while building STEM interest. Project ideas and software options will be presented.

Tiffany Sakaguchi
@hinksketchprint
TenMarks, Burlingame, California

Henry B. Gonzalez Convention Center, 007D

369.1  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 concrete manipulatives within the CRA pedagogy, participants will engage in hands-on lessons and games. Teachers and administrators love the ease of use and improved results.

Math Teachers Press
Minneapolis, Minnesota

Henry B. Gonzalez Convention Center, 206A

369.2  CW
Cipher Solvers: Math and the Cryptic Missive
General Interest Exhibitor Workshop
A puzzling note and a dusty copy of an Edgar Allan Poe book lead you to discover that there is a buried treasure. Use algebra, geometry, and cryptology to decipher the cryptic message to find it. Engage your students by weaving the application of systems of equations and the construction of a circumcenter into an exciting adventure.

Texas Instruments
Dallas, Texas

Henry B. Gonzalez Convention Center, 206B

369.3  CW
Unleash the Power of Game-Based Learning with Mangahigh
Coaches/Leaders/Teacher Educators’ Exhibitor Workshop
Discover how Mangahigh helps you build a true 21st-century classroom with interactive games and adaptive quizzes aligned to curriculum for K–10. In this session, you’ll learn ways to differentiate instruction and create an environment where each student is motivated to work at the best of their ability.

Mangahigh
London, United Kingdom

Henry B. Gonzalez Convention Center, 207A

369.4  CW
Making Principles to Actions Come Alive with CPM Mathematics
8–10 Exhibitor Workshop
Let CPM show you how we incorporate the eight Mathematics Teaching Practices in your classroom. CPM provides rich mathematics curricula that are student centered and problem solving based. Experience multiple rich tasks, opportunities for student discourse, and concrete ways to build fluency from conceptual understanding that are embedded within the materials.

CPM Educational Program
Elk Grove, California

Henry B. Gonzalez Convention Center, 210AB
9:30 A.M.–10:30 A.M.

369.5 EW
What’s New with Version 2! A First Look at ORIGO’s Stepping Stones 2.0
3–5 Exhibitor Workshop
ORIGO’s innovative program has been made even better! Learn how these enhancements are helping teachers to foster students’ thinking/reasoning skills, differentiate instruction, and engage student learning through embedded digital teaching tools. This enlightening workshop is a must for anyone in K–5 education looking for a smarter approach to teaching math.
ORIGO Education
Earth City, Missouri
Henry B. Gonzalez Convention Center, 212AB

369.6 EW
Promoting Success on the AP Exam with The Practice of Statistics
Exhibitor Workshop
The AP Statistics exam is a month away. How can you use The Practice of Statistics to help students succeed on this 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 will be provided.
Bedford, Freeman & Worth Publishers
New York, New York
Henry B. Gonzalez Convention Center, 213AB

369.7 EW
Japanese Approach for Establishing the Foundation of CCSSM Mathematical Practices in K and 1
Pre-K–2 Exhibitor Workshop
International studies have pointed out the Japanese curriculum is focused, coherent and rigorous. In this workshop, we will explore selected examples from Japanese curriculum to help the participants gain insights into the features of the Japanese curriculum that supports students establish the foundation for becoming mathematical problem solvers.
Japan Math
Inverness, Illinois
Henry B. Gonzalez Convention Center, Exhibitor Workshop
Theater in Exhibit Hall 3/4

9:45 A.M.–11:00 A.M.

370 A&E
BBA: Going Against the Tide of Contemporary Mathematics!
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
Parkview Arts and Science Magnet High School, Little Rock, Arkansas
Karen Rivers
Parkview Arts and Science Magnet High School, Little Rock, Arkansas
Grand Hyatt San Antonio, Texas Ballroom B

371 BUILD
Develop Meaning by Connecting Multiple Strategies
Pre-K–2 Workshop
Students may have multiple strategies, but do they understand how various strategies relate or know when using each is best and most efficient? Learn how to support students in making connections among multiple addition and subtraction strategies so they become flexible, strategic problem solvers.
Jennifer Leimberger
University of Illinois at Chicago
Elizabeth Cape
University of Illinois at Chicago
Sandra Niemiera
University of Illinois at Chicago
Grand Hyatt San Antonio, Texas Ballroom E
9:45 A.M.–11:00 A.M.

372  BUILD
Early Elementary Algebraic Reasoning Development for Students Receiving Intervention Support
Pre-K–2 Workshop
This workshop’s objective is for participants to discuss struggling K–2 students’ learning progressions when engaging in inversion and compensation tasks. Discussion will center on students’ algebraic reasoning as related to number development. Participant engagement with these tasks and video analysis of students will connect to student learning.

Beth MacDonald
Utah State University, Logan
Jill Ashby
Utah State University, Logan
Kristy Litster
Utah State University, Logan

Henry B. Gonzalez Convention Center, 305

373  TLC
Empowering Students through Formative Assessment Lessons
Coaches/Leaders/Teacher Educators’ Workshop
During this session, participants will engage in a formative assessment lesson that uses five strategies of formative assessment from the work of Dylan Wiliam, as well as the 5 practices for effective classroom discussions from Margaret Smith and Mary Kay Stein and make connections to NCTM’s Principles to Actions.

Robin Hill
Kentucky Department of Education, Frankfort

Grand Hyatt San Antonio, Lonestar Ballroom B

374  “M”
Excited to Think! Interactive, Inquiry-Based STEM Activities to Engage Students
8–10 Workshop
Try some hands-on, inquiry-based STEM activities! We will launch a ball, model the bounce with an equation, predict where to place a baseball glove to catch the ball, and try it! Bring your singing voices, as we will use an oscilloscope to discover properties of sinusoidal curves. Learn to integrate coding (Lego Mindstorms, Sphero, etc.) with math.

Katherin O’Hara
@KatherinOHara
Thames Valley District School Board, London, Ontario, Canada
Henry B. Gonzalez Convention Center, 217C

375  BUILD
Fractions on a Number Line: Making Sense of Strategic Benchmarks
3–5 Workshop
We will share number line tasks that we have developed over the last four years asking students to extend and reinforce key ideas of fractions as a number. This session will share student work and the research-based touchpoints that help third and fourth graders make sense of the unit, partitioning and equivalence on the number line.

Debbie Monson
University of St. Thomas, Minneapolis, Minnesota
Sue Ahrendt
University of Wisconsin-River Falls
Terry Wybert
University of Minnesota, Minneapolis

Henry B. Gonzalez Convention Center, 006B

Create your personal schedule using the online conference planner by visiting nctm.org/planner
Investigating Pre-Geometry Skills through Art and Shapes Using Processing.org

6–8 Workshop

In this session, you will be introduced to Processing, a free and intuitive programming language, used to build basic geometric diagrams in less than twelve commands. To make the most of the workshop download the software at processing.org. Our six-class-period middle school pre-geometry unit will be shared as will recent student work.

Susan Fisher
Meadowbrook School of Weston, Massachusetts
Sarah Albertyn
Meadowbrook School of Weston, Massachusetts

Henry B. Gonzalez Convention Center, 007B

Lesson Study Processes and Tools That Support Teacher Learning

Coaches/Leaders/Teacher Educators’ Workshop

This session provides an overview of our approach to lesson studies focused on deepening students’ mathematical understanding and discourse. We describe the process, tools, and techniques that supported teacher learning. Participants analyze artifacts from a lesson study cycle and discuss ideas for capacity-building and sustainability for the work.

Nicole Rigelman
Portland State University, Portland, Oregon
Amy McQueen
David Douglas School District, Portland, Oregon
Karen Prigodich
Centennial School District, Portland, Oregon

Grand Hyatt San Antonio, Texas Ballroom D

Measuring in the Round: A Concrete Introduction to Radians

10–12 Workshop

Participants will work in groups to construct a measuring tape whose unit is one radius of their chosen circle. They will use their tape to mark angles of various sizes around a circle whose center is at the origin on graph paper. Then using the tape and the marked circle they will construct graphs of the sine, cosine, and tangent functions.

Diane Resek
San Francisco State University, California

Henry B. Gonzalez Convention Center, 224
9:45 A.M.–11:00 A.M.

381  **NT**
Creating a Motivating and Engaging Classroom Culture: Supporting All Students to Learn Mathematics
Coaches/Leaders/Teacher Educators’ Workshop

What are five essential, research-based elements of a mathematics classroom climate that can motivate and engage all students? We will engage teachers in thinking through how to apply these strategies to their classrooms, including drafting Rights of Learners that support students’ engagement and learning.

Amanda Jansen  
University of Delaware, Newark  
James Middleton  
Arizona State University, Tempe

Grand Hyatt San Antonio, Texas Ballroom C

382  **BUILD**
Pattern Blocks: The Forgotten Tool In Middle School!
6–8 Workshop

Join us for explorations in middle school geometric concepts! We will use pattern blocks to dig deeper into understanding relationships among angles, lines, and dilations. This session will include lesson plans for immediate implementation.

Jennifer Moffett  
@jarguelovesmath  
CMAT/Private Consultant, Porter Ranch, California  
Jennifer Hagman  
CMAT, Porter Ranch, California  
Silvia Llamas-Flores  
CMAT, Porter Ranch, California

Henry B. Gonzalez Convention Center, 217B

383  **BUILD**
Playing to Deeper Thinking: Creating a Maker-Space Mentality (Algebra I to Precalculus)
8–10 Workshop

Stitching together low- and high-tech activities allows us to create maker-space experiences for students where play engages them in a deep thinking search for the why before practicing the how. Experience hands-on activities from rulers, Post-it notes, popcorn, and play dough to Python, Scratch, and Desmos. Take away resources that you can use now.

Barbara Filler  
The Steward School, Richmond, Virginia  
Karen Hudson  
The Steward School, Richmond, Virginia

Henry B. Gonzalez Convention Center, 006D
9:45 A.M.–11:00 A.M.

384 BUILD
Rekenreks as Tools for Building Number Sense
Pre-K–2 Workshop
In this workshop, participants will use 10-bead, 20-bead, and 100-bead rekenreks to develop these key ideas in the K–3 number strand: subitizing; counting; composing and decomposing numbers; place value; meanings of the operations; and mental math strategies for addition, subtraction, multiplication, and division.

Nirmala Nutakki
SUNY Buffalo State College, New York
Donna Lillis
Cheektowaga Central School District, New York

Grand Hyatt San Antonio, Texas Ballroom A

385 A&E
Revolutionize Your Math Class One Open-Ended Question at a Time!
6–8 Workshop
Participants will walk out of my session with engaging resources that will help them change their classroom. A classroom where students ask most of the great open-ended higher level questions of each other. A classroom where productive struggle, critical thinking, problem-solving, and math practices are used by ALL student populations daily.

Steven Krolikowski
@skteach27
Downey Unified School District, California

Henry B. Gonzalez Convention Center, 217A

386 M
STEAM Lab RTI: Interventions through Making with Math
3–5 Workshop
RTI provides a framework in which data informs resource distribution and drives instructional moves. Math competence during the elementary grades is key to later learning success. Follow the journey of three RTI students as they navigate a STEAM Lab makerspace. Could the Maker Movement be the key to math RTI?

Richard Cox
@OldMillSTEAM
Bullitt County Public Schools, Mount Washington, Kentucky

Henry B. Gonzalez Convention Center, 304B

387 BUILD
Taking Trig to Task
10–12 Workshop
The transition from the static perspective of right triangle trig ratios to the dynamic perspective of circular trig functions, and from measuring angles in degrees to measuring angles in radians, can generate roadblocks and misconceptions. In this session, we will examine a sequence of tasks that reveal, rather than obscure, trigonometric ideas.

Scott Hendrickson
Brigham Young University, Provo, Utah

Henry B. Gonzalez Convention Center, 006A

388 TLC
The Power of Rehearsal: Practice Making Decisions That Empower ALL Students
8–10 Workshop
Experience and participate in a coached rehearsal of an algebraic instructional routine designed to engage students in rich discussions about mathematics. See how formative assessment practices embedded within the routine help classrooms come alive by positioning ALL students as capable of doing mathematics.

Sara Toguchi
@stoguchi
New Visions for Public Schools, New York, New York
Elizabeth Ramirez
New Visions for Public Schools, New York, New York
David Wees
New Visions for Public Schools, New York, New York

Henry B. Gonzalez Convention Center, 302AB
9:45 A.M.–11:00 A.M.

**389  BUILD**
Thumb Drives and Cheese: Building Geometric Understanding
6–8 Workshop
Imagery with understanding is not only the heart of geometry, but also all of mathematics. In this hands-on workshop to solidify middle school geometric ideas with their algebraic equations, you will build prisms, create nets, and draw visual representations to package thumb drives and cheese. You will leave with ideas to implement immediately.

Keith Krone
Boise State University, Idaho
Jonathan Brednufur
Boise State University, Idaho

**Grand Hyatt San Antonio, Lonestar Ballroom A**

**390  TLC**
Transforming Ordinary into Extraordinary: Motivate, Engage, and Challenge Every Student
8–10 Workshop
Are you tired of the same classroom routine? Join us to learn 10 ways to transform ordinary assignments into engaging activities. Receive examples, instructions, and templates to create your own versions of Lucky Buckets, One & Why, Fix the Flaw & Fly, Can You?, and Topic Triominoes. Get your students moving, talking, and thinking mathematically.

Lori Keleher
@L_Keleher
Huron School District, South Dakota
Lindsey Brewer
Huron School District, South Dakota

**Henry B. Gonzalez Convention Center, 004C**

**391  TECH**
Using GeoGebra to Support Student Learning During Problem-Solving Tasks
10–12 Workshop
Did you know you can create GeoGebra applets on your smartphone? Come learn how to design problem-solving tasks that use GeoGebra to scaffold student learning! Workshop participants will design their own task and create a dynamic GeoGebra applet they can use with students. Bring your own smartphone, tablet, or laptop.

Amdeberhan Tessema
Middle Tennessee State University, Murfreesboro
Jeremy Strayer
Middle Tennessee State University, Murfreesboro
Lucy Watson
Middle Tennessee State University, Murfreesboro

**Henry B. Gonzalez Convention Center, 007C**

**392  TECH**
Using Technology to Engage in Whole-Class Mathematical Inquiry
10–12 Workshop
Together we will explore strategies for using a variety of technologies to facilitate whole-class mathematics discussions—discussions in which students are motivated and positioned to engage in making sense of mathematics. Bring your laptop, tablet, calculator, smartphone, or just yourself and join in the fun.

Keith Leatham
Brigham Young University, Provo, Utah

**Henry B. Gonzalez Convention Center, 304A**

**393  TLC**
We’re in This Together! Supporting Students’ Collaborative Learning in the Mathematics Classroom
6–8 Workshop
Why do collaborative math lessons fall apart? This workshop is designed to introduce participants to classroom norms and task design principles that support students’ collaborative participation and persistence in the math classroom. The audience will use complex instruction design principles to adapt tasks they can take back to their classroom.

Sandra Crespo
@SMCrespo66
Michigan State University, East Lansing

**Henry B. Gonzalez Convention Center, 004**
What’s the Angle (Measure)? Appreciating the Protractor

How do you develop understanding of an angle, its measure, and a protractor? This hands-on session includes activities for measuring angles with nonstandard and standard units of measure. Come create and use a wax paper angle measuring tool along with a standard protractor to measure, estimate, sketch, and construct angles on paper and with objects.

Sami Briceno
@SamiBriceno_CLI
Carnegie Learning, Inc., Pittsburgh, Pennsylvania
Sue Hamilton
Carnegie Learning Inc., Pittsburgh, Pennsylvania

Henry B. Gonzalez Convention Center, 007A

Are Worksheets Getting You Down? Go Sheetless!

Worksheets: we all use them, and they provide quick and valuable feedback; but are you (and your students) tired of giving the same worksheets day after day? Transform that boring worksheet into a fun and engaging activity to assess for learning with immediate feedback, with or without the help of technology through this hands-on session.

Stephanie Ryon
@stephanieryon
College Station ISD, Texas
Jessica Caviness
Coppell ISD, Coppell, Texas

Henry B. Gonzalez Convention Center, 205

What Is Active Learning for Mathematics in Higher Education?

A quickly growing number of college math courses are using active learning. What does this look like in practice? How does this impact K–12 students and teachers? I will describe various active learning environments and discuss preparing K–12 students for active learning college courses, with connections to the Standards for Mathematical Practice.

Benjamin Braun
University of Kentucky, Lexington

Henry B. Gonzalez Convention Center, Hemisfair 2
Engage in Deep Learning with NCTM Interactive Institutes

The NCTM 2017 Interactive Institutes in Baltimore provide two-and-a-half days of face-to-face, in-depth professional development. This summer, the Interactive Institutes feature all new topics! Choose from two specialized professional development opportunities: facilitating meaningful mathematical discourse and supporting students’ productive struggle.

- Instruction aligned to college- and career-ready standards
- Effective teaching strategies with NCTM’s upcoming publication, *Taking Action: Implementing Effective Mathematics Teaching Practices*
- Practical classroom strategies to promote student success

Register for the NCTM Interactive Institutes by May 19 to save at the early-bird rate. Plus, if you register with at least two other colleagues, you save 20% on registration!

Learn more at [nctm.org/institutes](http://nctm.org/institutes) and follow us on Facebook, Instagram, LinkedIn, Pinterest, Twitter, YouTube, and hashtag #NCTMinstitutes.
11:00 A.M.–12:00 P.M.

398 PROF
Changing Teacher Practices: Transforming Teaching 101 to PD 101
Coaches/Leaders/Teacher Educators’ Session
How can we use best practices in teaching to inform our professional development design? What elements form effective professional development, and how do they relate to lesson planning, formative assessments, and human nature? Come join us as we learn together and leave with a plan of action for your future professional development design.

Audrey Mendivil
@Audrey_Mendivil
San Diego County Office of Education, California

Grand Hyatt San Antonio, Republic ABC

399 BUILD
Conceptualizing Polynomials
10–12 Session
Spending too many weeks on factoring? Frustrated that students go out to the garden when you ask them to find roots? Come learn how students have collaborated to go beyond procedures to conceptually understanding how data, equations, roots, factoring, complex numbers, and more can actually connect together as one mathematical reality.

Jennifer North Morris
Marana High School, Tucson, Arizona

Grand Hyatt San Antonio, Presidio ABC

400 "M"
Creating Communities of Learners: Math in Art, Technology, and History
10–12 Session
We will discuss a math in art, technology, and history class designed for students who desire something other than the typical math path. The class explores mathematics through units such as the Golden Ratio, music, tessellations, architecture, fractals, origami, and the history of numbers and counting, the Rubik’s Cube—the fun things you’ve always wanted to teach!

David Peabody
@davidmpeabody
University Prep Academy, Seattle, Washington

Grand Hyatt San Antonio, Crockett AB

401 BUILD
Developing Conceptual Understanding of Fractions
3–5 Session
Fractions are typically a difficult concept for students. However, with the use of visual models, hands-on activities, communication, and problem solving, students learn to develop a deep understanding of fractions. Come learn about activities that develop conceptual understanding of fractions through modeling, reasoning, and problem solving.

Ellen Edmonds
W.H. Sadlier, Charlotte, North Carolina

Henry B. Gonzalez Convention Center, 007D

402 TLC
Effective Teaching Practices That Support Students with SMPs
6–8 Session
How can teachers support students to enact the Standards for Mathematical Practice? In this session, we focus on three Effective Teaching Practices from NCTM’s Principles to Actions publication and how they support students to engage in SMPs. Teachers will have the opportunity to explore these teaching practices and connect them to the SMPs.

Katie Salguero
WestEd, Redwood City, California
Angela Knotts
WestEd, Redwood City, California

Grand Hyatt San Antonio, Lonestar Ballroom E
11:00 A.M.–12:00 P.M.

403 BUILD Integrating Algebraic Thinking in Elementary Math: The Power of a Routine
3–5 Session

Using CGI research, learn how a 15-minute routine helps develop deep understanding in algebraic thinking while engaging ALL students. In this session, we will share classroom-tested routines and the power of recording student thinking in order to support students and make mathematical connections through their explorations with numbers.

Melissa Canham
@Melissa_Canham
Downey Unified School District, California
Glenda Martinez
Downey Unified School District, California

Henry B. Gonzalez Convention Center, 207B

405 PROF K–8 Teacher Preparation: What Are the Unchangeables?
Higher Education Session

If the K–8 mathematics curriculum is based on Common Core or another trend, teacher preparation continues. What are the constants in a program that allow flexible prospective teachers with enough knowledgeable to teach effectively while preparing for future changes? Two different perspectives are offered with foci on content and methodology.

Johnny Lott
Past President, National Council of Teachers of Mathematics, Reston, Virginia; Retired, Oxford, Mississippi
Rebecca Nance
University of Mississippi, Oxford

Henry B. Gonzalez Convention Center, 225

406 TLC Making Space to Explore: Teaching Area with Coherence
6–8 Session

Engage in experiences designed to develop a deeper understanding of teaching area with coherence. Make sense of the progression of area through elementary and middle grades by exploring tasks as learners. Area formulas for quadrilaterals and the circle will be of focus. Connect your experience to students through authentic classroom video.

Heidi Eisenreich
Georgia Southern University, Statesboro
Juli Dixon
University of Central Florida, Orlando
Janet Andreasen
University of Central Florida, Orlando

Grand Hyatt San Antonio, Bowie ABC

404 A&E REFLECTION COVE Iris M. Carl Equity Address: Have You Ever Felt or Been Erased in the Mathematics Classroom?

General Interest Session

Who participates in the mathematics classroom? Why? How? What role do our beliefs about who can do mathematics play in how we organize classroom discussions? What language do we use to talk about students and their parents? I explore these questions with a focus on the voices of students and parents whose mathematical ideas tend to go unnoticed.

Marta Civil is a professor of mathematics education and the Roy F. Graesser Chair in Mathematics at the University of Arizona. Her research looks at cultural, social, and language aspects in the teaching and learning of mathematics, including parental engagement and the connections between mathematics in and out of school. She has led several funded projects in mathematics education, with a focus on developing culturally responsive learning environments, particularly with Latina/o communities. In 2013 she received the TODOS Iris M. Carl Equity and Leadership Award from TODOS: Mathematics for ALL.

Marta Civil
University of Arizona, Tucson

Henry B. Gonzalez Convention Center, Lila Cockrell Theatre
**11:00 A.M.–12:00 P.M.**

**407 TLC**

**Math during Recess: Strengthening Number Sense through Teacher-Guided Play**

*Pre-K–2 Session*

Children love to play and they LOVE when the teacher joins in! Teacher-guided play at recess provides children with a comfortable, non-threatening environment to participate in genuine applications of math concepts outside the classroom. Ideas for games to play and engaging learners during recess are shared during this hour of play!

Ryan Higgins  
Coker College, Hartsville, South Carolina  
John Byrd  
Student, Hartsville, South Carolina  

Grand Hyatt San Antonio, Travis CD

**408 TLC**

**Middle School Number Talks: Shifting the Classroom Culture**

*6–8 Session*

Number talks as a vehicle for changing the middle school classroom culture will be discussed. We will look at how this routine impacts student engagement, discourse, and mathematical mindsets. Video of middle school classrooms number talks will be used to analyze number talk strings and shifts in the classroom culture.

Sherry Parrish  
@numbertalks  
Parrish and Associates, Inc., Birmingham, Alabama

Henry B. Gonzalez Convention Center, 221

**409 TECH**

**Principles to Actions with Dynamic Math Tech**

*Coaches/Leaders/Teacher Educators’ Session*

“Mathematical action technology influences not only how we teach but also what we are able to teach.” With this statement from NCTM, we now must dig into what features of the technology specifically influence teaching and learning. Come to learn how and why to use tech for specific learning goals.

Scott Farrar  
@farrarscott  
GeoGebra Institute, Oakland, California

Henry B. Gonzalez Convention Center, 214A

**410 TLC**

**Promoting Productive Discourse = Deeper Mathematics Learning**

*General Interest Session*

Participants will engage in activities that promote mathematical discourse and discuss how these support deeper learning for all students. Resources for tasks that support discourse and ideas for classroom discourse norms will be shared.

Mark Ellis  
@ellismathed  
California State University, Fullerton  
Cathery Yeh  
Chapman University, Orange, California  
Carolee Koehn-Hurtado  
University of California, Los Angeles

Grand Hyatt San Antonio, Lonestar Ballroom F

**411 ASSESS**

**Taking Action in Middle School: Implementing Effective Mathematics Teaching Practices**

*General Interest Session*

This session will engage teachers in activities that support the development of the *Principles to Actions* Effective Mathematics Teaching Practices in the middle school. These activities will include engaging in rich mathematical tasks, discussing cases of teaching, and analyzing classroom artifacts including student work. Activities are drawn from the new NCTM publication *Taking Action: Implementing Effective Mathematics Teaching Practices in Grades 6–8*.

Margaret (Peg) Smith  
University of Pittsburgh, Pennsylvania  
Michael Steele  
University of Wisconsin–Milwaukee

Henry B. Gonzalez Convention Center, Hemisfair 1
Rigor vs. Play in Early Mathematics: A False (and Risky) Choice

Pre-K–2 Session
This session will address the types of math experiences that are most effective for building young children's foundational mathematical concepts, skills, and dispositions. Participants will discuss current context and trends in early math education and how best practices in early math mesh with best practices in early childhood more generally.

Debbie Leslie
University of Chicago Center for Elementary Mathematics and Science Education, Illinois

Grand Hyatt San Antonio, Travis AB

Strategies to Support Purposeful and Intentional Student Math Talk

Pre-K–2 Session
Explore strategies for structuring and guiding young learners in discourse with children's literature as the springboard. Participants will examine strategies such as, PEER, Wh-prompts, CROWD, and a Reader's Guide to engage young children in purposeful and intentional “math-talk” discussions to reflect the CCSS mathematical practices.

Lynn Columba
Lehigh University, Bethlehem, Pennsylvania

Grand Hyatt San Antonio, Crockett CD

Tactical Escape: A Great Math Challenge

8–10 Session
We will discuss our involvement in two Mathematics Partnership Grants collaborating with mathematics teachers in Wisconsin. We will showcase how we used an escape room challenge to engage students, emphasize the Standards for Mathematical Practice, and promote mathematical discourse. Examples from the escape rooms and student work will be included.

Ashlee LeGear
Hudson School District, Wisconsin
Erick Hofacker
University of Wisconsin-River Falls
Kathryn Ernie
University of Wisconsin-River Falls

Grand Hyatt San Antonio, Lonestar Ballroom C

Teaching Math for Social Justice in the Elementary Classroom

3–5 Session
How do you infuse teaching for social justice in the elementary math classroom? We provide examples of cross-curricular lessons (social studies and science) that were taught in two bilingual classrooms (second and fifth grade) around critical water access. Participants will receive examples of the problems and activities developed for these lessons.

Luz Maldonado
Texas State University, San Marcos
Melissa Adams
Austin ISD, Texas

Henry B. Gonzalez Convention Center, 214B

The New Basics: Arithmetic and Algebra with 21st-Century Tools

General Interest Session
It’s easy to get digital tools to drill students on their facts, at the very same time that these tools make fact memorization less valuable. What do students need to know about arithmetic and algebra, and how can digital tools support them learning it? This session provides some answers and classroom-ready examples.

Christopher Danielson
@Trianglemancsd
Desmos, Inc., St. Paul, Minnesota

Henry B. Gonzalez Convention Center, 301

The Progression of Geometry in the Common Core from Grade 8 to High School

8–10 Session
We will illuminate the recently published Geometry Progression for the Common Core State Standards, illustrating it with examples of geometric reasoning based on rigid motions and similarity transformations and of modeling with geometry.

Bill McCallum
@wgmccallum
Illustrative Mathematics, Tucson, Arizona

Henry B. Gonzalez Convention Center, Hemisfair 3
Understanding the Progression of Fractions in K–8 Mathematics

Coaches/Leaders/Teacher Educators’ Session

In this presentation, we will discuss the progression of fractions from early elementary to middle school mathematics, and we will highlight ways in which students can use their previous understandings of fractions to make sense of harder fraction topics. Classroom video illustrating fraction connections across grade levels will be shared.

Jennifer Tobias
@tobimath3
Illinois State University, Normal

Lisa Brooks
University of Central Florida, Orlando

Grand Hyatt San Antonio, Lonestar Ballroom D

Using Tape Diagrams to Solve Ratio/Proportion Problems

6–8 Session

See how tape diagrams can be used to foster algebraic thinking. We will examine and illustrate how tape diagrams can be used to develop and support proportional and algebraic reasoning. Tape diagram solutions will be compared to traditional solutions to illuminate the usefulness of this tool.

Connie Laughlin
Great Minds, Washington, D.C.

Krysta Gibbs
Great Minds, Washington, D.C.

Henry B. Gonzalez Convention Center, 214C

What’s the Probability I Can Draw That?

6–8 Session

Simple and compound probability can be easily represented and understood using visual models. Visual representations lead to a more intuitive and deeper conceptual understanding; drawings and diagrams help students describe probability as fractions and percentages. Come explore probability problems and ways to determine sample spaces in context.

Janet Tomlinson
Carnegie Learning, Inc, Pittsburgh, Pennsylvania

Kelly Edenfield
Carnegie Learning, Inc, Pittsburgh, Pennsylvania

Grand Hyatt San Antonio, Texas Ballroom F

Technology to Visualize Senior Mathematics Concepts: Tools to Transform Learning

10–12 Session

Mathematical action technologies, as referenced in Principles to Actions, offer us rich opportunities for reasoning and sense making to develop conceptual understanding through visualization and making connections. Bring a device and let’s explore what this can look like in the classroom, and also consider the implications for assessment.

Marc Garneau
@314Piman
Surrey School District, Surrey, British Columbia, Canada

Henry B. Gonzalez Convention Center, 217D
11:00 A.M.–12:00 P.M.

422.1  
Mathspace—Why You’ll Never Grade Math Assignments Again. Seriously. (BYOD!)  
General Interest 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 to try award-winning Mathspace live, and ask about a free trial!

Mathspace  
New York, New York  
Henry B. Gonzalez Convention Center, 206A

422.2  
STEM behind Sports: Field Goal for the Win  
General Interest Exhibitor Workshop  
The kick is up . . . and it’s good! Get your students fired up about math with interactive lessons that model a game-winning field goal. Learn how technology can be used to engage your students in challenging mathematics that they experience every day. Get free resources for middle grades through precalculus that can be used in your classroom right away.

Texas Instruments  
Dallas, Texas  
Henry B. Gonzalez Convention Center, 206B

422.3  
Bridges Intervention: Delivering Clear and Systematic Instruction  
General Interest Exhibitor Workshop  
Searching for an effective K–5 intervention resource with built-in assessments and frequent progress monitoring? Discover how Bridges Intervention uses the power of visual models to reach struggling students. Organized by content rather than grade, each session includes warm-ups, lessons, and practice pages focused on key standards.

The Math Learning Center  
Salem, Oregon  
Henry B. Gonzalez Convention Center, 207A

422.4  
A Fresh Look at Proofs in Geometry  
10–12 Exhibitor Workshop  
Explore multiple strategies that empower students to independently solve proof problems and build crucial deductive reasoning skills. You will hear how teachers are using CanFigureIt® Geometry to create a more engaging learning environment while supporting their students’ individual needs. Bring a laptop for a lively hands-on session!

CanFigureIt  
New York, New York

422.5  
What’s the Problem? Supporting Student Success in Solving Problem  
3–5 Exhibitor Workshop  
During this interactive workshop, participants will discover several effective strategies for problem solving while exploring how the use of language and discourse, visual models, and strategy/thinking games can foster reasoning skills and develop deeper understanding of concepts.

ORIGO Education  
Earth City, Missouri  
Henry B. Gonzalez Convention Center, 212AB

422.6  
A New Approach to On-Level Statistics: Statistics and Probability with Applications  
10–12 Exhibitor Workshop  
Teaching an on-level statistics course or thinking about it? Come find out about a uniquely designed textbook, written for high-school students by high school teachers. During this session, authors Daren Starnes and Josh Tabor will highlight the student- and teacher-friendly features of their new text, including teacher resources. Samples will be provided.

Bedford, Freeman & Worth Publishers  
New York, New York  
Henry B. Gonzalez Convention Center, 213AB
Blended by Design

A complete blended learning program with components that work together seamlessly.

Diagnostic and Monitoring | Whole Class and Small Group Instruction | Personalized Learning

Don’t miss our Exhibitor Session

Meeting Individual Student Needs and Informing Classroom Practice with i-Ready Adaptive Technology
Thursday, April 6, 9:30 – 10:30 am
Exhibit Hall Theater Workshop Area

Visit us at Booth 909 to enter for a chance to win a Chromebook™.
11:30 A.M.–12:45 P.M.

**423 BUILD**

**Building Conceptual and Procedural Understanding in Middle School Mathematics**

**6–8 Workshop**

Using resources from the *Principles to Actions* Toolkit, participants will explore ways of building conceptual and procedural understanding of two important middle school topics (proportional reasoning, rate of change) and ways of enacting the Effective Mathematics Teaching Practices more broadly.

Melissa Boston  
Duquesne University, Pittsburgh, Pennsylvania

**Henry B. Gonzalez Convention Center, 302AB**

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**424 PROF**

**BYOSW: How Bring Your Own Student Work Can Revolutionize Teacher Collaboration**

**3–5 Workshop**

*Principles to Actions* encourages us to use student thinking to inform instruction. Before NCTM’s annual meeting we’ll post a task on this session’s page at meetings.nctm.org; during the session we’ll analyze our own students’ work on the task; and afterwards implement instruction we plan together. Participate in any or all parts of this ongoing PD.

Max Ray-Riek  
@maxmathforum  
The Math Forum at NCTM, Reston, Virginia

**Henry B. Gonzalez Convention Center, 304A**

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**425 BUILD**

**Coaching for Conceptual Understanding: Making Mathematical Routines Routine in K–5 Classrooms**

**Coaches/Leaders/Teacher Educators’ Workshop**

As we moved to the CCSSM we made small shifts in practice. Participating in mathematical routines allowed students to learn content and engage in the mathematical practices while building a community of mathematicians. See how our K–5 classrooms increased intellectual engagement, participation in math discourse, and justifying thinking and reasoning.

Jana Sanchez  
@jsanchezmath  
Everett Public Schools, Washington

**Henry B. Gonzalez Convention Center, 224**

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**426 BUILD**

**Cuisenaire Rods across the Curriculum**

**Coaches/Leaders/Teacher Educators’ Workshop**

Cuisenaire rods are engaging manipulatives that can be used for fractions and beyond. In this session, participants will engage in hands-on activities using Cuisenaire rods that support many different grade level standards. This session is ideal for math specialists and coaches who support students and teachers in many different grade levels.

Heather Dyer  
Howard County Public School System, Ellicott City, Maryland

**Grand Hyatt San Antonio, Texas Ballroom E**

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**427 BUILD**

**Discovering Rules: Making Sense of Fractions through Investigations**

**3–5 Workshop**

While we may have studied fractions as a series of rules, we recognize that just memorizing those rules does not mean that our students are proficient with fractions. Through hands-on explorations, we will explore investigations that help our students discover the rules for themselves and build an understanding of why they work.

Sue OConnell  
@SueOConnellMath  
Quality Teacher Development, Millersville, Maryland

**Grand Hyatt San Antonio, Texas Ballroom A**
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 meetings.nctm.org.
11:30 A.M.–12:45 P.M.

432 **TLC**
Further beyond Sudoku: Using Logic Puzzles to Develop Mathematical Reasoning
10–12 Workshop
Logic puzzles are an engaging and accessible way to introduce students to deductive reasoning. Participants will break down the process of proof-writing, connect the rules of logic puzzles to axiomatic proof systems, make conjectures, write “because statements” and develop their ideas into simple proofs, modeling how to use these ideas with students.

Breedeen Pickford-Murray
@btwnthenumbers
The Bay School of San Francisco, California

**Henry B. Gonzalez Convention Center, 007A**

433 **BUILD**
Igniting Connections: Educating Your Parent Community
3–5 Workshop
Ignite parents’ depth of understanding of the CCSSM Content Standards and eight mathematical practices with informational meetings, parent coffees, and student-led math nights. Receive ready-to-use resources to spark constructive partnerships with parents.

Kimberly Kelly
@HiMsKelly
San Luis Coastal Unified School District, California
Barbara Blanke
Cal Poly State University, San Luis Obispo

**Henry B. Gonzalez Convention Center, 006B**

434 **TLC**
Mathematical Practices Go to the Movies: High-Level Box Office Activities
8–10 Workshop
A movie’s box office performance over time and the relative performances of different genres of movies provide engaging contexts for mathematical practices. Using real data, but doing more than just statistics, this session presents examples of modeling, problem solving, and arguing and critiquing reasoning. Digital tools welcome.

Samuel Otten
@ottomsam
University of Missouri, Columbia

**Henry B. Gonzalez Convention Center, 007B**

435 **TLC**
Name That Polygon: A Higher Order Thinking Algebra Activity
8–10 Workshop
Name That Polygon is a higher order thinking activity that integrates linear algebra and coordinate geometry. Participants will have the opportunity to walk through the linear algebra topics of slope, distance formula, the Cartesian coordinate plane, and polygons in a two-day classroom activity.

Lesa Covington Clarkson
University of Minnesota, St Paul

**Grand Hyatt San Antonio, Texas Ballroom D**

436 **BUILD**
Nix the Tricks
6–8 Workshop
Being a mathematics student is about critical thinking, justification, and using tools of past experiences to solve new problems. Students who approach every topic as a series of steps to memorize are not learning math. In this session we will explore how to replace some popular tricks with teaching for understanding.

Tina Cardone
@crstn85
Salem High School, Salem, Massachusetts
Ashli Black
Illustrative Mathematics, Tucson, Arizona

**Henry B. Gonzalez Convention Center, 006A**
11:30 A.M.–12:45 P.M.

**437 TLC**
Pinterest Pitfalls with Preservice Teachers
**Coaches/Leaders/Teacher Educators’ Workshop**
Preservice teachers rely on the Internet as one source for lesson ideas. Without a filter for what is research-based, “cute” activities are chosen instead of ones that are mathematically sound. We share how we use these activities in methods class to foster analysis and revisions to support preservice teachers in effectively teaching mathematics.

Victoria Miller Bennett  
Bellarmine University, Louisville, Kentucky  
Stefanie Livers  
University of Alabama, Tuscaloosa

Henry B. Gonzalez Convention Center, 006C

**438 TLC**
Promoting Higher Level Depth of Knowledge in High School Math
**10–12 Workshop**
Come explore strategies and tasks that inspire students to develop deeper conceptual understanding in high school mathematics. In particular, we will examine strategies to provoke discourse and bump up the Depth of Knowledge in algebra, functions, and geometry through the integration of analysis tasks, open questions, and open middle problems.

Mishaal Surti  
@MrSurti  
Thames Valley District School Board, London, Ontario, Canada

Henry B. Gonzalez Convention Center, 006C

**439 ASSESS**
Proportional Reasoning in the Common Core: Tasks and a Diagnostic Test for Teacher Use
**6–8 Workshop**
Participants will engage in proportional reasoning tasks with a focus on the use of models (e.g., unifix cubes, pictures, tape diagram, number line) to tap into students’ informal knowledge and bridge them to more formal understandings. Next we will provide an overview of open-source proportional reasoning diagnostic assessments for teachers’ use.

Michele Carney  
Boise State University, Idaho

Henry B. Gonzalez Convention Center, 217C

**440 BUILD**
**6–8 Workshop**
There is a difference between using proportions to solve problems and having proportional reasoning. This session will introduce participants to the levels of proportional reasoning and provide participants the opportunity to create activities that lead to the development of proportional reasoning.

Lois Williams  
College of William and Mary, Williamsburg, Virginia  
Ruth Harbin Miles  
Mary Baldwin College, Staunton, Virginia

Henry B. Gonzalez Convention Center, 304C

**441 BUILD**
Recursive and Explicit Relationships using Algebra Tiles
**3–5 Workshop**
Participants will build algebraic reasoning through connections between recursive and explicit descriptions of patterns explored through hands-on tasks with algebra tiles. Considerations of student thinking through examples of student work will be included in the presentation.

Alyson Lischka  
Middle Tennessee State University, Murfreesboro  
Lucy Watson  
Middle Tennessee State University, Murfreesboro  
Amber Matuszewski  
Rutherford County, Murfreesboro, Tennessee

Henry B. Gonzalez Convention Center, 005
11:30 A.M.–12:45 P.M.

442  "M"
Simple Machines: It’s That Simple
Pre-K–2 Workshop
These lessons show how simple it is to infuse STEM concepts into curriculum, and it is so simple that kindergartners and even preschoolers can learn and do STEM. The attendees will leave the session with lesson plans for the entire simple machines unit. Participants will engage on one of the lessons during the session.

Melissa Sheffer
Student, Millersville University, Pennsylvania
Aneshka Szczesny
Student, Millersville University, Pennsylvania
Jason Petula
Millersville University, Pennsylvania

Henry B. Gonzalez Convention Center, 007C

443  "M"
Tea, Guinness, & Crop Yields: The Many Faces of Statistics
10–12 Workshop
Statistics has worn many faces throughout history. Framing statistics within a historical and contextual perspective provides new opportunities in which students can read about and investigate topics. Participants will walk away with a series of online resources to use as well as authentic STEAM integrations taken from a well-known piece of literature.

Tammy Jones
@TLJCG
TLJ Consulting Group, Lebanon, Tennessee
Mary Martin
Middle Tennessee State University, Murfreesboro

Henry B. Gonzalez Convention Center, 006D

444  BUILD
The Power of Unit-Fraction Quantities for Building Children’s Understanding
3–5 Workshop
Unit fractions (1/n) lie at the heart of the mathematics of fractions. Story problems involving these quantities build children’s understanding of relationships between a unit fraction and 1. Come explore children’s understandings by viewing and discussing children solving problems and consider how these problems enhance fraction instruction.

D’Anna Pynes
University of Texas at Austin
Gladys Krause
University of Texas at Austin
Susan Empson
University of Missouri, Columbia

Henry B. Gonzalez Convention Center, 004

445  BUILD
Wacky & Wild Workstations for Prekindergarten–Grade 2
Pre-K–2 Workshop
Learn how to incorporate low prep/cost, engaging standards-based workstations related to number relationships, operations, and algebraic reasoning. While incorporating thinking, problem solving, student accountability, and fun, participants will interact with a variety of activities and games from a student perspective. A QR code and link will be provided.

Alison Lentz
@alilentz
ESC Region 11, White Settlement, Texas
Jennifer Jones
Round Rock ISD, Texas

Grand Hyatt San Antonio, Texas Ballroom B

Check out the Reflection Coves on the second and third floors of the Convention Center to discuss topics of interest with featured speakers, board members, Affiliate Relations Committee members, as well as the President and Immediate Past President.
**446 BUILD**
*Wait! What Do I Find—Surface Area or Volume?*
8–10 Workshop
We will explore student misconceptions as we take a look at their conceptual learning journey, elementary grades through geometry. We will discuss effective teaching strategies as well as provide lesson ideas, resources, and activities that will help students to differentiate surface area and volume problems.

Patty McGraw
Prince William County Schools, Woodbridge, Virginia
Lisa Sill
Prince William County School, Woodbridge, Virginia

**Grand Hyatt San Antonio, Texas Ballroom C**

**447 BUILD**
*Young Mathematicians: Powerful Strategies for Building K–2 Number Sense*
Pre-K–2 Workshop
Number sense is within the reach of young children! The number sense pathway allows teachers to select and offer children rich, meaningful, and appropriate experiences. Join us for engaging activities, videos, and discussions, and leave with exemplar activities and a useful framework of understanding how to build a strong foundation of number.

Amanda Confer
Camino Nuevo Charter Academy, Los Angeles, California
Christine Confer
Associates for Educational Success, Tucson, Arizona

Henry B. Gonzalez Convention Center, 217B

Don’t miss featured speaker Ed Burger’s session on Friday, April 7 at 4:45 p.m. followed by IGNITE at 6:30 p.m.

**448 A&E**
*Mathematical Argumentation Lessons: Engaging All Students*
6–8 Session
Researchers (Herbel-Eisenmann et al. 2012) report that students of color need increased access to mathematically based discourse, including argumentation. Working with teachers, we developed online instructional activities and improvisational “games” particularly supportive of culturally and linguistically diverse students engaging in argumentation.

Harriette Stevens
Mathematics Education Group, San Francisco, California
Jennifer Knudsen
SRI Education, Austin, Texas
Teresa Lara-Meloy
SRI International, Menlo Park, California

**Grand Hyatt San Antonio, Lonestar Ballroom C**

**449 ASSESS**
*I Got an 86. What Does That Mean?*
10–12 Session
Why do we grade? Is a single number meaningful? When evaluating student work, we have an opportunity to guide students forward with feedback. Instead of identifying mistakes and subtracting points to determine a numerical grade, let’s give evaluations dimension, depth, and character by answering the question, “What is my student struggling with?”

Brian Abend
@mrabend
Worcester Academy, Massachusetts

**Grand Hyatt San Antonio, Lonestar Ballroom D**
12:30 P.M.–1:30 P.M.

**450** TLC

3 Parts to a K–5 Student-Centered Intervention Program

3–5 Session

Are you stuck using an intervention program that you and your students don’t find engaging? We found a way to make intervention engaging and student centered. Come learn how we incorporated the use of number talks/strings, story problems, and games during intervention time and how each is backed by research.

Donna Wommack
Genesee School District, Idaho
Christina Tondevold
Mathematically Minded, Orofino, Idaho

Grand Hyatt San Antonio, Republic ABC

**451** BUILD  REFLECTION COVE

Algebra Tasks That Promote Reasoning and Problem Solving

8–10 Session

This session will provide participants the opportunity to experience three approaches for adapting tasks, to adapt concrete tasks for their classrooms, and to give feedback on tasks that have been adapted. The focus of the session will be on adapting everyday algebra 1 and algebra 2 tasks to promote reasoning and sense making.

Benjamin Sinwell
Pendleton High School, South Carolina

Henry B. Gonzalez Convention Center, 214C

**452** BUILD

Building Concepts in Ratios and Proportional Reasoning

6–8 Session

The presenters will use Interactive dynamic action/consequence applets that display ratios in ratio tables, diagrams, double number lines, and as points on a line to discuss ratios and proportional reasoning from the perspective of the Progressions documents associated with the coherent, consistent Common Core State Standards for Mathematics.

Wade Ellis
Retired, West Valley College, San Jose, California
Thomas Dick
Oregon State University, Corvallis

Henry B. Gonzalez Convention Center, 214A

**453** TLC

Classroom-Tested Activities That Promote Reasoning, Sense Making, and Proof in High School Geometry

8–10 Session

Learn how to implement four multiday lessons that afford students opportunities for productive struggle and purposeful discourse. Content includes points of concurrency, bisectors, parabolas, coordinate geometry, constructions, and proof. Leave with access to editable documents to differentiate and scaffold these activities for your students.

Wayne Nirode
Troy City Schools, Ohio

Henry B. Gonzalez Convention Center, 007D

**454** BUILD

Don’t Be Quick to Count-On: Building Procedures from Conceptual Understanding

Pre-K–2 Session

Children solving addition problems are commonly taught the strategy of counting-on. When is this another empty procedure and when is it supported by conceptual understanding? Participants will leave with a progression of student counting concepts and research-supported activities to promote the movement through the progression.

Beverly Ford
AIMS Center for Math and Science, Fresno, California
Darrell Blanks
Fresno Pacific University, Fresno, California
Tiffany Friesen
AIMS Center for Math and Science Education, Fresno, California

Grand Hyatt San Antonio, Lonestar Ballroom F
12:30 P.M.–1:30 P.M.

**455** **BUILD** REFLECTION COVE

**Fluency and Conceptual Understanding: Student Thinking and Completing the Square**

**8–10 Session**

Be part of a lesson on completing the square that models using evidence of student thinking to adjust instruction and to assess student progress and asking productive questions. You will work with different ways to complete the square and to connect the methods to create procedural fluency with conceptual understanding.

Fred Dillon  
@fdizzle1955  
Ideastream/PBS, Strongsville, Ohio  

**Henry B. Gonzalez Convention Center, 225**

**456** **BUILD**

**In Your Interest: Integrating Mathematics and Financial Literacy**

**8–10 Session**

We will share a set of activities that address both goals for mathematics (CCSSM) and financial literacy (Jump$tart Standards). See how algebra/functions, data analysis/statistics, and modeling can support students in building a stronger understanding of financial literacy topics such as savings, investing, credit, and debt.

Sherri Martinie  
Kansas State University, Manhattan  

Susan Peters  
University of Louisville, Kentucky  

**Grand Hyatt San Antonio, Travis CD**

**457** **A&E**

**Language Effects in K–2 ESL Students Receiving Mathematics Intervention Support**

**Pre-K–2 Session**

This presentation will discuss the effects of a mathematics intervention support on young English language learners’ (ELLs) abilities to operationalize number. In particular, we will discuss the relationship between language instruction and algebraic reasoning development.

Marialuisa Di Stefano  
Utah State University, Logan  

Kristy Litster  
Utah State University, Logan  

Beth MacDonald  
Utah State University, Logan  

**Henry B. Gonzalez Convention Center Center, Hemisfair 3**

**458** **TECH**

**Looking Forward: What’ll Be Possible in Math Ed in a Decade?**

**8–10 Session**

Technology is evolving rapidly. Every year, devices get cheaper and better. Every year, wifi access improves. What do these trends imply for the future? What will be possible in a decade that isn’t possible today? We’ll look at the best tech, from pencils on up to the Internet, and see how future possibilities can inform our classrooms today.

Eli Luberoff  
@eluberoff  
Desmos Inc, San Francisco, California  

**Henry B. Gonzalez Convention Center, 301**

**459** **“M”**

**Math as Telescope: Applying Concepts to Explore Our World**

**8–10 Session**

What’s the fairest way for cities to raise revenue? Is there an upside to having a bad day? Like a telescope, math is a powerful tool that allows us to better understand the world. In this presentation, we’ll model real-world lessons in which students apply concepts such as linear functions and integer operations to explore how the world works.

Karim Ani  
@karimkai  
Mathalicious, Austin, Texas  

**Henry B. Gonzalez Convention Center Center, 221**
12:30 P.M.–1:30 P.M.

460 PROF
My Coaching Journey through Fractions: Frightening, Yet Empowering Educators’ Session
As educators, many of us learned fractions procedurally. Take a glimpse into several classrooms, along with our coach, as we established goals, planned, assessed, and analyzed evidence of student thinking. Participants will learn how teachers built learning experiences through book talks, social media, and lesson studies in a PLC.

Emily Paschall
Limestone County Schools, Athens, Alabama
Sheila Holt
University of Alabama/Huntsville AMSTI, Huntsville

Henry B. Gonzalez Convention Center, 008AB

461 BUILD
Noticing the Numbers: Students Using Computation Strategies Based on Reasoning
3–5 Session
Research indicates that engagement with multiple computation strategies increases conceptual understanding and student achievement. But how do we move students toward efficient use of strategies? In this session, participants consider instructional decisions that move students toward efficiency based on reasoning about the numbers at hand.

Patricia Clark
@pclarke_patty
Math Solutions, Sausalito, California
Mary Mitchell
Math Solutions, Sausalito, California

Henry B. Gonzalez Convention Center, 214B

462 TECH
Number Sense Fun with Game-Based Early Childhood Apps
Pre-K–2 Session
Game-based apps provide enriching opportunities for children to learn number sense. Research suggests that developing a good foundation of number sense skills in children promotes successful math achievement in future mathematics courses. The importance of number instruction for pre-K students and a collection of apps will be shared and discussed.

Amy Adkins
University of Nevada, Las Vegas
Dawn Lockett
Clark County School District, Las Vegas, Nevada
Lina DeVaul
University of Nevada, Las Vegas

Henry B. Gonzalez Convention Center, 207B

463 TLC
REFLECTION COVE
Rich Real-World Problems
6–8 Session
These engaging problems provide a context you can use to introduce a math topic and make conceptual understanding more tangible. We’ll do a problem together and discuss how to help students articulate their mathematical thinking in writing. Finally we’ll cover options for assessing their work and sources of free problems from kindergarten through high school.

Robert Kaplinsky
@robertkaplinsky
Downey USD, Long Beach, California

Henry B. Gonzalez Convention Center, Hemisfair 1

Check for updates and for full or cancelled sessions through the conference app or program updates screens located in the lobbies of the convention center and the Grand Hyatt.
12:30 P.M.–1:30 P.M.

**464 ASSESS**
Smarter Balanced: Lessons Learned from Writing Performance Tasks

General Interest Session
As a classroom teacher, nothing informed my assessment writing more than developing items for Smarter Balanced. Come hear about the lessons I learned regarding rigor, expectations, and instructional implications. Whether you’re a classroom teacher or a supporter of teachers, you’ll be able to help students better understand performance tasks!

Jessica Balli
@JessicaMurk13
Callahan Consulting, Santa Rosa, California

Grand Hyatt San Antonio, Presidio ABC

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**465 A&E**
Strategies for Including Students with Disabilities in Computational Thinking

Research Session
This presentation highlights research and practical solutions for teaching computational thinking to students at risk for academic failure. Data on teacher implementation and student outcomes related to persistence, adaptive help seeking, and collaborative problem solving will be shared as well as implications for special ed teacher education.

Cheryl Moran
University of Chicago, Illinois

Maya Isreal
University of Illinois at Urbana-Champaign

Quentin Wherfel
University of Illinois at Urbana-Champaign

Grand Hyatt San Antonio, Crockett CD
12:30 P.M.–1:30 P.M.

**466  A&E**

**Strengthening Girls’ Math Identity: Best Practices Learned**

General Interest Session

From an early age, girls are taught that math success is an innate ability that they lack and being feminine and good at math are mutually exclusive. Focusing on girls in grades 4–8, the critical years of transition from elementary to middle to high school, this presentation will review programs and strategies that strengthen girls’ math identity.

Lorraine Howard
Wilkes University, Wilkes-Barre, Pennsylvania

Grand Hyatt San Antonio, Texas Ballroom F

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**468  A&E**

**Teaching Is Tough, But What Makes it Complex? Implementing Complex Instruction**

General Interest Session

Complex instruction (CI) is one way to realize equity goals in mathematics education. It is a strengths-based pedagogical approach that embraces student diversity and provides all students to access challenging mathematics, use their strengths to help their group attain a mathematical goal, and see each other as resources for learning new content.

Nicole Wessman-Enzinger
@DrEnzinger
George Fox University, Newberg, Oregon
Sararose Lynch
Westminster College, New Wilmington, Pennsylvania
Barbara Swartz
McDaniel College, Westminster, Maryland

Grand Hyatt San Antonio, Travis AB

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**469  TLC**

**Teaching Mathematics Powerfully with Rich Tasks**

10–12 Session

You’ve tried Investigations (3-act tasks, modeling) lessons. Making these tasks work well is not trivial. I’ll share some delivery principles that help teachers make the most of rich mathematical inquiry lessons and resulting class discussions. We’ll talk about pacing, questioning, choosing who shares, and other important considerations.

Pamela Harris
@pwharris
University of Texas at Austin, Kyle

Henry B. Gonzalez Convention Center, 303

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**470  TECH**

**Technology Makeovers: Finding Digital Approaches to Your Favorite Lessons**

10–12 Session

A precalculus and calculus session that will demonstrate how to utilize technology tools, like Desmos, that offer new opportunities for your favorite classroom activities. Come experience how small digital additions can be quickly implemented into your lesson, helping you expand the bridge of what students know to what you want them to learn.

Luke Walsh
@lukeselfwalker
Catawba Valley Community College, Hickory, North Carolina
James Martin
Wake Technical CC, Raleigh, North Carolina

Henry B. Gonzalez Convention Center, 205

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Visit the NCTM Bookstore and save 25% off the list price of all publications and specialty items.
**471 TLC**
**The Answer Still Matters . . . Eventually**

*General Interest Session*

Effective teachers engage students in productive struggle as a way to develop mathematical thinking and learn new content. We sometimes say, “It’s not the answer that matters, it’s the process.” But the answer does matter, even as we focus on the struggle. How can we slow down the race to answers and use the journey as a vehicle for learning?

*Cathy Seeley*
@cathyseeley
Past President, National Council of Teachers of Mathematics, Reston, Virginia; Consultant, Austin, Texas

*Grand Hyatt San Antonio, Bowie ABC*

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**473 BUILD**
**This Math Was Made for Talking: Targeting Math Discussions in the K–6 Classroom**

*General Interest Session*

Number talks are powerful tools for building students’ mathematical thinking, fluency, and discourse, but there’s more to them than just show and tell. Leverage your talks: analyze and use student strategies shared during number talks to plan and lead targeted follow-up discussions that reengage students in their mathematical thinking.

*Christine Newell*
@MrsNewell22
Stanislaus County Office of Education, Modesto, California

*Grand Hyatt San Antonio, Crockett AB*

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**472 A&E REFLECTION COVE**
**This Is Not A Test: Math, Equity, and What’s Not Adding Up**

*General Interest Session*

How can we best serve our children of color as math teachers? We will discuss possible solutions and methodologies for teaching math for all children, and why equity matters in the daily work we do as math teachers.

*José Vilson*
@thejlv
NYC Department of Education, New York, New York

*Henry B. Gonzalez Convention Center, Hemisfair 2*

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**474 TECH**
**Using the Desmos Calculator to Analyze Student Photographs and Pictures**

*6–8 Session*

Most students enjoy taking photographs of their friends and the world around them. Additionally, many are budding artists. But, how often do they analyze the mathematics behind their images? Participants will learn how to use the Desmos calculator to analyze the underlying equations and geometric figures.

*Stephanie Cooperman*
School District of the Chathams, Chatham, New Jersey

*Neil Cooperman*
Millburn High School, New Jersey

*Henry B. Gonzalez Convention Center, 217D*
12:30 P.M.–1:30 P.M.

475 TLC
Which One Doesn’t Belong?
General Interest Session
Come explore thought-provoking mathematical puzzles for K–12 students. Each has a set of four shapes, numbers, or graphs with a reason why each one doesn’t belong. As you work through problems and create your own, you will see how WODB helps construct possible arguments and critique the reasoning of others.

Mary Bourassa
@MaryBourassa
West Carleton Secondary School, Dunrobin, Ontario, Canada
Chris Hunter
Surrey Schools, British Columbia, Canada
Grand Hyatt San Antonio, Lonestar Ballroom E

476 ASSESS REFLECTION COVE
Why Formative Assessment Should Be a Priority for Every School
General Interest Session
Increased use of formative assessment raises student achievement, but too often implementation focuses on the least effective form of formative assessment analysis of student data. This presentation explains why, in order to maximize impact on student achievement, formative assessment requires changing classroom practice, minute by minute and day by day.

Dylan Wiliam
@dylanwiliam
Learning Sciences International, Starke, Florida
Henry B. Gonzalez Convention Center, Lila Cockrell Theatre

476.1 CW
Motivating Students through High-Level Problem Solving Using Models in a Collaborative Setting
3–5 Exhibitor Workshop
Sarah Schaefer will explain how to use models and other strategies to solve challenging word problems from the original Singapore Math® program: Primary Mathematics. Workshop participants will learn how to increase student achievement while persevering and making connections between mathematical content and NCTM’s Mathematics Teaching Practices.

Singapore Math
Tualatin, Oregon
Henry B. Gonzalez Convention Center, 206A

476.2 CW
Introducing Financial Algebra 2nd Edition: Raising Interest, Raising Competence, Raising Confidence
10–12 Exhibitor Workshop
Learn how to implement the most successful financial algebra course in the country, Advanced Algebra with Financial Applications Using Financial Applications, 2nd Ed. (Cengage 2018). Ideal as a third- or fourth-year course for all students. Various pathways may be created depending on student ability level. Sample copies will be distributed to all attendees.

National Geographic/Cengage
Boston, Massachusetts
Henry B. Gonzalez Convention Center, 206B

476.3 CW
What Is the Role of Practice to Build Mastery?
General Interest Exhibitor Workshop
Through collaborative, hands-on activities and conversation, we will explore your ideas about mastery and how practice can support its development. Your insights will help inform future development of Renaissance products. In appreciation, all participants will receive a free math T-shirt!

Renaissance Learning
Wisconsin Rapids, Wisconsin
Henry B. Gonzalez Convention Center, 207A
**476.4**  
**Sustaining Student Effort, Cognitive Demand, and Perseverance during Instruction!**  
**General Interest Exhibitor Workshop**  
In this inspiring session, Dr. Timothy Kanold provides four essential teacher actions that can cause students to sustain their effort and persevere in and through the mathematics during a lesson. Participants will evaluate their current practices against an effective teaching strategies “Test” to see how they rate on the Causing Student Perseverance scale.  
**Houghton Mifflin Harcourt**  
Round Rock, Texas  
*Henry B. Gonzalez Convention Center, 210AB*

**476.5**  
**Procedural Fluency in a Box . . . of Facts.**  
**Coaches/Leaders/Teacher Educators’ Exhibitor Workshop**  
Developing procedural fluency from conceptual understanding can be found using the visual models from ORIGO’s Box of Facts. Come explore and engage in the thinking strategies for the four operations and leave with a broader, more balanced view of concepts and procedures in developing flexible thinking.  
**ORIGO Education**  
Earth City, Missouri  
*Henry B. Gonzalez Convention Center, 212AB*

**476.6**  
**NCTM Business Meeting**  
**General Interest Session**  
Join NCTM leadership for an overview of recent activities and strategic priorities for the coming year.  
**Matt Larson**  
President, National Council of Teachers of Mathematics, Reston, Virginia; Lincoln Public Schools, Nebraska  
*Grand Hyatt San Antonio, Bonham B*

**477**  
**Closure: Beyond the Exit Ticket**  
**Pre-K–2 Workshop**  
Lesson closure is a premier time for students to transfer learning from their working memory to their long-term memory. Participants will explore the research and importance behind lesson closure and engage in closure activities for engagement and assessment. Experiences and data from K–5 classrooms where closure is a focus will also be shared.  
**Molly Caroland**  
Howard County Public Schools, Ellicott City, Maryland  
**Kristen Mangus**  
Howard County Public Schools, Ellicott City, Maryland  
*Grand Hyatt San Antonio, Texas Ballroom C*

**478**  
**Addition and Subtraction—More Than “Add To” and “Take Away”**  
**Pre-K–2 Workshop**  
What are the various problem types expected in K–2? How do we support students beyond basic problem types? We’ll identify and distinguish between problem types. Then, we’ll explore strategies to support explicit instruction in various types. Participants will leave with lesson ideas, planning suggestions, and resources for problems of varied types.  
**Gina Kilday**  
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Exeter-West Greenwich Regional School District, Rhode Island  
*Henry B. Gonzalez Convention Center, 302AB*
Algebra Experiments: Engaging Students through Exciting Applications of Exponential Functions

Are you looking for some hands-on activities to help your algebra students understand exponential functions? 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. Questions that promote student discourse will be considered.

Amy Herman
Math Solutions, Sausalito, California
Connie Horgan
Math Solutions, Sausalito, California

Grand Hyatt San Antonio, Texas Ballroom D

Building Connections: Algebraic Reasoning and Sense Making in the Elementary Grades

This session will explore aspects of algebraic thinking and sense making appropriate for the elementary grades. Connections to fractions and proportional reasoning will be made. Participants will engage in activities that incorporate several of the mathematical practices to help students build confidence and strong conceptual understanding.

Karen Graham
University of New Hampshire, Durham

Henry B. Gonzalez Convention Center, 006B

AP Calculus Framework: Discovering Integral Defined Functions and FTC Using Technology

Analysis of functions defined by integrals is a learning objective of the calculus framework. The connections between these functions and their derivatives will be explored using paper and pencil and technology activities. Hands-on investigations designed to help students improve their conceptual understanding of AP problems involving FTC will be included.

Mike Koehler
Blue Valley North High School, Kansas City, Missouri

Henry B. Gonzalez Convention Center, 224

Connect Four: How Integration Builds Proficiency with the SMPs

Integration is key to helping students be mathematically proficient. The connections between math and other disciplines are easily made in the Standards for Mathematical Practice. This session will focus on the connections between the four content areas and four SMPs. Participants will take away ideas and tasks to help their students Connect Four.

Suzette Gilbert
Middle Tennessee State University, Murfreesboro
Jeremy Winters
Middle Tennessee State University, Murfreesboro
Tracey Huddleston
Middle Tennessee State University, Murfreesboro

Henry B. Gonzalez Convention Center, 005
1:30 P.M.–2:45 P.M.

484 **TLC**
Create an Environment Where Collaboration, Sense Making, Modeling, and Perseverance Thrive
10–12 Workshop
Well-structured collaborative groups working on modeling problems worthy of student effort facilitates the mathematical practices. Collaborate on one of three problems and discuss how assessing your students’ knowledge and anticipating their problem-solving approach can inform group formation. Also discuss worthy problems, monitoring, and regrouping.

Allan Bellman
@abellman17
University of Mississippi, Oxford

Kayton Hosket
University of Mississippi, Oxford

Henry B. Gonzalez Convention Center, 304B

485 **TLC**
Engaging Students in Meaningful Math through Games
3–5 Workshop
Games are an effective way to engage students in learning. In this workshop, participants will experience how to support the development of pre-adolescent mathematicians through purposeful play. The focus will be on the CCSS mathematical practices and the content domain of Number and Operations associated with Fractions.

David Coffey
@delta_dc
Grand Valley State University, Allendale, Michigan

Kathryn Coffey
Grand Valley State University, Allendale, Michigan

Grand Hyatt San Antonio, Texas Ballroom E

486 **BUILD**
Engaging Students with Great Questions, Fun Simulations, and Free Technology
10–12 Workshop
Is it possible to smell Parkinson’s disease? Is flipping a coin really a fair way to decide which team gets to be on offense first? Participants will answer these questions with simulations that allow students to make sense of statistical inference. Hands-on physical simulations are introduced first, followed by simulations with (free!) technology.

Douglas Tyson
@tyson_doug
Central York School District, York, Pennsylvania

Jason Molesky
Lakeville Area Public Schools, Lakeville, Minnesota

Henry B. Gonzalez Convention Center, 007A

487 **TECH**
Evaluating Students’ Digital Work: Same as Print?
3–5 Workshop
Educators have spent decades learning how to evaluate student work in a print environment with physical manipulatives. As classrooms turn more to digital environments, teachers must learn how to interpret and evaluate students’ digital artifacts. BYOD and join us to examine how student work changes in response to their use of digital manipulatives.

Mary Dairyko
University of Chicago, Illinois

Catherine Donaldson

Carla Strickland
@CisforCarla
UChicago CEMSE, Chicago, Illinois

Henry B. Gonzalez Convention Center, 304A

Check out the Reflection Coves on the second and third floors of the Convention Center to discuss topics of interest with featured speakers, board members, Affiliate Relations Committee members, as well as the President and Immediate Past President.
488  **TLC**  
I DID IT! Combining Representation & Purposeful Questions to Promote Perseverance in Problem Solving  
6–8 Workshop  
How do we help students move forward when they are stuck? This session will engage participants in several problem-solving activities and model research-based processes to identify questions that enable and extend students’ thinking and help students make mathematical connections. We will highlight practices from the *Principles to Actions* document.

Jane Wilburne  
@JaneMWilburne  
Penn State Harrisburg, Hershey

Tara Russo  
PaTTAN Harrisburg, Harrisburg, Pennsylvania

**Grand Hyatt San Antonio, Texas Ballroom A**

489  **BUILD**  
I’m Game! Are You?  
3–5 Workshop  
Helping students construct meaning, develop strategies, and incorporate reasoning and discourse can be challenging. Games have proven to be an effective way to teach concepts while engaging students and differentiating instruction. Join us to learn more: I’m game! Are you?

Diane Reynolds  
Math Solutions, Sausalito, California

Sandra Coulson  
Math Solutions, Sausalito, California

**Henry B. Gonzalez Convention Center, 305**

490  **BUILD**  
Interesting Ideas, Manipulatives, and Activities for Teaching Geometry  
8–10 Workshop  
Participants will use hinged mirrors, rubber bands, patty paper, paper plates, and other manipulatives, as well as investigations to develop geometry concepts such as similarity and triangle congruence, transformations, central angles, polygons, area, and more.

Christine Mikles  
CPM Educational Program, Elk Grove, California

Karen Wootton  
CPM Educational Program, Elk Grove, California

**Henry B. Gonzalez Convention Center, 004**

491  **BUILD**  
Lessons on Adding and Subtracting Integers: Developing Understanding through Context  
6–8 Workshop  
Do you find it difficult to teach students how to add and subtract integers without jumping right into rules and procedures? Do you wish you had a way to build students’ conceptual understanding instead? We will present a series of classroom-tested lessons designed to develop students’ reasoning and sense making around these integer operations.

Delise Andrews  
@deliseandrews  
Lincoln Public Schools, Nebraska

Julie Kreizel  
Lincoln Public Schools, Nebraska

Anne Schmidt  
Lincoln Public Schools, Nebraska

**Henry B. Gonzalez Convention Center, 006A**

492  **BUILD**  
MathLab™: Building Conceptual Understanding of Exponential Functions in Algebra 1  
8–10 Workshop  
Building a conceptual foundation of exponential functions can be engaging and informative. Starting with a simulation of the spread of a disease, participants will collect, graph, and make predictions from data; compare linear, doubling, and tripling models; and culminate the workshop with analyzing actual data from the 2014 Ebola epidemic.

Katherine Kanim  
New Mexico State University, Las Cruces

Regina Watson  
New Mexico State University, Las Cruces

**Henry B. Gonzalez Convention Center, 304C**
1:30 P.M.–2:45 P.M.

493 “M”
Modeling: A New Pathway for High School Students
10–12 Workshop
This talk presents a new pathway for students who have completed algebra and geometry. On this path as juniors and seniors, students engage in modeling that involves proportion and difference equations, that connects mathematical concepts, that links to the larger world, and that leverages mathematical action technologies, thinking, and discourse.

Gregory Foley
Ohio University, Athens
Stephen Phelps
Madeira High School, Cincinnati, Ohio

Henry B. Gonzalez Convention Center, 006D

494 NT
NCTM Resources for New and Early Career Teachers
Coaches/Leaders/Teacher Educators’ Workshop
Along with key journal articles, NCTM offers a range of resources, lessons, tools, and tips that can be helpful for those training to be teachers and those early in their careers. Find out how your NCTM membership can help you even more!

Chonda Long
National Council of Teachers of Mathematics, Reston, Virginia
Kristin Keith
National Council of Teachers of Mathematics, Reston, Virginia

Grand Hyatt San Antonio, Texas Ballroom B

495 “M”
Parachuting into Practices: An Integrated Elementary STEM Lesson
3–5 Workshop
Come be an aerospace engineer and use your math and science knowledge to design a parachute that will land on another planet! Find out how an integrated elementary math, science, and engineering lesson can foster student engagement, meet many of the CCSS mathematical practices, and lead to a meaningful learning experience.

Chantal Balesdent
Museum of Science, Boston, Massachusetts

Henry B. Gonzalez Convention Center, 007C

496 BUILD REFLECTION COVE
Pathways to Procedural Fluency
3–5 Workshop
This session zooms in on the PtA Teaching Practice “Build procedural fluency from conceptual understanding” taking a look at research and connecting that research to instructional strategies that provide pathways to procedural fluency.

Jennifer Bay-Williams
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Louisville, Kentucky

Henry B. Gonzalez Convention Center, 217C

497 TECH
Rethinking Expressions & Equations: Implications for Our Classrooms
6–8 Workshop
How are one- and two-variable expressions, one- and two-variable equations, and the standard form of a line connected in a powerful way? How might this progression support student learning of these “tough-to-teach/tough-to-learn” ideas? Explore the underlying theme that unifies these seemingly disparate topics using a technology-leveraged approach.

Michelle Rinehart
@HowWeTeach
Region 18 Education Service Center, Midland, Texas
Gail Burrill
Michigan State University, East Lansing

Henry B. Gonzalez Convention Center, 007B
1:30 P.M.–2:45 P.M.

498 A&E
Six Reasoning Mini-Lessons to Revitalize Early Childhood Routines
Pre-K–2 Workshop
In early childhood, routines are one of the best ways to develop students’ mathematical reasoning, listening, and social skills and ability to communicate with clarity. Often, because teachers do not know how to adapt them, routines become boring. In this session, we will explore reasoning routines that will keep all students challenged and engaged.

Antonia Cameron
Metamorphosis Teaching Learning Communities, New York, New York
Jenn Costanzo
Metamorphosis Teaching Learning Communities, New York, New York
Michael Cassaro
Metamorphosis Teaching Learning Communities, New York, New York

Henry B. Gonzalez Convention Center, 217A

499 TLC
Supporting Algebra Learners through Modeling Investigations of the (Extra) ordinary
8–10 Workshop
Come investigate mathematics with burger basket liners, odd-shaped containers, and other everyday contexts. Modeling can help make algebra accessible to a range of students. Multiple representations, varied solution methods, and class discourse will be discussed as ways to support student understanding beyond formulas and exercises.

Fay Zenigami
University of Hawaii at Manoa, Curriculum Research & Development Group, Honolulu
Linda Venenciano
University of Hawaii at Manoa, Honolulu
Seanyelle Yagi
University of Hawaii at Manoa, Honolulu

Grand Hyatt San Antonio, Lonestar Ballroom B

500 BUILD
Teaching Fractions without Reteaching Fractions: How Can Coherence Be Used to Support All Learners?
3–5 Workshop
Have you ever had to reteach content to support students’ work with fractions? Traditional reteaching guidance often falls short of illustrating critical connections between fractions and students’ earlier work with whole numbers. This session uses fraction tasks to highlight important but often overlooked connections that support differentiation.

Shelbi Cole
Student Achievement Partners, Palm Harbor, Florida
Barbara Beske
Student Achievement Partners, Mullica Hill, New Jersey

Henry B. Gonzalez Convention Center, 006C

501 BUILD
When O.A. and My BFF, the Number Line, Met in Kindergarten
Pre-K–2 Workshop
Come learn how my BFF, the number line and O.A. met and work together. Learn how to integrate manipulatives to develop a conceptual understanding of the O.A. standards while using a number line. Participants will learn how to address all K-2 O.A. standards. Everything is hands-on! Come ready to play with my BFF and O.A.

Keysha McIntyre
@moldingminds2
Fulton County B.O.E., Atlanta, Georgia

Henry B. Gonzalez Convention Center, 217B
Explore the Exhibit Hall for the latest educational resources.
In this strand, sessions will focus on instructional practices and strategies that meet the needs of each and every student while participants consider their own beliefs, biases, assumptions, and dispositions.

Examples of practices and strategies may include:
- Response to Intervention (RTI)/Multi-Tiered Systems of Supports (MTSS)
- Universal Design for Learning (UDL)
- culturally responsive pedagogy (CRP)
- social justice
- inclusion
- differentiation

Sessions may also address practices and strategies that target specific student populations such as:
- English language learners (ELL)
- gifted students
- students with special needs
- students who struggle in the classroom
2:00 P.M.–3:00 P.M.

506 **TLC**
**Engaging 3–5 Students in Productive Struggle**

3–5 Session
In this session, we will explore problem-solving tasks that provide students opportunities to grapple with mathematical concepts. This session will also allow participants to reflect on instructional strategies designed to support all students in productive struggle as outlined in NCTM’s publication *Principles to Actions*.

Jennifer Kosiak
University of Wisconsin-La Crosse
Kim Markworth
Western Washington University, Bellingham
Jenni McCool
University of Wisconsin-La Crosse

*Henry B. Gonzalez Convention Center, 007D*

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507 **BUILD**
**Fascinating Sets of Numbers: Nurturing Number Sense through Number Enjoyment**

6–8 Session
This session will focus on work with a variety of fascinating sets of numbers, including abundant, deficient, perfect, semiperfect, friendly, weird, happy, vampire, untouchable, lazy caterer, narcissistic, and McNugget numbers. Session participants will share ideas for incorporating number enjoyment into standards-based lessons.

William Lacefield
Mercer University, Atlanta, Georgia

*Grand Hyatt San Antonio, Texas Ballroom F*

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508 **BUILD**
Get a Move On: Movement-Infused Math for Preschool and Kindergarten

Pre-K–2 Session
Kids learn best when their brains and bodies are active. Integrating movement with math subtracts stress, adds fun, and maximizes brain function. Join us to learn the research behind movement in the classroom and over twenty games and activities to pump up the movement in your math lessons.

Carrie Cutler
@DrCarrieCutler
University of Houston, The Woodlands, Texas

*Henry B. Gonzalez Convention Center, 214B*

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509 **PROF**
**REFLECTION COVE**
Get to Know the Research Companion to *Principles to Actions*

General Interest Session
We will provide an overview of the newly released research companion to *Principles to Actions*. The thirteen chapters were co-authored by practitioners and researchers, and they lend insight into the research base behind *Principles to Actions* as well as providing classroom applications.

Denise Spangler
@dspangler811
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Georgia, Athens

*Henry B. Gonzalez Convention Center, 221*

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510 **PROF**
I Spy with My Little Eyes, Effective Teaching Practices & Mathematical Practices

8–10 Session
So let it be written, so let it be done! Well, that is much easier said than done. We often find ourselves wanting to incorporate the vision of great teaching provided by NCTM. However, it can be difficult to know what exactly “it looks like.” We will watch video and identify quality practices in the clips we examine.

Travis Lemon
@TravisLemon
Mathematics Vision Project (MVP), Lehi, Utah
Janet Sutorius
Mathematics Vision Project (MVP), Lehi, Utah

*Grand Hyatt San Antonio, Lonestar Ballroom D*
2:00 P.M.–3:00 P.M.

511 PROF REFLECTION COVE
Leading School-Based Math Labs: How Principal-Coach Teams Make a Difference for Teacher Learning
Coaches/Leaders/Teacher Educators’ Session

Creating strong and equitable learning communities for students necessitates having strong learning communities for teachers. We show how different schools have used Math Labs to launch and sustain job-embedded professional learning opportunities with a special focus on the work of principal-coach teams.

Elham Kazemi
@ekazemi
University of Washington, Seattle
Rebecca Lewis
University of Washington, Seattle
Ruth Balf
University of Washington, Seattle

Henry B. Gonzalez Convention Center, Hemisfair 2

512 A&E
Lesson Study: Building Effective Lessons for Mathematics and Social Justice Learning
General Interest Session

Lesson study is a dynamic professional development activity resulting in students developing deeper understanding about mathematics and social justice. Effective lesson design, classroom observation protocols, and rubrics are all part of this interactive session. Participants will develop rich, mathematics tasks and social justice learning goals.

Linda Fulmore
Solution Tree, Bloomington, Indiana

Grand Hyatt San Antonio, Crockett CD

513 TLC Mathematical Modeling: Making Sense of the World through Mathematics
6–8 Session

Are you struggling to find ways for your students to engage in mathematical modeling? This session will examine applications of mathematical modeling across the middle grades. Mathematical tasks along with classroom videos that are designed to provide opportunities for rich discourse and student engagement will be shared.

Janet Andreasen
University of Central Florida, Orlando
Erhan Haciomeroglu
University of Central Florida, Orlando
George Roy
University of South Carolina, Columbia

Henry B. Gonzalez Convention Center, Hemisfair 3

514 BUILD Number Sense: Bring It Back through Strategy Sharing!
Coaches/Leaders/Teacher Educators’ Session

Do you find a lack of number sense to be the leading concern of teachers? Our math specialist team will share how we’ve utilized the book Making Number Talks Matter by Cathy Humphreys and Ruth Parker to bring number sense back to the classroom. Learn what number talks are and how to implement them to build and strengthen students’ number sense.

Alissa Murray
Madison County School District, Ridgeland, Mississippi
Jennifer Fillingim
Madison County School District, Ridgeland, Mississippi
Elizabeth Wells
Madison County School District, Ridgeland, Mississippi

Henry B. Gonzalez Convention Center, 217D
2:00 P.M.–3:00 P.M.

**515 PROF**

**Our Story: Math/Special Ed Learning Labs = Content Progressions + Instructional Practice**

6–8 Session

Micro-experience micro-learning labs for student and teacher growth. Share in the story of a 6-7-8 team of math, special ed co-teachers, and their coach as they foster learning opportunities for and for/from all teachers. Bonus: authenticating a common understanding of content progressions and instructional practices

Norma Gordon
@normabgordon
Public Schools of Brookline, Massachusetts
Lynsey Gibbons
Boston University School of Education, Massachusetts

Grand Hyatt San Antonio, Crockett AB

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**516 ASSESS**

**Taking Action in High School: Implementing Effective Mathematics Teaching Practices**

General Interest Session

The session will engage teachers in activities that support the development of the *Principles to Actions: Effective Mathematics Teaching Practices in High School*. These activities will include engaging in rich mathematical tasks, discussing cases of teaching, and analyzing classroom artifacts including student work. Activities are drawn from the new NCTM publication *Taking Action: Implementing Effective Mathematics Teaching Practices in Grades 9–12*.

Melissa Boston
Duquesne University, Pittsburgh, Pennsylvania

Henry B. Gonzalez Convention Center, Hemisfair 1

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**517 BUILD**

**Puzzles: The Poetry of Logical Ideas**

General Interest Session

If you are a lover of logic, come in. We will engage in a series of logic puzzles to demonstrate the mathematical practices embedded within. Multiple math strategies will be uncovered as we deconstruct Kakuro, KenKen, and a variety of other logic puzzles. Puzzles have the power to transform your classroom in a fun and entertaining way. Come and play!

Monica Tienda
@matienda
Key Elementary, Oak Park, Michigan

Grand Hyatt San Antonio, Travis AB

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**518 A&E**

**By Any Means Necessary: Creative Insubordination, Risk Taking, and Reclaiming the Profession**

General Interest Session

Given the pressure to attend to parents, districts, states, and national policies, mathematics teachers face many tensions in their teaching. This session focuses on mathematics teachers who align their teaching with their own values. I highlight the kinds of risks they have taken and the extent to which they have met with success.

Rochelle Gutiérrez
University of Illinois at Urbana-Champaign

Henry B. Gonzalez Convention Center, Lila Cockrell Theatre

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**How the NCTM Journals Changed My Life**

General Interest Session

Join your fellow readers, authors, department editors and editorial panel members as they share examples of how the NCTM journals impacted their professional lives. Learn how you too can get involved as a manuscript referee, use article ideas in your classroom and improve your writing.

Representatives of *TCM, MTMS and MT*

Grand Hyatt San Antonio, Bonham B
2:00 P.M.–3:00 P.M.

**519 TECH**

**Self-Paced Flipped Model: A Twist on Flipped Mastery**

10–12 Session

This presentation encourages people to amend the usual method for a flipped classroom. We will explain why our self-paced twist on flipped mastery is changing how students learn and provide information for this method. Our units consist of target dates, stations, and applications that are done within our classroom, and we will provide an example unit.

Kyle Wilhelm  
Lake Forest High School, Illinois  
Shelly Lindsey  
Lake Forest High School, Illinois  

Henry B. Gonzalez Convention Center, 214A

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**520 ASSESS**

**Student Portfolios in Mathematics**

10–12 Session

Portfolios have been part of my classes for more than 25 years. Although the prompts and structure have evolved, my belief in their overall value endures. Portfolios allow a teacher to provide a range of opportunities and offer students a way to express their strengths, weaknesses, and feelings about math.

Donita Robinson  
North Carolina School of Science and Mathematics, Durham  

Grand Hyatt San Antonio, Lonestar Ballroom C

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**520.1**

**Productive Strategies to Support Students’ Engagement in Productive Struggle**

*General Interest Session*

Engaging students in tasks that involve reasoning and problem solving is essential for developing the conceptual understanding, procedural fluency, and productive habits of mind they need for their futures. In this session, we’ll investigate strategies to increase students’ willingness to engage in challenging tasks and to use these tasks to advance the learning of the entire class. We’ll also identify common pitfalls to avoid.

Diane Briars  
Past President, National Council of Teachers of Mathematics, Reston, Virginia; Pittsburgh, Pennsylvania  

Henry B. Gonzalez Convention Center, Stars at Night 2&3

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**521 TLC**

**Coherence Across K–16 Mathematics: Enriching Vertical Learning Progressions**

*Coaches/Leaders/Teacher Educators’ Session*

Advanced mathematics topics usually reserved for college can be woven into both high school and middle school curricula to help students see mathematics as a unified body of knowledge. Participants will experience four investigative problems that highlight interdisciplinary connections as well as encourage discourse and productive struggle.

Keith Nabb  
Moraine Valley Community College, Palos Hills, Illinois  
Jaclyn Murawska  
Saint Xavier University, Chicago, Illinois  

Henry B. Gonzalez Convention Center, 214C

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**522 TLC**

**Students Take the Lead: Promoting a Culture of Peer-to-Peer Accountability**

*8–10 Session*

How can our students become our greatest assets? What parts of teaching should we entrust to students, and how can passing the baton to our students help them achieve the NCTM Process Standards? Come learn how one teacher’s journey to make his students become teachers revolutionized his classroom community.

Benjamin Walker  
@bwalkerq  
Walter Payton College Prep High School, Chicago, Illinois  

Grand Hyatt San Antonio, Bowie ABC

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**523 PROF**

**Supporting the High School Mathematics Teacher: Four Cues for Coaching**

*Coaches/Leaders/Teacher Educators’ Session*

It's time to turn the focus to high school teaching. Many high school teachers know how to correctly respond to mathematical tasks, but some struggle on how to help their students do the same. Explore a model for coaching mathematics teachers to instill problem solving strategies in their students and make sense of mathematics for teaching.

Edward Nolan  
@ed_nolan  
Towson University, Maryland  

Grand Hyatt San Antonio, Republic ABC
2:00 P.M.–3:00 P.M.

524 A&E
The Math Practices! Objectively Speaking, Writing Math IEPs Using the Math Practices
Coaches/Leaders/Teacher Educators’ Session
How are needs of struggling learners and students with 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 Agness
Howard County Public Schools, Columbia, Maryland
William Barnes
Howard County Public School System, Ellicott City, Maryland
Kym Craig
Howard County Public Schools, Columbia, Maryland
Henry B. Gonzalez Convention Center, 225

525 TLC
The Probabilities of “Wheel of Fortune”: A Contestant’s Perspective
General Interest Session
How does a contestant’s expected value change from spin to spin? How does English language letter frequency affect player strategy? How many “safe” spins can one expect to make before going bankrupt or losing a turn? Come explore, play, and simulate with a recent Wheel contestant.
Mike Reiners
@Tresio
Christ’s Household of Faith School, Saint Paul, Minnesota
Henry B. Gonzalez Convention Center, 008AB

526 ASSESS
The Use of Video from One-on-One Assessments to Create a Portrait of Student Understanding
Pre-K–2 Session
This session will explore the use of video to record one-on-one assessment interviews with students to gain insight on the understanding and strategies of an individual student. Participants will watch video of students working to solve a variety of mathematical problems and will examine the understanding of each student based on the video.
Michael Busch
United States Math Recovery Council, Laramie, Wyoming
Grand Hyatt San Antonio, Lonestar Ballroom F

527 “M” REFLECTION COVE
Transformations at the Heart of Connections and Creativity in STEAM
General Interest Session
Transformations play a central role in modern mathematics, though they are sometimes tucked into a relatively isolated corner of the K–12 curriculum. Through a sequence of “snapshots” we will offer examples of tasks, questions, and suggestions for encountering transformations at a range of levels and a variety of contexts.
Carl Lee
University of Kentucky, Lexington
Henry B. Gonzalez Convention Center, 207B

528 BUILD
Understanding Sampling Variability
10–12 Session
Statistics students often confuse the sample standard deviation and the standard deviation of the sample mean. This can lead to serious errors in reasoning. This session explores some of these errors and looks at examples and activities designed to eliminate this confusion and help students develop their understanding of sampling variability.
Roxy Peck
Cal Poly, San Luis Obispo
Henry B. Gonzalez Convention Center, 303
2:00 P.M.—3:00 P.M.

529 TECH REFLECTION COVE
Using Digital Tools to Give Every Student a Voice
6–8 Workshop

Simply put, we value student thinking. Technology tools that help us gather, examine, and share students’ mathematical thinking inform our instruction and help create a growth-mindset classroom culture. Bring a tablet or laptop, and be ready to wear your “teacher hat” and “student hat” as you experience strategies to try in your own classroom.

Cathy Yenca
@mathycathy
Eanes Independent School District, Austin, Texas

Henry B. Gonzalez Convention Center, 301

529.1 EW Mathspace—Why You’ll Never Grade Math Assignments Again. Seriously. (BYOD!)
General Interest 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 to try award-winning Mathspace live, and ask about a free trial!

Mathspace
New York, New York

Henry B. Gonzalez Convention Center, 206A

529.2 EW Hands-On Operations: Using Manipulatives for Understanding of ALL Four Operations
3–5 Exhibitor Workshop

Come use place-value manipulatives to understand and practice addition, subtraction, multi-digit multiplication, and long division algorithms for whole numbers and decimals. Learn how to help all learners master the move from concrete to the representation to the ultimate abstract algorithm with a deep understanding of regrouping and place value.

Singapore Math
Tualatin, Oregon

Henry B. Gonzalez Convention Center, 206B

529.3 EW Make Math Move with Dinah Zike
General Interest Exhibitor Workshop

In this hands-on session, Dinah Zike shares some of her favorite Notebook Foldables, Vocabulary VKV Strategies, and new K–12 Foldable Math Manipulatives. Visual-kinesthetic graphic organizers help students retain and understand complex concepts and content-laden vocabulary by organizing information in moveable, recallable ways. Materials provided.

McGraw-Hill Education
Columbus, Ohio

Henry B. Gonzalez Convention Center, 207A

529.4 EW Flipping Classrooms into Dynamic and Impactful Learning Spaces with Videos
General Interest Exhibitor Workshop

Dr. Ed Burger will share how GO Math! videos transform classrooms into dynamic learning environments, in which students will joyfully cheer, “GO MATH!”

Houghton Mifflin Harcourt
Round Rock, Texas

Henry B. Gonzalez Convention Center, 210AB

529.5 EW Real Steps to Teaching Fractions
3–5 Exhibitor Workshop

There is no doubt that the teaching and learning of fractions is challenging. But as educators dig deeper into the research, a pattern of common conclusions begins to emerge. During this session we will share how the ORIGO Stepping Stones instructional approach to teaching fractions was developed based on key research findings.

ORIGO Education
Earth City, Missouri

Henry B. Gonzalez Convention Center, 212AB
2:00 P.M.–3:00 P.M.

529.6 **BUILD**

Building Number Sense: Creating a Playground of Numbers in the K–5 Classroom

3–5 Exhibitor Workshop

Build a playground of numbers using standards-based games and stories designed to enhance MP standards and support and excite all learners.

Nasco
Fort Atkinson, Wisconsin

Henry B. Gonzalez Convention Center, 213AB

529.7 **BUILD**

Using Assessment Data to Improve Elementary Math Instruction

Pre-K–2 Exhibitor Workshop

Empower teachers with quality assessments and proven activities that build conceptual understanding of early math concepts. Kathy Richardson’s Assessing Math Concepts and Developing Number Concepts materials, coupled with online recording and reporting, have helped teachers and students across the country. Come and see how these powerful resources can impact teaching and learning in your classroom.

Didax
Rowley, Massachusetts

Henry B. Gonzalez Convention Center, Exhibitor Workshop Theater in Exhibit Hall 3/4

3:15 P.M.–4:30 P.M.

530 **ASSESS**

Beyond Right or Wrong: Uncover More with Student Work Analysis

Pre-K–2 Workshop

Have you ever wondered where to start when looking at student work? In this session participants will analyze student work to determine strengths and weaknesses. Participants will collaborate to develop a remediation plan that focuses on using effective models that move students across the concrete-representational-abstract continuum.

Beth Barnes
Great Minds, Washington, New York
Colleen Sheeron
Great Minds, Washington, D.C.

Grand Hyatt San Antonio, Texas Ballroom E

531 **BUILD**

Build Fluency During Intervention with a Powerful Pair: Visual Representations and Discourse

Pre-K–2 Workshop

Representations help build a deeper understanding of math concepts and procedures. Our goal is to get students to switch to the abstract fluently. This session will show the power of engaging students in mathematical discourse and instructional strategies to build fluency.

Dina Mendola
US Math Recovery Council, Oak Creek, Wisconsin

Grand Hyatt San Antonio, Texas Ballroom A

532 **BUILD**

Closing the Gap: Fraction Equivalence and Comparison

3–5 Workshop

Have your students said, “I think \( \frac{3}{4} \) and \( \frac{6}{7} \) are equal because each is one piece from a whole?” Gap thinking is one of many misconceptions that cause students to struggle with fraction equivalence and comparison. This session will highlight a variety of strategies/activities for fraction comparison that will address misconceptions about fractions.

Joann Barnett
Missouri State University, Springfield
Patrick Sullivan
Missouri State University, Springfield
Ann McCoy
University of Central Missouri, Warrensburg

Grand Hyatt San Antonio, Lonestar Ballroom B

533 **“M”**

Connecting the “M” in STEM

8–10 Workshop

Love the idea of STEM, but don’t know how to make it relevant to your mathematics classroom? In today’s classroom, teachers must find creative ways to integrate STEM while engaging their students with relevant content. In this session, participants will engage in classroom ready, hands-on, authentic STEM activities that have a mathematical focus.

Margaret Mohr-Schroeder
University of Kentucky, Lexington
Christa Jackson
Iowa State University, Ames
Craig Schroeder
Fayette County Public Schools, Lexington, Kentucky

Henry B. Gonzalez Convention Center, 302AB
3:15 P.M.–4:30 P.M.

534 BUILD  
Embracing Messy Mathematics: Strengthening Reasoning through Hands-On Geometry Problems  
6–8 Workshop
Too often, students see math as a large set of facts, formulas, and procedures to memorize. Through manipulating concrete objects and ensuing discussions, students can be creative and are supported in developing reasoning skills and conceptual understanding. Participants will engage in hands-on tasks that they can take back into their classrooms.

Peter Clark  
Sir Wilfrid Laurier School Board, Rosemère, Quebec, Canada

Saba Din  
McGill University, Montreal, Vermont

Henry B. Gonzalez Convention Center, 217A

535 BUILD  
Experimental Design and Simulation-Based Inference  
10–12 Workshop
Does caffeine affect pulse rate? Can you visualize success? In this session, we will discuss the principles of experimental design and when we can make inferences about cause and effect. Then, using hands-on simulations and technology, we will determine if the results of an experiment are significant—and how these topics connect to the Common Core.

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

Daren Starnes  
The Lawrenceville School, Lawrenceville, New Jersey

Henry B. Gonzalez Convention Center, 217C

536 BUILD  Got Division? Building Procedural Fluency from Conceptual Understanding  
3–5 Workshop
This session focuses on the teaching of division in grades 3–5 and spotlights building procedural fluency through conceptual understanding. We will explore strategies based on place value, properties of operations, and the relationship between division and multiplication. We will also explore rectangular arrays and area models.

Sorsha-Maria Mulroe  
Howard County Public Schools, Columbia, Maryland

Kelly Healey  
Howard County Public Schools, Columbia, Maryland

Claudia Eckstrom  
Howard County Public School System, Ellicott City, Maryland

Henry B. Gonzalez Convention Center, 006C

537 TECH  Intro to Coding: Learn Scratch Coding with Activities for Algebra, Geometry, & Precalculus Classes  
8–10 Workshop
This workshop offers an introductory block-based coding experience for math using Scratch. Attendees will work through lessons in algebra, geometry, and precalculus, which can later be used as with students. Bring your own device (laptop, tablet, iPad, etc.) and either download Scratch or code online from https://scratch.mit.edu.

Martin Funk  
New Trier High School, Winnetka, Illinois

Henry B. Gonzalez Convention Center, 007B

Don’t miss featured speaker Ed Burger’s session on Friday, April 7 at 4:45 p.m. followed by IGNITE at 6:30 p.m.

NCTM Regional Conferences & 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 math resources right on your doorstep.

What you’ll get:
- Innovative ideas you can immediately put to use.
- Updates on classroom best practices from recognized innovators.
- In-depth discussion about the latest education resources.
- Knowledge-sharing with like-minded peers.
- Interaction with the latest tools and products in the robust exhibit hall.

Who should attend?
- Pre-K–Grade 12 classroom teachers
- Math coaches
- Administrators
- Math teacher educators
- Preservice teachers
- Math specialists

Join NCTM in Orlando or Chicago 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
3:15 P.M.–4:30 P.M.

538  TLC  Let’s Talk! Assisting Struggling Learners to Successfully Engage in Mathematical Communication!

3–5 Workshop

Learn practical activities for K–8 that assist struggling learners to communicate their thinking and deepen their understanding and enjoyment of math. Explore how you can foster communication through strategies that develop math vocabulary and build student confidence with mathematical discourse. All activities are ready to implement for Monday!

Cathy Marks Krpan
University of Toronto, Ontario, Canada

Henry B. Gonzalez Convention Center, 304C

539  TLC  Making an IMPACT on the Journey of Learning

Pre-K–2 Workshop

ROAD TRIP: A journey in reasoning and problem solving! Join us and explore how students “CONSTRUCT” mathematical ideas. Explore interdisciplinary tasks and instructional strategies that support students’ ability to reach their mathematical destination! CAUTION: This session will be full of adventures that you can take back to engage students!

Kelli Shrewsberry
Teaching & Learning Collaborative, Worthington, Ohio
Renee Snyder
Teaching & Learning Collaborative, Worthington, Ohio
Joan Smith
Teaching & Learning Collaborative, Worthington, Ohio

Henry B. Gonzalez Convention Center, 224

540  TLC  Understanding Division of Fractions through Models, Language, and Structure

3–5 Workshop

Fraction understanding is critical for students in helping them make sense of mathematics, but can be difficult to build. Participants will leave with ideas for tasks and practice items to use with students that build on their fraction sense to understand division of fractions, and allow for connections to proportional reasoning in later grades.

Jacquelyn Ismail
Boise State University, Idaho
Sam Strother
Boise State University, Idaho

Grand Hyatt San Antonio, Texas Ballroom C

541  “M”  NASA’s Scale of Discovery: Applications for Ratios, Conversions, and Scale

6–8 Workshop

Come explore the applications of ratios, fractions, conversions, and scale with hands-on, standards-aligned STEM activities. Engage with examples from aeronautics, space, and our universe as you apply scale to distance, time, size, and models. Learn how problem-solving skills get a spacecraft from the planning stages to its destination.

Barbie Buckner
@bbuckner
NASA Armstrong Flight Research Center, Palmdale, California
Sue Nichols
Ohio University, Ironton

Henry B. Gonzalez Convention Center, 004
3:15 P.M.—4:30 P.M.

542 PROF
New Teacher Celebration
Coaches/Leaders/Teacher Educators’ Workshop
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. And win wonderful prizes. Come celebrate with us. We’ll have refreshments, too. Come when you can and join in!

David Barnes
National Council of Teachers of Mathematics, Reston, Virginia
Grand Hyatt San Antonio, Texas Ballroom B

543 A&E
From Fraction Frustration to Fraction Fluency with Deep Understanding
3–5 Workshop
The speaker will actively engage workshop participants with strategies and tools to develop deep understanding of fractions, with a focus on fractions as numbers, equivalent fractions, operations with fractions, and decimal notation. She will engage attendees with real-world fraction problem solving and effective questioning strategies.

Donna L. Knoell
Consultant, Shawnee Mission, Kansas
Henry B. Gonzalez Convention Center, 304A

544 BUILD
Polar Coordinates—Insights and Applications
10–12 Workshop
By using a rotating number line, not the traditional ray, students make sense of a point (r, theta) with a negative value of r. You can enhance this knowledge using pencil and paper on accurately plotted graphs, and using technology to generate polar graphs dynamically. Students learn why two polar graphs can cross each other but not “intersect!”

Paul Foerster
Alamo Heights ISD (Emeritus), San Antonio, Texas
Henry B. Gonzalez Convention Center, 007A

545 PROF
Powerful, Active, and Engaged Mathematics Professional Learning!
Coaches/Leaders/Teacher Educators’ Workshop
Are you a mathematics leader looking for techniques to actively engage your preservice and in-service participants in mathematical thinking, reasoning, and reflecting? This session will provide specific strategies that can be applied to a variety of mathematics topics to enrich and magnetize your professional development for long-term impact!

Beth Kobett
Stevenson University, Baltimore, Maryland
Delise Andrews
Lincoln Public Schools, Nebraska
Grand Hyatt San Antonio, Lonestar Ballroom A

546 A&E
Rethinking Groupwork: How Groupworthy Tasks Truly Promote Collaborative Learning
3–5 Workshop
Groupwork provides opportunities to learn communication and collaboration skills, but how can we ensure all students are engaging with the content during groupwork? Groupworthy tasks provide structures needed for students to participate equally with the content and practice such social skills. Learn how to incorporate them in your instruction!

Barbara Swartz
McDaniel College, Westminster, Maryland
Sararose Lynch
Westminster College, New Wilmington, Pennsylvania
Grand Hyatt San Antonio, Texas Ballroom D
So That’s How it Works! Math and Robotics Work Together in the Classroom

6–8 Workshop

Learn the building blocks for using robotics in the classroom to integrate math with engineering, science, and the latest technology. Design, build, and program best-in-class robotics solutions for hands-on mathematical learning.

Dee Wallace
LEAP teacher with LEGO Education, Houston, Texas

Henry B. Gonzalez Convention Center, 006D

STEM Integration: Math, Meet Biology!

3–5 Workshop

Join us for two hands-on, inquiry-based activities integrating mathematics in a biological context. Sort a set of images using the powers of ten and design a scale model of an E. coli’s DNA. Art, science, and math intersect in an activity merging coordinate geometry, symmetry, and biotechnology skills. NGSS practice standards will be demonstrated.

Lindsey Herlehy
@iMSA_
Illinois Mathematics and Science Academy, Aurora
Karen Togliatti
Illinois Mathematics and Science Academy, Aurora

Henry B. Gonzalez Convention Center, 006A

Teaching about Population and the Environment with Mathematical Models

6–8 Workshop

In this interdisciplinary workshop, discover how mathematical models can be used to bring current events and top global challenges into the math classroom. Explore population growth models and probabilistic projections, create cartograms and use models to illustrate carbon emissions over time.

Christine Moseley
Retired, Brady, Texas

Henry B. Gonzalez Convention Center, 217B

Teaching Logic & Proofs through Games & Number Theory

10–12 Workshop

Discover the underlying structure of mathematical concepts through a highly engaging hands-on activity to teach the essentials of the mathematical process of investigative discovery and metacognition: observation, conjectures, analysis, revision, proof. We use this activity amongst many others to teach mathematical reasoning and proof writing.

Andrea Kung
Urban Academy Laboratory High School, New York, New York
Gabriella Weisberg
Humanities Preparatory Academy, New York, New York

Henry B. Gonzalez Convention Center, 006B

The Path to Place Value and Beyond

Pre-K–2 Workshop

Come and join us as we engage in activities that can be taken back and used in your classroom on Monday to strengthen your students’ understanding of place value. We will also explore how this understanding can be used by students to develop strategies for adding and subtracting two-digit numbers and explaining their thinking.

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

Henry B. Gonzalez Convention Center, 005

Transformations: Making Sense in the CCSS Geometry Progression

8–10 Workshop

CCSS for math and the geometry progressions have redefined the purpose of transformations as a foundation for geometry in today’s classroom. Through a series of activities built for making sense, see how one can build a coherent model for transformations. Session will include activities ready for immediate use in your secondary classroom.

Jedidiah Butler
Heritage High School, Perris Union High School District, Menifee, California

Henry B. Gonzalez Convention Center, 304B
3:15 P.M.—4:30 P.M.

553 BUILD
My Children Can’t Think: Building Discourse into Our Classroom through Number Talks
3–5 Workshop
Facilitating mathematical discourse is an effective teaching practice for all students (NCTM 2014). African Americans are usually taught with traditional methods. Number Talks allow teachers and students to engage in meaningful mathematical discussions. The presenters will share their Number Talks journey with African American students.

Johanna Lee Massey
Alabama A&M University, Huntsville
Latesa Willis-Sanders
Bessemer City Schools, Alabama

Henry B. Gonzalez Convention Center, 305

554 BUILD
“Crowdsourced Algebra”: Achieve Generalization through Crowdsourcing
8–10 Workshop
Encourage students to be active participants with these algebra activities. We’ll explore both no-tech and high-tech methods for “class-sourcing”—take part in the human inequality number line, be a piece in the binomial theorem jigsaw, explore visual approaches to exponential growth and see how Desmos Activity Builder can invite class discussions.

Steve Fuguet
@mr funguet
Hatboro-Horsham High School, Pennsylvania
Bob Lochel
@bobloch
Hatboro-Horsham High School, Pennsylvania

Henry B. Gonzalez Convention Center, 007C

3:30 P.M.—4:30 P.M.

555 ASSESS
AP Calculus: The New Curriculum Framework and the Mathematical Practices
10–12 Session
The updated AP Calculus includes a new curriculum framework that ties course content and mathematical practices to clearly stated learning objectives. How do these Mathematical Practices for AP Calculus define instruction? How are they related to the conceptual understanding of calculus? How do these changes affect assessment?

Vicki Carter
@vickimcarter
West Florence High School, Florence, South Carolina
Stephen Davis
Davidson College, Davidson, North Carolina
Ben Hedrick
College Board, Duluth, Georgia

Henry B. Gonzalez Convention Center, 214B

556 BUILD
Arithmetic and Algebra: More Alike Than You Think
Coaches/Leaders/Teacher Educators’ Session
We share a sequence of problems that demonstrate how classic one, two and multi-step applied problems from the elementary classroom connect to problems of increasing difficulty in algebra. We share classroom activities designed to help students make these connections between the problems they solved in elementary school and algebra.

Heather Dallas
UCLA Mathematics, Los Angeles, California
Roger Howe
Yale University, New Haven, Connecticut

Grand Hyatt San Antonio, Crockett AB
3:30 P.M.–4:30 P.M.

557 **TECH**
Enterg Formative Assessment Techniques with Technology

*8–10 Session*

This session will have teachers engaging in several formative assessment tasks using free technology from Desmos to Nearpod. The tasks will demonstrate that we can engage students in their learning and assess them understanding in real time using such technology.

**Eric Milou**
@drMi
Rowan University, Glassboro, New Jersey

*Henry B. Gonzalez Convention Center, 301*

558 **TECH**
Five Steps to Flip Your Math Classroom

*General Interest Session*

With the popularity of Khan Academy, a flipped classroom has become a popular practice. Flipping the classroom gives teachers valuable class time for student practice, while putting students in the driver’s seat of their learning. Learn five steps to flip a lesson, and get recommendations on great edtech tools to support you.

**Steve Garton**
@sgarton121
Common Sense Education, San Francisco, California

*Henry B. Gonzalez Convention Center, 205*

559 **BUILD**
Get Your Students Talking: Introducing Debate to the Math Classroom

*8–10 Session*

What is the value of 0/0? Is there a better order for Order of Operations? Is math invented or discovered? Embracing these questions leads to new and better understanding of mathematical concepts. Watch a demonstration debate, learn how to structure safe, meaningful debates in your math class, and then introduce the fun of arguing to your students.

**Ethan Weker**
@Ethan_MidPen
Mid-Peninsula High School, Menlo Park, California
Noirin Foy
Los Altos School District, California

*Grand Hyatt San Antonio, Lonestar Ballroom D*

560 **PROF**
I’m Not Looking for a Hero

*General Interest Session*

Expectations for teachers grow each year. How do we keep up with the responsibilities and continue to create mathematics success for our students? Are teacher’s leaders and collaborators or heroes expected to do it all alone? Come learn and discuss how to create a mathematics classroom where children learn and teachers thrive.

**Connie Schrock**
Emporia State University, Kansas

*Grand Hyatt San Antonio, Republic ABC*

561 **PROF**
Lesson Study: It’s Not Just about the Lesson!

*General Interest Session*

In Oakland Unified School District, site math teams use lesson study to engage around CCSS content and practice standards. Come experience essential components of a lesson study cycle using a research theme, lesson plan, and video from one of our sites. Discussants include lesson study researchers Dr. Akihiko Takahashi and Dr. Catherine Lewis.

**Courtney Ortega**
Oakland Unified School District, California
Mary Reed
Oakland Unified School District, California

*Henry B. Gonzalez Convention Center, 303*

562 **A&E**
Let’s Talk Numbers, Shall We? Our Journey to Building Number Sense

*6–8 Session*

Are your students lacking number sense? Do you struggle to teach the standards due to re-teaching algorithms? Our math specialist team will share how we’ve utilized the book *Making Number Talks Matter* by Cathy Humphreys and Ruth Parker. Learn what number talks are, how to implement them, and how they build and strengthen students’ number sense.

**Pamela Rayburn**
Madison County School District, Ridgeland, Mississippi
Alissa Murray
Madison County School District, Ridgeland, Mississippi

*Henry B. Gonzalez Convention Center, 217D*
3:30 P.M.—4:30 P.M.

**563 BUILD**  
Making Sense of Trigonometry in Geometry Class through the Unit Circle  
10–12 Session  
In this session, we will explore an alternative approach to introducing trigonometry in geometry using the unit circle. This approach calls upon a number of mathematical standards, develops students’ sense of angle measure and trigonometric functions, and has historical precedence.

Jon Southam  
Sonoma Valley Unified School District, California  
*Henry B. Gonzalez Convention Center, 008AB*

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**564 A&E**  
Matching an Effective Strategy to the Language Level of ELLs  
General Interest Session  
Using three cognitively demanding math tasks written in Korean, Spanish, and British English, we will show various strategies that help English language learners make sense of mathematics. Each problem will place participants in the shoes of ELLs at high, intermediate, and beginner levels of English proficiency.

Ricardo Martinez  
Iowa State University, Ames  
Ji Yeong I  
Iowa State University, Ames  
*Henry B. Gonzalez Convention Center, 214A*

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**566 M**  
Pi, Phi, Polynomials, and Python: Integrating Mathematics and Computer Science  
8–10 Session  
This session will explore how mathematical topics and relationships can be seen through a computer science and coding in the Python programming language. Explorations involving Xeno’s Paradox, the Golden Ratio, polynomial arithmetic, and elementary cryptography will connect algorithmic thinking to deep mathematical understanding.

Thomas Ward  
@TWardGH  
Greenhills School, Ann Arbor, Michigan  
*Henry B. Gonzalez Convention Center, 214C*

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**565 BUILD**  
MMMMM: Making Math More Meaningful with Models (K–Grade 2)  
Pre-K–2 Session  
Making Math More Meaningful with Models: 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, and so on. Teachers will learn how to use these models to make math meaningful for their students.

Duane Habecker  
@dhabecker  
Pleasanton Unified School District, California  
*Grand Hyatt San Antonio, Texas Ballroom F*

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**567 BUILD**  
Please Eliminate My Dear Aunt Sally  
6–8 Session  
PEMDAS limits students’ understanding of many important properties of mathematics that can help students make connections to important mathematical properties. So, let’s eliminate Aunt Sally and discuss how to build mathematical flexibility and approach the order operations with numerical fluency in mind.

Daniel Ilaria  
West Chester University, Pennsylvania  
*Grand Hyatt San Antonio, Travis CD*

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**568 BUILD**  
Problem Solving and Problem Posing: A Structural Approach to Word Problems  
General Interest Session  
Problem solving is important, but often perceived as difficult. Beyond problem solving, problem posing is also a key skill for teachers. With a focus on addition and subtraction word problems, we will present a structural approach to analyzing, solving, and creating multistep word problems.

Yeeping Li  
Texas A&M University, College Station  
Roger Howe  
Texas A&M University, College Station  
*Henry B. Gonzalez Convention Center, Hemisfair 3*
3:30 P.M.—4:30 P.M.

569  “M”
Putting the “M” in STEM Activities
8

“M” Professionalism: Learning Together as Teachers

How can your students help Toyota improve the efficiency of their manufacturing process? We’ll share a problem involving measurement, accuracy, and precision that your students can solve. Ask questions of one of the engineers who solved it, and learn how to involve your students in a real STEM problem (free materials available from Spark101.org).

Michael Collins
Toyota Motor Engineering & Manufacturing North America, Inc., Georgetown, Kentucky
Fred Dillon
Ideastream/PBS, Strongsville, Ohio

Henry B. Gonzalez Convention Center, 221

570  ASSESS
Quality Questioning for Formative Assessment in the Mathematics Classroom
3–5 Session

What is quality questioning? What is formative assessment? How can quality questioning be used effectively to formatively assess your students? Attend this session to find out how you can ask the best questions to determine what your students know and what they don’t know!

DesLey Plaisance
@DesLeyVP
Nicholls State University, Thibodaux, Louisiana

Henry B. Gonzalez Convention Center, 007D

571  TLC
Reasoning in Mathematics Classrooms: Small Steps That Lead to Big Change
3–5 Session

Meet teachers who worked with math education researchers to provide opportunities for students to develop and use reasoning skills while learning mathematics. Transfer of ideas into practice was difficult, but small steps added up. We will share what struggles and successes we experienced when students’ reasoning became a focus of their learning.

Kyong Mi Choi
University of Iowa, Iowa City
Karen Kauffman
Mt. Pleasant School District, Iowa
Lottie Schnicker
Mt. Pleasant School District, Iowa

Grand Hyatt San Antonio, Presidio ABC

572  “M”
STEM: Solving (Problems), Toyota, Engineering, and Mathematics
8–10 Session

How can your students help Toyota improve the efficiency of their manufacturing process? We’ll share a problem involving measurement, accuracy, and precision that your students can solve. Ask questions of one of the engineers who solved it, and learn how to involve your students in a real STEM problem (free materials available from Spark101.org).

Michael Collins
Toyota Motor Engineering & Manufacturing North America, Inc., Georgetown, Kentucky
Fred Dillon
Ideastream/PBS, Strongsville, Ohio

Henry B. Gonzalez Convention Center, 221

573  A&E
Still Fighting the Good Fight: Standing Up for Equity In Mathematics
Coaches/Leaders/Teacher Educators’ Session

Are you hoping to detrack your schools? Come ask us about our next chapter: San Francisco has worked for three years to implement a board policy that detracks math through the end of tenth grade. Using research and our own data, we frame this as a social justice issue and instructional opportunity. Together, we will reflect on learnings and next steps.

Lizzy Hull Barnes
@sfusdmath
SFUSD, San Francisco, California
Richard Carranza
SFUSD, San Francisco, California

Henry B. Gonzalez Convention Center, Hemisfair 2

574  TLC
Supporting Productive Struggle in Mathematics Classrooms
General Interest Session

This session will focus on what productive struggle is and how to support it in the classroom. Video and text-based examples will be used to illustrate ways to support productive struggle. Participants will discuss general principles for supporting student’s productive struggle that can be applied in their own classrooms.

Margaret Smith
University of Pittsburgh, Pennsylvania

Henry B. Gonzalez Convention Center, Stars at Night 2&3
### 575 A&E

**Teaching Problem-Solving Strategies as Part of Algebra 1 Enables More Students to Succeed**

**8–10 Session**

Problem solving strategies align well with algebra 1 skills. Many students are not aware of strategies that others use. Explicitly teaching strategies such as Guess & Check, Look for Sub-problems, Make a Table, and Use a Manipulative helps level the playing field and provides access for students who were unaware of them. Examples will be provided.

**Judith Kysh**  
San Francisco State University, California  
*Grand Hyatt San Antonio, Travis AB*

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### 576 BUILD

**Unpacking the Magic of the “tan” Button: Developing a Conceptual Understanding of Tangent**

**10–12 Session**

It is time to move past the magic of the tangent button on your calculator. We will discuss a way to develop a conceptual understanding of tangent (and the rest of right triangle trigonometry?) before jumping to the calculator. Participants will have a chance to engage in an activity that will connect similar triangles to tangent.

**Joshua Males**  
@josh_males  
Lincoln Public School District, Nebraska  
Lorraine Males  
University of Nebraska-Lincoln  
*Henry B. Gonzalez Convention Center, 225*

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### 577 A&E

**Ways to Help Students Overcome Their Math Anxiety**

**10–12 Session**

We will look at steps for teachers to help their students deal with their anxiosity in math class. These steps are parallel to steps used by some psychologists in overcoming other fears. These will be steps that can be done by any teacher.

**Gary Hall**  
Lipscomb University, Nashville, Tennessee  
*Grand Hyatt San Antonio, Bowie ABC*

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### 578 BUILD

**What’s Puzzling You? 2.0**

**General Interest Session**

Do you enjoy getting up in the morning and working the puzzles? This session will explore common and not-so-common examples of puzzles that are available. If time permits, we will discuss how these puzzles can be used in the mathematics classroom. This presentation is a continuation of the What’s Puzzling You? session given in 2016.

**Jane Tanner**  
Onondaga Community College, Syracuse, New York  
*Grand Hyatt San Antonio, Lonestar Ballroom C*

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### 579 TLC

**Writing Counts**

**Coaches/Leaders/Teacher Educators’ Session**

“Students need opportunities to sink their teeth into the marrow of math”—Wendy Ward Hoffer. Learn how discourse and writing help students grapple with their problem-solving processes. Experience structures and strategies designed to engage students in the process of thinking deeply about math which will assure their understanding.

**Brenda Mesa**  
Birdville ISD, Haltom City, Texas  
**Ann-Marie Trammell**  
Birdville ISD, Haltom City, Texas  
*Henry B. Gonzalez Convention Center, 207B*

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### 579.1 TLC

**Hidden Figures: My Role as a Math Consultant for This Film**

**General Interest Session**

In January 2017, the movie *Hidden Figures* was released. This movie tells the story of three African-American women mathematicians and engineers who would play a pivotal role toward the successful mission of John Glenn’s spacecraft orbit around the Earth and the NASA missions to the moon. In this session, we give a brief review of the space race going on at the time between the United States of America and the former Soviet Union. We will discuss the lives and contributions that NASA mathematician Katherine Johnson and the NASA engineers Mary Jackson and Dorothy Vaughan made to the space race.

**Rudy L. Horne**  
Morehouse College, Atlanta, Georgia  
*Henry B. Gonzalez Convention Center, Hemisfair 1*
The “M” in STEM/STEAM — Professionalism: Learning Together as Teachers

3:30 P.M.–4:30 P.M.

579.2  **EW**
**enVision A|G|A powered by Desmos for High School Mathematics**

10–12 Exhibitor Workshop

Interested in a seamless and integrated digital experience for high school mathematics teaching and learning? Come see how the unique integration of Desmos into Pearson Realize offers a groundbreaking interactive experience designed to foster conceptual understanding through highly visual interactives that bring mathematical concepts to life.

Pearson Learning Services
Chandler, Arizona

Henry B. Gonzalez Convention Center, 206B

579.3  **EW**
**HP Prime: Mathematics Education Technology on All Platforms!**

10–12 Exhibitor Workshop

Get acquainted with HP Prime: the app-based, full-color graphing calculator. HP Prime is also available as software on Mac and PC as well as Android/iOS/Win10 phones/tablets. All versions have multi-touch, gesture-driven user interfaces (for example, pinch to zoom on a graph) and more. You’ll receive a free copy of the software after the workshop.

HP Inc.
San Diego, California

Henry B. Gonzalez Convention Center, 210AB

579.4  **EW**
**Math + ORIGO Digital Tools = Learning at Its Best**

Pre-K–2 Exhibitor Workshop

Today’s students are plugged in most of the day. Let’s use that to our advantage when teaching math. Come see how ORIGO’s digital resources can ignite and enliven any math lesson. This engaging workshop will highlight a variety of technology enhanced tools and how they can be used to enrich teaching and learning mathematics in K–5 classrooms.

ORIGO Education
Earth City, Missouri

Henry B. Gonzalez Convention Center, 212AB

4:45 P.M.–6:00 P.M.

580  **A&E**
**Effective Thinking and Creative Puzzle Solving**

General Interest Session

How can we joyfully and impactfully engage our students to thrive in their math classes? How can we inspire our students to see the beauty and power of mathematical thinking? Here we will offer some practical strategies of thinking that will allow our students to not only make greater meaning of mathematics but also to use those practices of the mind beyond their math classes.

Edward Burger is the president of Southwestern University; a professor of mathematics; an educational consultant on thinking, innovation, and creativity; and host of the podcast *Higher ED*. He is the author of more than 70 research articles, video series, and books, including *The 5 Elements of Effective Thinking*. Burger was awarded the 2001 Mathematical Association of America (MAA) Haimo Award for Distinguished Teaching of Mathematics, and in 2010 he was named the winner of the Robert Foster Cherry Award for Great Teaching. In 2006, *Reader’s Digest* listed Burger in their annual “100 Best of America” issue as America’s Best Math Teacher.

Ed Burger
Southwestern University, Georgetown, Texas

Henry B. Gonzalez Convention Center, Stars at Night 4

6:30 P.M.–7:30 P.M.

581  **PROF**
**Ignite! We’ll Enlighten You and We’ll Make It Quick**

General Interest Session

What makes mathematics teachers passionate? Join us to find out! Our 10 classroom teachers, representing kindergarten through high school, will 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 20 slides that auto advance every 15 seconds—whether they’re ready or not!

Mary Bourassa, Ottawa, Canada; Jessica Cheyney, Round Rock, Texas; Robyn Drew, Nashville, Tennessee; Troy Jones, Saratoga Springs, Utah; Paul Kelley, Anoka, Minnesota; Morondo Lewis, Columbia, South Carolina; Avery Pickford, Hillsborough, California; Megan Schmidt, St. Francis, Minnesota; Monica Tienda, Oak Park, Michigan; José Vilson, New York, New York

Henry B. Gonzalez Convention Center, Stars at Night 2&3
Ignite! We’ll Enlighten You and We’ll Make It Quick

What makes mathematics teachers passionate? Join us to find out! Our 10 classroom teachers, representing kindergarten through high school, will light up the room with fresh ideas in math teaching and learning. Each speaker gets 5 minutes to talk about whatever ignites their passion, using 20 slides that auto advance every 15 seconds whether they’re ready or not! Emceed by Matt Larson, president of NCTM, and brought to you by the Math Forum.

Friday, April 7, 6:30–7:30 p.m., Cash Bar Stars at Night Ballroom, B2 & B3

Mary Bourassa
@MaryBourassa
High School Math
West Carleton Secondary
Dunrobin, Ontario

Jessica Cheyney
@JChey1
Kindergarten
Callison Elementary School
Round Rock, TX

Robyn Drew
@robyndrew1
4th Grade Math/Science
Percy Pierce Elementary
Nashville, TN

Troy Jones
High School Math
Westlake High School
Saratoga Springs, UT

Paul Kelley
@paulrkelley
High School Math
Anoka High School
Anoka, MN

Morondo Lewis
High School Math
Eau Claire High School
Columbia, SC

Avery Pickford
@woutgeo
5th & 6th Grade Math
Nueva School
Hillsborough, CA

Megan Schmidt
@VeganMathBeagle
High School Math
St. Francis High School
St. Francis, MN

Monica Tienda
@matienda
Grade 4
Key Elementary School
Oak Park, MI

José Vilson
@TheJLV
Middle School Math
Inwood Intermediate, 52
New York, NY

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NCTM ANNUAL MEETING & EXPOSITION 2018
April 25-28 | Washington, DC

Empowering the Mathematics Community in the Nation’s Capital

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.

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- **Tools and Technology**: Enhancing Instruction and Promoting Innovation
- **Access, Equity, and Empowerment**: Transformative Practices and Professional Accountability
- **Purposeful Curriculum**: Cultivating Coherence and Connections
- **Teaching and Learning**: Building a Community of Empowered Learners
- **Assessment**: Involving and Empowering Students
- **Professionalism**: Empowering Teachers through Community
- **Mathematical Modeling**: Interpreting the World through Mathematics
- **Emerging Issues and Hot Topics**

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

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Research-Based Teaching Strategies to Strengthen Student Learning

With more than 70,000 copies in print, the landmark publication *Principles to Actions: Ensuring Mathematical Success for All* is a vital tool for teachers, mathematics coaches, administrators, parents, and policymakers.

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- research-based descriptions of eight essential Mathematics Teaching Practices;
- a review of the conditions, structures, and policies that must support the Teaching Practices;
- an understanding of obstacles, unproductive and productive beliefs, and key actions that must be acknowledged and addressed by all stakeholders; and
- tools to engage students in mathematical thinking, reasoning, and sense making to significantly strengthen teaching and learning.

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HIGHLIGHTS

Math Is Power Not Punishment, 595
Learning Cycles and Mathematical Practices in the Classroom Math Talk Community, 681
Closing Keynote: From Fermat’s Last Theorem to Homer’s Last Theorem, 708

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REGISTRATION HOURS
7:00 a.m.–12:00 p.m.

EXHIBIT HOURS
8:00 a.m.–12:00 p.m.

NCTM CENTRAL HOURS
8:00 a.m.–12:00 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.

**582** ❖ “M” ❖
**Bringing Computational Thinking into Elementary Mathematics**

**3–5 Session**
A research team at the University of Chicago and the University of Illinois Urbana-Champaign has been developing an online resource for elementary mathematics teachers to use to bring more computational thinking into their mathematics classes. Come and learn how you can use this resource to help bring CS to all!

Andy Isaacs  
University of Chicago, Illinois

Kathryn Rich  
University of Chicago, Illinois

Cheryl Moran  
University of Chicago, Illinois

**Henry B. Gonzalez Convention Center, 008AB**

**583** ❖ TLC ❖
**Experience Three-Act Tasks as a Learner**

**10–12 Session**
In this session, participants will experience three-act math tasks (modeled after Dan Myer’s tasks). An overview of how three-act tasks can be implemented in the classroom will be presented, and participants will experience at least one task as a student in the high school math classroom. We will discuss how three-act tasks kindle students’ interest.

Umamaheswari Subramanian  
Atlanta Public Schools, Georgia

Elizabeth Oparinde  
Atlanta Public Schools, Georgia

Lindra Gordon  
Atlanta Public Schools, Georgia

**Henry B. Gonzalez Convention Center, 007D**

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**584** ❖ PROF ❖
**Facilitating the Lesson Study Process with Google Apps**

**General Interest Session**
This session will demonstrate how the lesson study process can be streamlined and managed in a paperless manner using free, cloud-based Google Apps to communicate and collaborate. The session will also consider tech-based strategies for addressing challenges to engaging in lesson study.

Yvelyne Germain-McCarthey  
University of New Orleans, Louisiana

Tinashe Blanchet  
The Learning Laboratory New Orleans, Inc., Louisiana

**Henry B. Gonzalez Convention Center, 205**

**585** ❖ BUILD ❖
**Fractions as Numbers: Unifying All the Representations and Interpretations**

**3–5 Session**
Multiple representations and interpretations for fractions are introduced in grades 3–5: equipartitioning and part-whole area models, the number line, division, and operator. This session will explore a learning progression for fractions and related tasks that elicit and connect foundational conceptual understanding to procedural fluency.

Lauren Whitley  
Amplify Education, Raleigh, North Carolina

Drew Corley  
Amplify Education, Raleigh, North Carolina

Zachary Wissner-Gross  
Amplify Education, Brooklyn, New York

**Grand Hyatt San Antonio, Travis AB**

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Don’t miss the **Closing Session** on Saturday afternoon with featured speaker Simon Singh, science writer and broadcaster.
8:00 A.M.–9:00 A.M.

586  A&E  
Free Online Tools for Guiding Discourse in Rich Math Tasks
3–5 Session
Use free, online tools to kick-start rich tasks in your classroom. Give yourself a personal navigation system to move from notice and wonder, to making estimations, to facilitating multistep problem solving where students pursue their own solutions. Use video, online discussion guides, and virtual manipulatives, all available online for free.

Julie McNamara  
Cal State East Bay, Hayward, California
Arjan Khalsa  
@arjankhalsa  
Conceptua Math, San Rafael, California

Henry B. Gonzalez Convention Center, 301

587  BUILD  
From Euler to the Fundamental Theorem
10–12 Session
In this session, we will use Euler’s Method to build intuition into the Fundamental Theorem of Calculus. We will engage in an activity used in the classroom to model the lesson as it is done with students. Discussion about implementation and best practices will be conducted.

Tamar Avineri  
North Carolina School of Science and Mathematics, Durham

Grand Hyatt San Antonio, Lonestar Ballroom D

588  A&E  
Getting Struggling Math Students to Mathematize Their World and Engage Them in Meaningful Procedures
6–8 Session
Students who struggle with computation rarely learn to appreciate math in their worlds. They have a difficult time seeing themselves as mathematicians capable of doing math. In this session, you will explore activities aimed to get students to mathematize the world around them while developing computational skills within a meaningful context.

Jennifer McAleer  
@jennfuhs4  
The Carroll School, Lincoln, Massachusetts
Peter Morris  
The Carroll School, Waltham, Massachusetts

Grand Hyatt San Antonio, Lonestar Ballroom D

589  BUILD  
Going beyond Number Talks
General Interest Session
Are you using number talks in your classroom to develop fluency through the flexible use of computational strategies? Teachers in K–grade 5 will learn how to build upon their number talks routine by creating lessons that allow their students to investigate and build a deeper understanding of the mathematics behind those strategies.

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

Grand Hyatt San Antonio, Crockett CD

590  A&E  
Helping Learners Who Are Struggling to Access the Mathematics Curriculum
General Interest Session
Discover what research says about the learning needs of individuals who struggle with mathematics and the evidence-based strategies that can help them access the curriculum. Participate in a simulation, view video clips, and examine your own beliefs and assumptions. Leave with handouts summarizing research and effective strategies.

Linda Forbringer  
Southern Illinois University Edwardsville

Grand Hyatt San Antonio, Crockett AB
8:00 A.M.–9:00 A.M.

591 BUILD
Identifying and Addressing Common Addition and Subtraction Misconceptions
Pre-K–2 Session
Frustrated with seeing the same mistakes in your students’ addition and subtraction work? In this session, we will analyze student work to identify common addition and subtraction misconceptions. We will also explore a variety of models and strategies that will support your students’ deep conceptual understanding of addition and subtraction.

Saffron VanGelder
Eureka Math, Washington, D.C.
Henry B. Gonzalez Convention Center, 217D

592 BUILD
It’s Not Just a Careless Mistake!
6–8 Session
Often students dismiss their errors as careless mistakes, instead of opportunities for learning. In this session we will examine student errors in a number of different strands (Number and Operations, Algebra, Geometry), identify the source of the mistakes, and plan instruction to remediate or even avoid these errors altogether.

Mary Pat Sjostrom
@DrMPShoe
Winthrop University, Rock Hill, South Carolina
Grand Hyatt San Antonio, Texas Ballroom F

593 TLC
Julian’s Numerical Development across the Years: A Video Portrait
Pre-K–2 Session
From early childhood through the primary grades, children’s numerical development occurs in the ability to count, subitize, add and subtract, and make sense of multiplicative situations. We will explore this learning trajectory by reflecting on videos of one child, Julian, between the ages of two and nine, linking his development with current research.

Sarah Lord
University of Wisconsin-Madison
Sara Cutler
SEAMS Consulting, LLC, Madison, Wisconsin
Henry B. Gonzalez Convention Center, 214C

594 ASSESS
Making Number Sense the Heart of MTSS Using Interview-Based Screeners
Coaches/Leaders/Teacher Educators’ Session
Come watch and discuss videos, dig into some data, and consider the potential for supporting all tiers of MTSS using interview-based number sense screeners. In 2010, Boulder, Colorado, began implementing system-wide fall number sense interviews for K–5. Learn from our struggles and successes. Handouts of the free, open-source screeners will be available.

David Woodward
@elemmathguy
Boulder Valley School District, Colorado
Grand Hyatt San Antonio, Republic ABC

595 TLC
Math Is Power Not Punishment
General Interest Session
We often offer students shortcuts, strategies, and skills before students understand their origin, their value, and the millions of hours of work they’ve saved mathematicians throughout history. We’ll look at techniques for putting students in a position to need these challenging skills so they feel like power, not punishment.

Dan Meyer
Desmos, San Francisco, California
Henry B. Gonzalez Convention Center, Lila Cockrell Theatre

596 TLC
Math Workshop: Guided Math & Beyond
3–5 Session
Participants will learn WHY Math Workshop is a valuable model for instruction and HOW to establish routines and procedures that help get differentiated guided groups & learning stations up and running. Participants will gain a solid understanding of the different structures within Math Workshop and be able to see how it fits into a K–5 math class.

Jennifer Lempp
@lempp5
Fairfax County Public Schools, Falls Church, Virginia
Grand Hyatt San Antonio, Lonestar Ballroom F
ASSESS Mathematics Achievement from a National and International Perspective: A Deeper Look at 2015 Data

General Interest Session
Over the past 18 months, results from 2015 NAEP, TIMSS, TIMSS Advanced, and PISA have been released. This presentation will provide an overview of United States performance and examine both the mathematics being assessed as well as demonstrate how contextual variables can be used to provide further insight into student performance.

Kim Gattis
AIR, Washington, D.C.
Ebru Erberbr
AIR, Washington, D.C.

Grand Hyatt San Antonio, Presidio ABC

A&E Neurodiversity and Mathematics: Rethinking Intervention

general interest session
The time has come to challenge deficit thinking about disability and math. Learn about innovative approaches to disability such as Neurodiversity and Universal Design for Learning, and how to apply to math.

Rachel Lambert
Chapman University, Orange, California

Grand Hyatt San Antonio, Bowie ABC

BUILD Report on ICMI Study 23 on Whole Number Arithmetic

General Interest Session
The International Commission on Mathematics Instruction (ICMI) promotes international communication and cooperation for improving mathematics instruction worldwide. This session will report ICMI Study 23, focused on whole number arithmetic, including history, international teaching practices, and adaptation for 21st-century learning.

Roger Howe
Yale University, New Haven, Connecticut
Sybilla Beckmann-Kazez
University of Georgia, Athens

Henry B. Gonzalez Convention Center, 225

BUILD Structures and Repeated Reasoning: Keys to Decimal Number Teaching and Learning

3–5 Session
Decimals and fractions are two representations for numbers that require units less than 1. Students must look for and make use of structures of whole numbers and repeated reasoning used with whole number operations previously to build their understanding of decimals. We will highlight some key ideas such as units and properties of operations.

Tad Watanabe
Kennesaw State University, Georgia

Henry B. Gonzalez Convention Center, 225

PROF The HeART of Coaching: Asking Purposeful Questions

Coaches/Leaders/Teacher Educators’ Session
NCTM’s Principles to Actions states, “Effective teaching of mathematics uses purposeful questions to assess and advance students’ reasoning and sense making about important mathematical ideas and relationships.” This principle connects directly to the heart of coaching. During this session math coaches use a process for asking purposeful questions.

Mary Mitchell
@marymitchell
Math Solutions, Sausalito, California
Brenda Konicke
Math Solutions, Sausalito, California

Grand Hyatt San Antonio, Lonestar Ballroom C
602  **ASSESS**
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  
@mrgrinwismath
Downingtown Area School District, Exton, Pennsylvania
Michael Manganello
Downingtown Area School District, Exton, Pennsylvania

Henry B. Gonzalez Convention Center, 214B

603  **TECH**
Upgrade Your Card Sorts

10–12 Session

Card sorts help students compare, contrast, and group mathematical structures. In this session, we’ll discuss various ways in which card sorts promote conceptual understanding, and we’ll learn how to use a free digital card sort to promote discussion and give feedback in ways that are impossible with paper card sorts.

Shelley Carranza  
@stcarranza
Desmos, Inc., Mountain View, California

Henry B. Gonzalez Convention Center, 207B

604  **BUILD**
Building Conceptual Blocks for Procedural Understanding of Geometry

Coaches/Leaders/Teacher Educators’ Workshop

How do students learn about angles, parallel lines, and partitioning a segment? How does that knowledge lead to more complex concepts in middle and high school? Let’s examine the role teachers play in connecting foundational geometric concepts in elementary grades to the application of geometry at upper grades using hands-on activities.

Kelly Alsup
@kelly_alsup
Great Minds, Washington, D.C.
Stefanie Hassan
Great Minds, Washington, D.C.

Henry B. Gonzalez Convention Center, 007B

605  **BUILD**
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 and multiply? Teachers will explore the progression of division from whole numbers to fractions while using a variety of tasks and rigorous tasks to promote a deeper understanding of division of fractions.

Kathleen Carter
Howard County Public Schools, Sykesville, Maryland
Connie Conroy
Howard County Public School System, Ellicott City, Maryland
Kendra Johnson
Howard County Public School System, Ellicott City, Maryland

Henry B. Gonzalez Convention Center, 305

Plan now for the 2018 NCTM Annual Meeting & Exposition in Washington, D.C. • April 25–28
8:00 A.M.—9:15 A.M.

606 **A&E**
Dealing with Diversity: Math Games for Engaging All Learners
Pre-K–2 Workshop
Are you looking for engaging, hands-on activities for CCSS concepts that help your students gain competence and confidence? Participants play games that incorporate the use of cards and dice, and will learn ways to differentiate instruction to meet the needs of ESL, ELL and RTI students. Strategies for fact fluency, PV, and assessment will be shared.
Jane Felling
@Boxcarseduc
Box Cars and One-Eyed Jacks, Edmonton, Alberta, Canada
Grand Hyatt San Antonio, Texas Ballroom C

607 **BUILD**
Determining Definitions of a Circle and an Ellipse through a Modeling Activity
8–10 Workshop
In this session, participants will engage in a modeling activity in which they investigate a crime scene and, as a result, determine the definitions of a circle and an ellipse. The presenter will discuss the use of this activity with middle school students at a math camp and with preservice teachers in a middle grades mathematics methods course.
Bethany Noblitt
Northern Kentucky University, Highland Heights
Grand Hyatt San Antonio, Texas Ballroom A

608 **BUILD**
Developing Algebraic Thinking through Problem-Solving Activities
3–5 Workshop
This session focuses on hands-on and minds-on algebraic thinking activities that can be used to transform real-world problems into learning experiences that develop students’ abilities to use multiple representations to conjecture, justify, and make generalizations. Leave with classroom-ready activities and ideas to challenge all your students.
Carolyn White
Rice University, Houston, Texas
Susan Troutman
Rice University, Houston, Texas

609 **ASSESS**
Do Not Become Un-“Hinged”—Learn to Diagnose!
8–10 Workshop
Are you looking for tech-y formative assessment tools that will guide teacher and student moves during a lesson? Join us in an examination of hinge questions as a formative assessment strategy. You will learn some digital tools that will support its implementation. Participants should bring a device and/or laptop.
Debra Mintz
@debimintz
Retired, Pleasanton Unified School District, California
Celine Liu
Alameda County Office of Education, Hayward, California
Henry B. Gonzalez Convention Center, 304B

610 **TLC**
Experience-First Statistics: Using Activities to Promote Statistical Thinking
10–12 Workshop
The Common Core emphasizes statistics early and often. For AP Statistics or any class wishing to incorporate statistics, there are many activities that can be done to help students develop deep understanding of concepts. We will explore three such activities: understanding r-squared, interpreting confidence intervals, and a basic hypothesis test.
Jonathan Osters
@callmejosters
The Blake School, Minneapolis, Minnesota

611 **BUILD**
Exploring Right Triangle Properties with Paper Folding
10–12 Workshop
In this hands-on session you’ll cut, crease, and fold to reveal significant geometric results. Paper folding can be used to prove the Pythagorean theorem and explore a relationship between the altitude and hypotenuse. The culmination is seeing how all of this work leads to insight for real-world design problems. You gotta know when to fold ’em . . .
Marjan Hong
Discovery Education, Concord, North Carolina
Henry B. Gonzalez Convention Center, 006B
612 **TECH**
**Hands-On Activities + Technology = Mathematical Understanding through Authentic Modeling**

8–10 Workshop

Inquiry-based learning coupled with handheld technology empowers students to apply linear, quadratic, and exponential functions to real-world situations. Participants are provided with classroom-ready lessons that use and connect multiple mathematical representations and synthesize the Statistics, Functions, and Modeling strands of CCSSM.

Tom Beatini
Union City Public Schools, New Jersey

*Henry B. Gonzalez Convention Center, 006D*

613 **BUILD**
**Hands-On Geometry for Deeper Understanding for All Learners in Grades 3–5**

3–5 Workshop

We will investigate two- and three-dimensional components of geometry by exploring polygons and polyhedra and their properties through hands-on activities that lead to deeper student understanding. Attention will be given to differentiating the lessons for special education through gifted populations. Van Hiele levels will be addressed as well.

Marguerite Mason
College of William and Mary, Williamsburg, Virginia

Samuel Rhodes
College of William and Mary, Williamsburg, Virginia

Eric Shippee
College of William and Mary, Williamsburg, Virginia

*Henry B. Gonzalez Convention Center, 217A*

615 **“M”**
**Math in Your Feet: Moving Bodies Are Learning Bodies**

3–5 Workshop

We know kids love to move—there is a developmental imperative at play that can’t be ignored. How can we harness this innate playfulness in ways that move our students, literally, toward conceptual understanding of elementary math? Learn how the whole, moving, dancing body can be a tool for doing and learning mathematics in deep and engaging ways.

Malke Rosenfeld
@mathinyourfeet
Independent Teaching Artist, Bloomington, Indiana

*Henry B. Gonzalez Convention Center, 005*

616 **TLC**
**Problems in Context—Not a Problem! Comprehend the Scene**

Pre-K–2 Workshop

Add, subtract, multiply, divide; this is not the question we seek. This session will provide participants with insight and lessons on how to access student understanding of problems presented in context prior to attempting to find a solution. Technology, building concrete models, and retelling are all part of the plan.

Kendra Johnson
Howard County Public School System, Ellicott City, Maryland

Randi Blue
Howard County Public School System, Ellicott City, Maryland

*Henry B. Gonzalez Convention Center, 224*
8:00 A.M.–9:15 A.M.

617 **TLC**
**Some Solid Ideas for Learning Geometry: Engaging Activities for Middle Grades Students**
6–8 Workshop
Geometry, often overlooked in middle school mathematics, can allow students to engage in mathematics as it relates to the world around them. This workshop provides a series of connected activities to build students’ understanding of spatial relationships necessary for all students to solve grade appropriate real-world problems involving geometry.

Gail Englert  
Retired, Norfolk City Public Schools, Virginia  
Jean Howard  
Helena, Montana

*Henry B. Gonzalez Convention Center, 217B*

618 **TECH**
**Take Some Random Walks—on a Hexagonal Island with Dice, on a Number Line with a Calculator, & More!**
6–8 Workshop
We will take random walks on a hexagonal board with dice, and we’ll take simulated walks on a number line and on circular boards using graphing calculators. We’ll learn about and see the huge variety of outcomes of such walks, from short to very long. Take these classroom-tested hands-on activities back to your students!

Patricia Baggett  
New Mexico State University, Las Cruces  
Andrzej Ehrenfeucht  
University of Colorado Boulder

*Henry B. Gonzalez Convention Center, 007C*

619 **BUILD**
**The Power of 3!**
Pre-K–2 Workshop
How do I address the diverse needs of all my students while keeping the class on the same objective and learning target? Come explore how to use stations and Guided Math to differentiate the instruction for your developing, proficient, and advanced learners. Hands-on activities and multiple models will be presented and practiced.

Gayle Stahl  
Independent Consultant, Spring, Texas

*Henry B. Gonzalez Convention Center, 304C*

620 **PROF**
**The Power of Video to Analyze Strong Mathematical Instructional Practices**
Coaches/Leaders/Teacher Educators’ Workshop
Classroom observations can be a powerful tool to build understanding of strong mathematical instructional practices. Come learn about and explore free comprehensive PD modules centered around exemplar moments captured in video. Great session for teachers and coaches in K–12.

Barbara Beske  
@beske3  
Student Achievement Partners, Mullica Hill, New Jersey

*Henry B. Gonzalez Convention Center, 004*

621 **“M”**
**The Superhero Boat Challenge**
6–8 Workshop
Attendees will receive a copy of this interactive, hands-on STEM activity. The activity requires attendees to design and construct a boat based on specific mathematical specifications. Boats must be able to float, carry weight, and move across a pool. The boat challenge includes finding surface area, volume, finding rate of speed, and more.

Elizabeth Grossie  
Lafayette Parish School System, Louisiana

*Grand Hyatt San Antonio, Lonestar Ballroom B*
8:00 A.M.–9:15 A.M.

**622** **TLC**

**Thinking Critically about Statistical Inference: Playing Cards and Drinking Water**

10–12 Workshop

Difficulties understanding the underlying concepts of hypothesis testing can lead to incorrect conclusions regarding the outcome of a statistical study. This workshop will focus on some of these difficulties and provide activities for helping students better understand the difference between a correct and incorrect conclusion from inference.

Ellen Breazel
Clemson University, South Carolina

_Henry B. Gonzalez Convention Center, 302AB_
8:00 A.M.–9:15 A.M.

626 TECH
Using Simulations to Make Inferences: Come Learn How!
10–12 Workshop
In this workshop, participants will increase their understanding of using simulations to make inferences through engaging in hands-on, classroom-ready tasks. Participants will also learn about appropriate teaching strategies, students’ misconceptions while using simulations, and technology resources. Bring a laptop if you can!

Jeremy Strayer
Middle Tennessee State University, Murfreesboro
Jennifer Lovett
Middle Tennessee State University, Murfreesboro
Amber Matuszewski
Rutherford County, Murfreesboro, Tennessee

Henry B. Gonzalez Convention Center, 304A

627 BUILD
Wait—What? Multiplication Is More Than Just Equal Groups?
3–5 Workshop
Conceptual understanding of multiplication begins before students formally learn to multiply. Let’s examine activities to demonstrate the learning progression of multiplication that can be immediately used in your classroom. We will engage in tasks and explore models designed to facilitate students’ development of multiplicative reasoning.

Leslie Ceballos
@LDHirsh
Allen ISD, Allen, Texas
Meg Hearn
LearnZillion, Washington, D.C.

Henry B. Gonzalez Convention Center, 217C

628 TLC
A Teaching Model for Mathematical Argument in the Elementary Classroom
3–5 Session
This session provides a teaching model, illustrated with video examples, for making learning about mathematical argument a regular, ongoing part of instruction. The model engages students in a classroom routine that involves examining examples, articulating conjectures about what they notice, and using representations to construct arguments.

Susan Jo Russell
TERC, Cambridge, Massachusetts
Deborah Schifter
Education Development Center, Waltham, Massachusetts
Reva Kasman
Salem State University, Massachusetts

Henry B. Gonzalez Convention Center, 225

9:30 A.M.–10:30 A.M.

629 TECH
Actively Engage Students in Content and Practices with Interactive Simulations
6–8 Session
Interactive simulations are flexible tools for teaching content while also fostering engagement, reasoning, modeling, and sense making. Learn how to incorporate simulations into your classroom, facilitate inquiry-based activities, and engage students in mathematical practices. Take home new ideas and lessons you can implement immediately.

Amanda McGarry
@mcgarrymath
University of Colorado Boulder

Henry B. Gonzalez Convention Center, 214A

NCTM Central, located in the Exhibit Hall, has activities, lessons, sample journals, information about grant funding, and more—stop by!
9:30 A.M.–10:30 A.M.

630 TECH
Algebraic Functions, Computer Programming, and the Challenge of Transfer
8–10 Session
Programming is just like math . . . or is it? It turns out they differ in significant ways, and prior efforts to teach algebra through programming have been disappointing at best. This session will explore the reasons for this, and describe the research behind an evidence-based intervention that uses a unique approach to address these differences.

Emmanuel Schanzer
@bootstrapworld
Bootstrap, Alexandria, Virginia

Henry B. Gonzalez Convention Center, 008AB

631 A&E
BREAKING NEWS: Using Current Events to Develop Whole Students
10–12 Session
Incorporating current events into the math curriculum empowers students not only to make sense of the world around them, but to challenge their beliefs about themselves and others. We will look at multiple strategies from leading discussions that focus on building the Standards for Mathematical Practice to full-scale project-based learning.

Andrew Browning-Couch
STEM School Chattanooga, Tennessee

Grand Hyatt San Antonio, Crockett CD

632 TECH
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 Cooperman
Millburn High School, Millburn, New Jersey
Stephanie Cooperman
School District of the Chathams, New Jersey

Henry B. Gonzalez Convention Center, 217D

633 TECH
Designing Online Playgrounds for Learning Mathematics
8–10 Session
We share how teachers’ experiences with “online playgrounds” in a university course led to their use of online technology to broaden opportunities for student participation and to engage in formative assessment. We demonstrate how teachers can infuse video conferencing, social media, and online interactive tools to support students’ math learning.

Heather Johnson
@dr_heatherlynn
University of Colorado Denver
Peter Hornbein
University of Colorado Denver
Dana Bryson
Evergreen Country Day School, Colorado

Henry B. Gonzalez Convention Center, 214C

Visit nctm.org for lessons, activities, and teacher resources.
Developing Essential Understandings of Addition and Subtraction

Pre-K–2 Session

Have you ever heard, “If only my students knew their basic facts.” This doesn’t come from drill and kill, flashcards, or timed tests, it comes from strong number sense. Participants will explore the essential understandings of addition and subtraction to build numerical literacy from a conceptual understanding framework and how to progress monitor.

Jeremiah McGraw
Grant Wood Area Education Association, Cedar Rapids, Iowa
Amy Schemmel Keller
Grant Wood Area Education Agency, Cedar Rapids, Iowa

Grand Hyatt San Antonio, Crockett AB

Dive into Embedded Professional Learning Session Plans in Illustrative Mathematics’ New Curriculum

6–8 Session

Do you collaborate with peers in grade level or grade band meetings for math teachers? Struggle to find math based content for your meetings that corresponds to what you are currently teaching and pushes your own learning forward? Check out the new professional learning session plans freely available as an open education resource.

Jody Guarino
Orange County Department of Education, Costa Mesa, California
Jennie Beltramini
Anacortes School District, Washington
Ellen Whitesides
Illustrative Mathematics, Tucson, Arizona

Henry B. Gonzalez Convention Center, Hemisfair 3

Evening the Playing Field through Development of Facts Fluency

6–8 Session

Students lacking their math facts? Learn effective strategies to build number sense and fact fluency at the middle school level that are easy to implement and time friendly, giving all students access to grade level math. Leave with strategies to develop students’ mental math skills and ability to attend to structure that you can use the next day.

Ann Kim
Community Roots Academy, Aliso Viejo, California
Jane Noh
Community Roots Academy, Aliso Viejo, California

Henry B. Gonzalez Convention Center, 214B

Exploring Issues of Power, Privilege, and Opportunities to Learn Mathematics

Higher Education Session

Participants will learn to foster meaningful conversations with preservice teachers on issues related to power, privilege, and social justice in mathematics teaching. Traditional (e.g., annotated bibliography of scholarly articles) and nontraditional (e.g., BuzzFeed quiz, video clips) resources for facilitating these conversations will be provided.

Harry Washington
Millersville University, Pennsylvania
Erin Moss
Millersville University, Pennsylvania

Grand Hyatt San Antonio, Republic ABC
Breaking Barriers: Actionable approaches to reach each and every learner in mathematics


Bring your team and engage in an innovative learning experience for mathematics education. With a focus on access, equity, and empowerment, and designed specifically for teams, you can experience the conference through three different themes:

• Reflecting on mathematics instruction in terms of access, equity, and empowerment
• Developing equitable mathematical teaching practices that empower students
• Learning new strategies to identify and remove barriers to access to high-quality mathematics

What You’ll Gain—

• A deeper understanding of student agency, identity, social justice, culture, and language within the math classroom
• Tips on how to reflect on assumptions and deficit thinking about educational systems, students, and communities
• Relevant and responsive instructional practices in mathematics that take into account diverse learners
• Ways to foster positive mathematics identities.
• Methods to identify and overcome obstacles to ensure that each and every student has access to high-quality mathematics instruction
• Ways to empower your students to ask and answer critical questions about the world around them

Learn more at www.nctm.org/innov8 and follow us on

#NCTMinnov8
9:30 A.M.–10:30 A.M.

**639 BUILD**
Fluency, Discourse, and the Standards for Mathematical Practice
3–5 Session
Fluency doesn’t just happen! Let’s consider together how the Standards for Mathematical Practice can enhance mathematical discourse and support students’ development of mathematical fluency. How do purposeful questioning and the use of multiple representations strengthen discourse and support productive struggle?

Cathy Carroll
WestEd, Redwood City, California

Henry B. Gonzalez Convention Center, 303

**640 BUILD**
Increasing Discourse through Task Design in the Elementary Math Workshop
3–5 Session
Using research on student discourse, North Kansas City Schools will share how they increased productive talk and the rigor of tasks in elementary math workshops. This has deepened student understanding and resulted in significant increases in math state test scores and students’ ability to accurately, efficiently, and flexibly compute mentally.

Chad Sutton
North Kansas City Schools, Missouri
Todd Hinnenkamp
North Kansas City Schools, Missouri
Lisa Friesen
North Kansas City Schools, Missouri

Grand Hyatt San Antonio, Bowie ABC

**641 ASSESS**
Journaling: A Tool for Developing Mathematics Identity
General Interest Session
Multiple studies have shown that when students reflect on their thinking and emotions in mathematics, especially through writing, they experience greater success. Math journal prompts and protocols support positive classroom culture as well as identity development. Teachers will leave with new tools they can use in their classroom.

Kemble Schnell
West Linn Wilsonville School District, Portland, Oregon
Kasi Allen
Lewis & Clark College, Portland, Oregon

Grand Hyatt San Antonio, Lonestar Ballroom E

**642 TLC**
Juicy Tasks to Nourish Students’ Mathematical Reasoning
Pre-K–2 Session
Participants will learn the characteristics of what we refer to as “juicy tasks” that engage young mathematicians in making sense of profound mathematics, allow a range of reasoning strategies, and build on students’ daily experiences. We will discuss strategies for identifying and creating juicy tasks for teachers’ own classrooms.

Cathery Yeh
Chapman University, Orange, California
Mark Ellis
California State University, Fullerton
Carolee Koehn Hurtado
University of California, Los Angeles (UCLA) Mathematics Project

Henry B. Gonzalez Convention Center, 221
Visit NCTM Central and join your peers in the math education community exploring new resources, renew your NCTM membership, shop the latest titles in the Bookstore, learn about grant funding through the Mathematics Education Trust, connect with colleagues in the Networking Lounge, and explore fun math activities in the Math Corner.
9:30 A.M.–10:30 A.M.

**647 PROF**
Noticing and Wondering: A Feedback Approach for Collaboration
Coaches/Leaders/Teacher Educators’ Session
How can we shift our feedback after teacher observations from feeling evaluative toward a more inviting conversation about math teaching? Join me to learn about a language structure for inquiring about and discussing math teaching, practice this structure with short cases and video, and identify some lenses for guiding observations and feedback.

Sarah Roller
University of Alabama in Huntsville

Grand Hyatt San Antonio, Lonestar Ballroom C

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**648 “M”**
The Connectivity of Mathematics to Science in Elementary School
Coaches/Leaders/Teacher Educators’ Session
Creating lessons across mathematics and science can be a way to promote positive dispositions about mathematics. Planning and implementing engaging lessons that connect STEM concepts can be challenging. Come and learn more about the connectivity of mathematics to science and explore example of thematic integration of science in mathematics.

Susan Cooper
Florida Gulf Coast University, Fort Myers
Elif Safak
Florida Gulf Coast University, Fort Myers

Grand Hyatt San Antonio, Travis AB

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**649 TLC**
REFLECTION COVE
The Struggle is Real: Tasks, Academic Status, and Productive Problem-Solving
8–10 Session
Developing a culture of productive struggle in classrooms requires holistic vigilance. We often treat such problems in isolation: if only I had the right tasks, if only students demonstrated enough grit, if only. . . . We’ll examine the relationship between quality tasks and student mindsets which together promote an environment of productive struggle.

Geoff Krall
New Tech Network, Napa, California

Henry B. Gonzalez Convention Center, Hemisfair 2

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**650 “M”**
Using Music Videos in the Key of Mathematics: Put STEAM in Your STEM!
General Interest Session
Music videos provide an auditory and visual representation of important topics in mathematics which can be used in classes at ANY level. From the invertible music of Mozart to Kylie Minogue and Beyoncé, the structure of music forms a perfect analogue to mathematical concepts, even of the artist M. C. Escher. No background in music is necessary!

David Masunaga
Iolani School, Honolulu, Hawaii

Grand Hyatt San Antonio, Lonestar Ballroom F

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**651 BUILD**
Whole Group or Partial Group? It Matters When Kids Make Sense of Fraction Problems
3–5 Session
Does is matter to students when solving multiplication and division fraction problems if the number of groups is a whole number or a fraction? This session will examine students’ intuitive strategies for solving fraction multiplication and division problems that do not rely on shortcuts such as “multiply across” and “keep-change-flip.”

Laura Kent
University of Arkansas, Fayetteville
Olof Steinthorsdottir
University of Northern Iowa, Cedar Falls

Henry B. Gonzalez Convention Center, 007D

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**652 BUILD**
Writing in Math: It’s Not an Add-On
Higher Education Session
Writing in math classes can be a powerful tool for both students and teachers. Over several semesters, we have infused different writing tasks into beginning college-level courses. Join a discussion about our tasks, successes, and lessons learned. Collect some practical ideas to incorporate writing into your already full curriculum.

Ingrid Peterson
University of Kansas, Lawrence
Susan Gay
University of Kansas, Lawrence

Grand Hyatt San Antonio, Lonestar Ballroom D
9:45 A.M.—11:00 A.M.

**653 BUILD**
“*What Makes You Say That?” Questioning That Promotes Thinking*

3–5 Workshop
Creating mathematicians focused on explanation, justification, reflection, and thinking begins with posing purposeful questions. What instructional strategies will the teacher use in crafting questions? What role will the student play in owning their learning? Engage in rich mathematical tasks and leave with a new mission.

Rob Nickerson
ORIGO Education, Earth City, Missouri

Henry B. Gonzalez Convention Center, 302AB

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**654 “M”**
**A Series of Fortunate Math LABS (or Out-of-Classroom Experiences)**

10–12 Workshop
Labs are an essential experiential learning component in science classes. Why can’t this happen in math class? This workshop looks at a series of simple math labs that take students out of the classroom to visualize math in hallways, staircases, the gymnasium, football fields and local parks to transform paper/pencil math to the real world.

Mark Couturier
@tansinecosine
OCSB, Orleans, Ontario, Canada

Henry B. Gonzalez Convention Center, 304B

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**655 BUILD**
**Completing the Incomplete: Making Sense of Completing the Square Using Manipulatives**

8–10 Workshop
Participants will use algebra tiles to make sense of completing the square. This workshop will focus on collaboration to build a deeper understanding of the topic. Participants will also discuss student misconceptions, possible errors when completing the square, and how manipulatives can help students make sense of the process.

Erhan Haciomeroglu
University of Central Florida, Orlando

Heidi Eisenreich
Georgia Southern University, Statesboro

Aline Abassian
University of Central Florida, Orlando

Henry B. Gonzalez Convention Center, 304C

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**656 TLC**
**Geometry & Algebra: Easy Hands-On Math Activities and Games**

6–8 Workshop
Participants will learn easy, hands-on activities and games focused on coordinate geometry, algebraic expression of coordinates on lines, slope, perimeter, area, and volume. Participants will see real-life connections for geometry and algebra as well as their relationship to each other. Student samples and extensive handouts will be provided.

John Felling
Box Cars And One Eyed Jacks, Edmonton, Alberta, Canada

Henry B. Gonzalez Convention Center, 006C
9:45 A.M.–11:00 A.M.

657 BUILD
Does This Algorithm Make Me Look Fat? Addition and Subtraction in K–Grade 5
Coaches/Leaders/Teacher Educators’ Workshop
Teachers and students need a deep command of place value, properties of operations and the relationship between operations for success in common core. Participants will trace the path of addition and subtraction vertically from K to 5, building the standard algorithm using the continuum of concrete–pictorial–abstract.

Kari Fiutak
Kenmore Tonawanda UFSD, Buffalo, New York
Henry B. Gonzalez Convention Center, 304A

658 A&E
Effective Teaching Practices in Linguistically Diverse Classrooms
6–8 Workshop
During this workshop, participants will have the opportunity to experience examples of teaching practices in classrooms where multiple languages are spoken while keeping high expectations and high cognitive demand. Scenarios and videos of real classrooms will be posed as teaching challenges, and participants will discuss possible solutions.

M. Alejandro Sorto
Texas State University, San Marcos
Alexander Rasche
Texas State University, San Marcos
Brittany Webre
Texas State University, San Marcos
Henry B. Gonzalez Convention Center, 217C

659 TLC
Encouraging Productive Struggle Using “What-If-Not” Problems in Geometry Class
8–10 Workshop
High school geometry students are typically exposed to proofs of the Pythagorean theorem. In this session, we will use Brown and Walter’s “What-if-not” strategy for formulating new problems when the conditions of the Pythagorean theorem are not met, leading to deeper understanding of the original theorem.

Roger Wolbert
Edinboro University, Pennsylvania
Henry B. Gonzalez Convention Center, 217A

660 A&E
Families and Mathematics: Strategies for Learning from and with Students’ Families
3–5 Workshop
We share a series of family engagement sessions that featured examples of parents’ use of mathematics in their daily lives to launch into investigations of number conceptions and arithmetic operations. This bidirectional model that bridges parent assets and school mathematics helped to open discussions of learning with understanding.

Mayra Orozco
Price Elementary, Anaheim, California
Magaly Rodriguez
ACSD, Anaheim, California
Armando Martinez Cruz
California State University, Fullerton

Henry B. Gonzalez Convention Center, 006B

Visit the NCTM Bookstore and save 25% off the list price of all publications and specialty items.
9:45 A.M.–11:00 A.M.

661 BUILD
Making Numbers Make Sense in the Early Years
Pre-K–2 Workshop
The speaker will offer strategies, including the use of manipulatives, to help students build number sense, including: addition/subtraction skills, patterning, and the comparison of values (0–20) in the early years. Attendees will be actively engaged with “make and take” hands-on activities to utilize in their own class. Handouts will be provided.
Ellen Lauterbach
Marshall Cavendish Education, Tarrytown, New York

Henry B. Gonzalez Convention Center, 004

662 TECH
Old School Geometry
8–10 Workshop
Using straightedge and compass, both physically and electronically, we will “do” geometry. Euclidean geometry is frequently taught by textbook and by example. However, putting theorems and postulates into action by constructing, investigating, and theorizing place us in Euclid’s classroom.
John Ashurst
@kiltedcyclist
Harlan Independent Schools, Kentucky
Lindsay Gold
University of Dayton, Ohio
Derek Sturgill
Ohio University, Athens

Henry B. Gonzalez Convention Center, 007C

664 TLC
Reasoning about Algebraic Concepts: Designing Tasks to Provide Opportunities for All Students
8–10 Workshop
Participants will examine five algebra textbook problem sets and, based on the content, design tasks that provide access for all students, build on prior knowledge, and promote opportunities for students to reason and develop mathematical arguments. The presenters will support the participants in designing tasks and will share their created tasks.
Justin Boyle
University of Alabama, Tuscaloosa
Yi-Yin (Winnie) Ko
Indiana State University, Terre Haute

Henry B. Gonzalez Convention Center, 006A

665 BUILD
Statistics for the Redesigned SAT
10–12 Workshop
The redesigned SAT assesses an increased number of statistics standards; One and two variable analysis, probability, and inference must now find a way into high school math curriculum. This session outlines four, activity-driven statistics units that aim to cover all of the standards needed for students to be successful on the SAT.
Lindsey Gallas
@mrsngallasmth
Kentwood Public Schools, Michigan
Luke Wilcox
Kentwood Public Schools, Michigan

Henry B. Gonzalez Convention Center, 007B

663 BUILD
Pinecones + Beaver + Compass = Narnia? Nope, Math!
6–8 Workshop
Do you ever think about how you can use your schoolyard to help students better understand math? Experiential education uses the natural world to teach essential math concepts. Participants will work in small groups to explore model lessons, then will have time to reflect on how they may use experiential education strategies in their own classes.
Lindsey Grundfast
Quarrybrook Outdoor Learning Center, Windham, New Hampshire

Henry B. Gonzalez Convention Center, 007A
9:45 A.M.–11:00 A.M.

**666 A&E**
The Missing Parts of Understanding Fractions
3–5 Workshop
While CCSSM and other state standards call for understanding fractions as parts of wholes, as measures, and as numbers themselves, educators struggle to develop their students’ facility with fractions. Experience tasks that identify and build the underlying mental actions for making sense of fractions. Position your students for learning success.
Carolyn Olijnek
@COlijnek
US Math Recovery Council, Apple Valley, Minneapolis
Christina Miller
US Math Recovery Council, Apple Valley, Minneapolis

*Henry B. Gonzalez Convention Center, 305*

**667 M**
Together Is Better! Using the Modeling Cycle to Connect Secondary Math and Science
8–10 Workshop
Connecting math with science through modeling! Participants will be mathematicians as scientists. You will gather data, identify a pattern in the data, originate a mathematical model that is both descriptive and supports the underlying pattern, and defend claims and justify reasoning of the model. You will leave with materials to use in class.
David Leib
Wichita Public Schools, Kansas
Art Ballos
Wichita Public Schools, Kansas

*Henry B. Gonzalez Convention Center, 217B*

**668 TECH**
Using NCTM’s Core Math Tools to Deepen Mathematical Connections in Statistics and Functions
10–12 Workshop
NCTM’s Core Math Tools will be used to deepen and connect content knowledge between the CCSSM’s conceptual categories statistics and functions. Activities will focus around the use of simulation in statistics and model fitting with functions. Participants will explore three tasks, common misconceptions, and questions used to develop CCSSM standards.
Basil Conway
Jacksonville State University, Alabama

*Henry B. Gonzalez Convention Center, 006D*

**669 ASSESS**
Using Rubrics to Engage Students with the Mathematical Practices
6–8 Workshop
Assessment and feedback of math standards is an integral part of instruction. Equally important is creating a culture of active engagement of the math practice standards. In this workshop, you will engage in a rigorous math task as facilitators model how to give teacher feedback and allow for student self-monitoring with a math practices rubric.
Veronica Ernandes
Aspire Public Schools, Los Angeles, California
Geneva Europa
Aspire Public Schools, Oakland, California
Rebecca Horwitz
The Level Playing Field Institute, Oakland, California

*Henry B. Gonzalez Convention Center, 005*

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Be a speaker! Submit your proposal now for the 2018 Annual Meeting & Exposition at [NCTM.org/speak](http://NCTM.org/speak). Deadline is May 1.
9:45 A.M.—11:00 A.M.

670  TLC  What's Next? Building Communities In the Senior Math Class—Thinking Routines and Open Tasks
10:45 A.M.

There is lots of work done to create math communities for primary and intermediate math classes, but what happens in a senior math class? In this session, teachers will engage in extending open problems to promote rich math communities in a high school setting and consider how to use observational data gathered from students for assessment.

Velisa Anusic
@MathManAnusic
Peel District School Board, Toronto, Ontario, Canada

Henry B. Gonzalez Convention Center, 224

11:00 A.M.—12:00 P.M.

671  BUILD  Addition/Subtraction Number Talks: Building Conceptual Understanding and Computational Fluency
Pre-K–2 Session

We’ll share what a number talk is, how number talks can be implemented in K–3 classrooms, and how they have impacted students’ understanding and computational fluency, focusing primarily on addition and subtraction. Student work will be shared.

Esther Billings
Grand Valley State University, Allendale, Michigan
Kathryn Coffey
Grand Valley State University, Spring Lake, Michigan

Grand Hyatt San Antonio, Bowie ABC

672  TLC  Algebra in Middle School: Engaging and Preparing Diverse Students for the Challenge
6–8 Session

Girls and students of color often are not expected or given opportunities for highest-level math, but skipping topics leaves gaps. Explore ways to provide greater access for students to thrive in middle school algebra and beyond with an engaging, challenging compacted curriculum. Activities focus on coherent development of algebraic thinking across grades.

Linda Sheffield
Emerita, Northern Kentucky University, Fort Thomas

Henry B. Gonzalez Convention Center, Hemisfair 3

673  TLC  Between Mindset and Performance: Building the Skills and Habits of Good Math Learners
General Interest Session

A growth mindset, the belief that intelligence can grow, is critical for driving student effort in math. But belief alone is insufficient. Students need the skills and dispositions of effective math learners. This session digs into reinforcing growth mindset by specifically developing the strategies and behaviors that lead to improved performance.

David Dockterman
Harvard Graduate School of Education/Houghton Mifflin Harcourt, Carlisle, Massachusetts

Grand Hyatt San Antonio, Crockett AB

674  TLC  Constructions for Calculus: Meaningful Math Models
10–12 Session

Participants will construct 3-D models to illustrate basic concepts from Calculus AB and BC. Emphasis will be placed on the underlying calculus that supports the physical models. Suggestions for assessing and adapting the models to alternative topics will be discussed.

Kathy VanderBee
East Kentwood High School, Kentwood, Michigan
Barbara Montgomery
Kentwood Public Schools, Kentwood, Michigan

Grand Hyatt San Antonio, Lonestar Ballroom C
11:00 A.M.–12:00 P.M.

**675**  
**TLC**  
**Design and Refine: Constructing Tasks to Spark Student Curiosity**  
**General Interest Session**  
What happens after you start using 3-act tasks in class? You begin to see math everywhere. Move from ideas to implementation by identifying the elements and arrangement that is most likely to engage students. We will follow one task as it is reiterated in response to students. Leave with questions to guide the process as you create or modify tasks.

Molly Daley  
@mdaley15  
Educational Service District 112, Vancouver, Washington

Lindy Sims  
Evergreen Public Schools, Vancouver, Washington

Jaime Rosa  
Evergreen Public Schools, Vancouver, Washington  
Grand Hyatt San Antonio, Travis AB

**676**  
**A&E**  
**Empowering Digital Collaboration in 3 Acts**  
**General Interest Session**  
How do we foster collaboration where all voices are heard? Can the most unlikely contributors supply ideas, while the brightest seek those insights? Technology is useful in ensuring all students routinely contribute equitably and improve their own capacity to problem solve. We will explore digital tools for collaboration on complex 3-act problems.

Cory Henwood  
@coryhenwood  
Diamond Ranch Academy, Hurricane, Utah  
Grand Hyatt San Antonio, Presidio ABC

**677**  
**TECH**  
**Flipping Calculus: A High School Educator’s Experience**  
**10–12 Session**  
Participants can learn more about flipped learning while I share my experiences about completely flipping AP Calculus AB. I will explain how I structure my class, how I create my materials, and what students and I see as the benefits and drawbacks of this format. Experienced flippers are invited to share ideas based on participant discussion.

Sarah Volk  
Fargo Public Schools, North Dakota  
Henry B. Gonzalez Convention Center, 214C

**678**  
**BUILD**  
**Fractions, Ratios, and Proportions, Oh My!**  
**General Interest Session**  
Come examine connections between understanding fractions in elementary grades and ratios and proportions in middle school. Mathematical connections and flexible ways of thinking about fractions, ratios, and proportions will be emphasized. Tasks and classroom videos will be presented which can be applied to participants’ classrooms.

Taylar Wenzel  
@taylor_wenzel  
University of Central Florida, Orlando  
Janet Andreasen  
University of Central Florida, Orlando  
Edward Nolan  
Towson University, Maryland  
Grand Hyatt San Antonio, Presidio ABC
11:00 A.M.–12:00 P.M.

679  TLC
I Asked a Question—Now What?
6–8 Session
What our students know and don’t know is often left uncovered. Students today are required to construct viable arguments and critique the reasoning of others. In this session, strategies for uncovering student understanding through the use of academically productive discourse as well as tasks that allow for discourse are explored.

Genni Steele
Math Solutions, Sausalito, California
Mary Mitchell
Math Solutions, Sausalito, California

Henry B. Gonzalez Convention Center, 301

680  BUILD
Is Carrying a “9” Heavier Than Carrying a “1”? Saying What We Mean and Meaning What We Say
General Interest Session
Does “reducing” a fraction really make it smaller? Do we really ever intend to give back what we “borrow”? In this session, we will examine vocabulary and expressions that do not precisely represent the mathematics to which they refer and consider more precise language that can be used to express and justify our thinking.

Pamela Halpern
Salem State University, Massachusetts
Cara Goldberg
Lexington High School, Massachusetts

Grand Hyatt San Antonio, Republic ABC

681  TLC
Learning Cycles and Mathematical Practices in the Classroom Math Talk Community
3–5 Session
A nurturing math talk community has learning cycles that advance student thinking as students explain methods using their own math drawings. We will discuss such cycles and how they support differentiation but also learning by all. Participants will discuss how videos show the mathematical practices and coaching by students and teachers.

Karen Fuson
Consultant, Fallbrook, California
Robyn Decker
Consultant, Holland, Michigan

Grand Hyatt San Antonio, Lonestar Ballroom D

682  BUILD
Nurturing Early Algebraic Thinking in Pre-K through Grade 2
Pre-K–2 Session
This session offers practical methods for teaching algebraic thinking at the early childhood level. The presenters will share ideas and classroom-ready activities designed to help support pre-K–2 teachers in providing appropriate and challenging instruction to develop the algebraic thinking of students in early elementary classrooms.

Edel Reilly
Indiana University of Pennsylvania
Joann Migyanka
Indiana University of Pennsylvania

Henry B. Gonzalez Convention Center, 303

Use #NCTMannual to stay connected with other attendees on Twitter, Facebook, and Instagram.
Powerful, Accessible
STEM Tools

Orion TI-84 Plus Talking Graphing Calculator
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683 TECH
Projecting Student Success: Making Project-Based Learning Work in a Math Classroom
6–8 Session

While project-based learning is becoming more and more popular in schools across the country, many math teachers are being told "math is just different" and not given many resources or ideas on how to successfully implement project-based learning. This session will focus on one math teacher’s pursuit to bring PBLs to life in her math classroom.

Maida Russell
@MaidaRussell1
Springfield Public Schools, Missouri

Henry B. Gonzalez Convention Center, 217D

684 BUILD
Reaching Students from Middle School through College with a Conceptual Approach to Algebra
General Interest Session

Factoring, rational expressions, exponents, and other algebra topics have left many students who learned by procedural methods with knowledge gaps. We will show how conceptual learning can be used in middle school to college calculus classrooms to build strong fundamentals and improve student work. Hands-on and technology-supported methods will be shared.

Jessica Pfeil
Choate Rosemary Hall, Wallingford, Connecticut
Gillian Curran
Hamlin School, San Francisco, California

Grand Hyatt San Antonio, Lonestar Ballroom E

685 BUILD
Set Your Sights High: Teaching Arithmetic with an Algebra Lens
3–5 Session

Algebra readiness is a hot topic. This session supports teachers in developing ways of thinking that underlie both arithmetic and algebra. Experience how to engage your students in exploring the laws of arithmetic with numbers and representations. While focusing on core content, you can optimize students’ learning and and foster algebra readiness.

Amy Mayfield
Math Solutions, Sausalito, California
Lu Ann Weynand
Math Solutions, Sausalito, California

Grand Hyatt San Antonio, Texas Ballroom F

686 “M”
STEAM: Using Mathematics to Put the A in STEM
General Interest Session

Creativity is at the heart of innovation. In this session, we connect visual and performing arts standards with mathematics standards in K–6. The intention is to give access to all students, in particular those from low socio-economic backgrounds, English language learners, and students with special needs to academic achievement through arts integration.

Diane Kinch
TODOS: Mathematics for ALL, Claremont, California

Grand Hyatt San Antonio, Lonestar Ballroom F

687 BUILD
The Difference between a Number Talk and a Lesson
Pre-K–2 Session

The power of a number talk is that the student does the thinking instead of following the teacher’s thinking. How do we support children’s growth in computational proficiency without thinking for them?

Kathy Richardson
Math Perspectives Teacher Development Center, Bellingham, Washington

Henry B. Gonzalez Convention Center, 221
11:00 A.M.–12:00 P.M.

688 **TECH**

**Turn Up the Feedback**

*General Interest Session*

It’s not surprising that rich, focused, and timely feedback is a key component in student learning. We see that in research, in brain science, and especially in our classrooms. We’ll look at four applications—Google Forms, Classkick, Kahoot, and Evernote—but more importantly at four moments in the learning process that are enhanced by feedback.

**Bill Doherty**
Campolindo High School, Moraga, California

*Henry B. Gonzalez Convention Center, 205*

689 **A&E**

**Using the Concrete-Representational-Abstract Technique to Teach Algebra to Students Who Are Struggling**

*6–8 Session*

Participants attending this session will learn how to teach introductory algebra to struggling students by implementing the concrete-representational-abstract technique. Specifically, individuals will learn how to use manipulatives and hands-on activities for teaching algebraic expressions and solving equations at the concrete and pictorial level.

**Joseph Sencibaugh**
Webster University, Saint Louis, Missouri

**Brooke Callan**
Webster University, Saint Louis, Missouri

**Brennen Almus**
Webster University, Saint Louis, Missouri

*Henry B. Gonzalez Convention Center, 225*

11:30 A.M.–12:00 P.M.

690 **A&E**

**Assisting Struggling Learners in Problem Solving through Self-Regulation**

*Pre-K–2 Burst*

This presentation will discuss how the problem-solving performance and solution accuracy of first-grade students at risk for mathematical learning difficulties (MTSS/RTI Tier 2) increased after they learned to self-regulate during the problem-solving process using the metacognitive based I-THINK problem-solving framework.

**Jeremy Lynch**
Slippery Rock University, Pennsylvania

*Henry B. Gonzalez Convention Center, 004*

691 **TECH**

**Computational Thinking in School Mathematics: It’s Elementary!**

*3–5 Burst*

We will share three activities that connect computational thinking with elementary school mathematics, including the geometry of polygons, fractions, and number stories. We will show how using Scratch programming and “unplugged” activities will help engage students to work collaboratively and productively.

**George Reese**
@mstegeorge
MSTE at University of Illinois, Champaign

**Carla Strickland**
UChicago CEMSE, Chicago, Illinois

**Wendy Maa**
Kenwood Elementary School, Champaign, Illinois

*Henry B. Gonzalez Convention Center, 006D*
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 meetings.nctm.org.
11:30 A.M.–12:00 P.M.

696 PROF Learning to Teach Mathematical Argumentation through Successive Approximations of Practice Coaches/Leaders/Teacher Educators’ Burst Teachers need support in helping students “construct viable arguments and critique the reasoning of others.” Several studies discuss the importance of teachers having professional development experiences proximal to new practices. We’ll share our work in the NSF-funded Bridging project and activities that simulate argumentation teaching practices.
Jennifer Knudsen
SRI Education, Austin, Texas
Harriette Stevens
Mathematics Education Group, San Francisco, California
Teresa Lara-Meloy
SRI International, Menlo Park, California

Henry B. Gonzalez Convention Center, 007A

697 “M” Logarithmic Earthquake Project: An Algebra 2 Project with Real Applications 10–12 Burst We will discuss the ins and outs of a project on earthquakes that ties into the logarithms unit of algebra 2 as well as on issues facing society today. We’ll show examples of student work and how to differentiate the project. Attendees will walk away from the session with a shared Google folder with all materials needed to implement the project.
Tanisha Fitzgerald-Williams
Notre Dame High School, San Jose, California
Beverly Heigre
Notre Dame High School, San Jose, California

Henry B. Gonzalez Convention Center, 217B

698 TLC Notecards Rule! Linking Length and Number Sense 3–5 Burst Can a 4-by-6 notecard be used to create all the lengths on a ruler? Help your students compose and decompose numbers while examining relationships evident on a simple rectangular notecard. Problem-solving, reasoning, and explanation are abundant in this hands-on, minds-on activity that can be engaging for students of many levels and abilities.
Bob Mann
Western Illinois University, Macomb
Anita Reid
Lewistown High School, Lewistown, Illinois

Henry B. Gonzalez Convention Center, 304A

699 TECH Online Technology Training for K–16 Math Teachers Coaches/Leaders/Teacher Educators’ Burst Discover how a learning-by-design approach with self-selected technologies (GeoGebra, TinkerPlots, Virtual Manipulatives, Applets, Calculators, SketchUp, Scratch, etc.) supports teachers as they create, peer review, implement, and reflect on technology-integrated lessons. Learn about which technology frameworks teachers prefer.
Kathryn Shafer
Ball State University, Muncie, Indiana

Henry B. Gonzalez Convention Center, 007C

700 TLC Purposeful Planning Leads to Productive Discourse General Interest Burst This session will explore and expand upon “The Five Practices for Orchestrating Productive Discussions.” Participants will learn simple planning techniques that will enable them to better facilitate mathematical discussions, minimize in-the-moment teaching decisions, and maintain a student-focus while also ensuring the learning goals are achieved.
Jessica de la Cruz
Assumption College, Worcester, Massachusetts

Henry B. Gonzalez Convention Center, 224
11:30 A.M.–12:00 P.M.

701 **TLC**
The First 10 Minutes Sets the Stage
6–8 Burst
Join us as we share how we get students engaged in the first few minutes of class. Each day of the week we focus on different skills to improve number sense, generalize patterns, use appropriate math vocabulary, and reflect on student learning. Leave with new ideas and a great format for setting the stage for a successful class period.

Elizabeth Warren  
Estacada Middle School, Oregon
Sally Wood  
Estacada Middle School, Oregon

Henry B. Gonzalez Convention Center, 304B

702 **BUILD**
The Progression of the Number Bond
3–5 Burst
Number bonds are models used to show part-part-whole relationships and can be used from K–5 as students manipulate whole numbers and decimal fractions. Having a familiar model as students move through the grades will help them conceptually understand the part-part-whole relationship as they work with increasingly complex math problems.

Soo Jin Lu  
Great Minds, Washington, D.C.

Henry B. Gonzalez Convention Center, 006B

703 **PROF**
Thinking Outside the Lunchbox: Starting with a Book Study
Coaches/Leaders/Teacher Educators’ Burst
Have you ever wanted to do a book study in your school or district, but struggled to answer: Who? When? How? Join us to learn about our first year providing a voluntary book study of *Principles to Actions* in two middle and two high schools. We will discuss grants, resources, lessons learned, and action plans to move each building (and you) forward!

Diona Cozzolino  
@dccozzolino  
Madison City Schools, Alabama
Sarah Roller  
University of Alabama in Huntsville

Henry B. Gonzalez Convention Center, 302AB

704 **BUILD**
A Fruity Investigation Featuring Data and Measurement
3–5 Burst
This presentation illustrates how produce from a school garden can engage grades 3–5 students in attending to precision and modeling while learning content about measurement and data. The instruction responds to *Principles to Actions* by connecting mathematics to the real world and incorporating other disciplines; in this instance, science.

Hannah Rae Stone  
West Virginia University, Morgantown
Jim Rye  
West Virginia University, Morgantown

Henry B. Gonzalez Convention Center, 214D
11:30 A.M.–12:00 P.M.

**705 BUILD**

Twelve Creative Activities for the Middle School Math Teacher

6–8 Burst

This session will focus on sharing twelve instructional strategies and activities that teachers can immediately implement in their classrooms. The strategies will include templates and lesson plans of hands-on activities that help students build strong, conceptual understandings of course content.

**Eric Shippee**
College of William and Mary, Williamsburg, Virginia

**Marguerite Mason**
College of William and Mary, Williamsburg, Virginia

**Samuel Rhodes**
College of William and Mary, Williamsburg, Virginia

Henry B. Gonzalez Convention Center, 006A

**706 BUILD**

Using Number Talks to Transform Instructional Practice

3–5 Burst

Participants will practice number talks as students. Experiences of the presenter using number talks to transform teaching practices will be shared.

**Brandon Banes**
Lipscomb University, Nashville, Tennessee

Henry B. Gonzalez Convention Center, 217A

12:30 P.M.–1:30 P.M.

**708 PROF**

Virtual Growth: Building Capacity with Bug-in-the-Ear

General Interest Burst

Explore an alternative approach to attending professional developments, observing classrooms, and providing feedback through a virtual environment. Discuss how Skype and Facetime can enhance teacher development and strengthen knowledge of content and students during real-time instruction.

**Vernita Glenn-White**
Stetson University, Deland, Florida

Henry B. Gonzalez Convention Center, 304C

**708 Closing Keynote**

From Fermat’s Last Theorem to Homer’s Last Theorem

General Interest Session

Best-selling British author Simon Singh discusses his books and how they can be used in the classroom to inspire students. He will cover *Fermat’s Enigma* (the first book about mathematics to become a No. 1 bestseller in the U.K.), *The Code Book* (a history of cryptography), and *The Simpsons and Their Mathematical Secrets* (an examination of the mind-blowing mathematics hidden in the world’s most successful TV show).

**Simon Singh** is a science writer and broadcaster based in London. His books include *Fermat’s Enigma, The Code Book, Big Bang: The Origin of the Universe, Trick or Treatment?,* and *The Simpsons and Their Mathematical Secrets.* His BBC documentary about *Fermat’s Last Theorem* won a BAFTA award and an Emmy nomination. In 2003, for services to science education, Queen Elizabeth awarded him an MBE (member of the Most Excellent Order of the British Empire), which means that he has to go to bed wearing a suit of armor. (The bit about the armor is not actually true.)

**Simon Singh**
Science Writer, United Kingdom

Henry B. Gonzalez Convention Center, Stars at Night 2&3
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Whether you’re a teacher, a coach, a department chair, or a school or district administrator, Developing Mathematical Ideas (DMI) will enable you to deliver rich and rewarding seminars to support teacher understanding and student learning.

**NEW** | Number and Operations, Part 1: Building a System of Tens: Calculating with Whole Numbers and Decimals
BY DEBORAH SCHIFTER, VIRGINIA BASTABLE, AND SUSAN JO RUSSELL

The first module in the seven-part DMI Series, this title engages participants in a collaborative learning experience. The thirty cases provide the basis of each session’s investigation of specific mathematical concepts and teaching strategies.

The online facilitator’s package contains everything necessary to prepare for and lead the seminar, including access to the casebook content and classroom videos.

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Casebook
Stock #15032  List Price: $50.95 / Member Price: $40.36

**COMING SOON** | Number and Operations, Part 2: Making Meaning for Operations: In the Domains of Whole Numbers and Fractions
BY DEBORAH SCHIFTER, VIRGINIA BASTABLE, AND SUSAN JO RUSSELL

In this second module of the seven-part DMI Series, participants examine the action and situations modeled by the four basic operations. The seminar begins with a view of young children’s counting strategies as they encounter word problems, moves to an examination of the four basic operations on whole numbers, and revisits the operations in the context of rational numbers.

The online facilitator’s package contains everything necessary to help coaches, university teacher educators, or those who are teachers themselves prepare for and lead the seminar successfully with participants who enter with a range of prior knowledge and experience.

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The DMI series emerged from decades of work in mathematics teacher professional development on the part of its creators, and continues to renew itself and remain relevant in this new online version by incorporating its connections to the Common Core State Standards for Mathematics, revising content on the basis of the observations and insights from the field, and keeping up to date with the latest research.
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 meetings.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.
- Become familiar with the layout of the Henry B. Gonzalez Convention Center and the Grand Hyatt by reviewing the floor plans on pages 199–205.
- Check for updates, and for full or cancelled sessions, through the conference app or program updates screens located in the lobbies of the convention center and the Grand Hyatt.
- Attend the Mathematics Education Trust Celebración Reception on Wednesday evening after the Opening Session to toast the 2017 NCTM Lifetime Achievement Award recipients, and mingle with mentors, colleagues, and friends (tickets can be purchased through registration; limited supply).
- Don’t miss ShadowCon at 5:00 p.m. on Thursday, April 6. As it has become more and more popular, over the past three years we’ve made it part of the NCTM Annual Meeting experience.
- Check out the Reflection Coves, where highlighted and invited speakers will continue the conversation from their sessions in a more informal setting. You must be present at their sessions to receive information about the speakers’ locations. Board members, Affiliate Relations Committee members, and the President and Immediate Past President will also spend time in the coves discussing topics of interest with attendees. There will also be three Math Teachers’ Circle coves, one for K–5 mathematics one for 6–8 mathematics, and another for 9–12 mathematics.
- Visit us in NCTM Central at the Exhibit Hall entryway. Join the community of educators exploring the many NCTM resources designed 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 Mathematics Education Trust desk, where you can inquire about grant, scholarship, or award funding available to you; the NCTM 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 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, along with NCTM editors and authors.
- Visit the Exhibit Hall, where more than 200 exhibitors will share the latest educational products.
- Stop by the City Information Desk in the registration area of the Exhibit Hall for information on Alamo City.
- Stay connected with other Annual Meeting attendees by using #NCTMannual on Twitter, Facebook, and Instagram.
- If you are attending the conference with colleagues, attend different presentations and share your learned knowledge after the conference.
- Be sure to silence cell phones during presentations.
- The more you participate in the presentations, the more you will get from the conference.
- Be safe! Remove your name badge when you leave the conference facilities at the end of the day.
- Tell us about your conference experience by responding to the post-conference online survey.

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 3–5, at the Henry B. Gonzalez Convention Center. The Research Conference Registration Area will be located on the second-floor Park View lobby. 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 #NCTMrc 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, with 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.
Technology at Your Fingertips

Wi-Fi Access

The Henry B. Gonzalez Convention Center and the Grand Hyatt hotel offer complimentary wireless throughout the lobby areas.

Conference App

The NCTM conference app, available on Apple and Android mobile devices, as well as a mobile Web 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 Twitter 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.

Program Updates

Check online for a digital copy of the program updates including all of the latest changes, cancellations, and additions!

Registration and Access to Presentations

Registration will be located in the Henry B. Gonzalez Convention Center Exhibit Hall 3/4. You must wear your badge to enter all presentations and the NCTM Exhibit Hall. You will need to show a picture ID to have your badge reprinted.

By registering for the NCTM 2017 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.

NCTM Central

Make your meeting experience complete with a visit to NCTM Central in Exhibit Hall 3/4 of the Henry B. Gonzalez Convention Center during exhibit hours.

Learn how NCTM supports you and the field of 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 Problems of the Week, Ask Dr. Math®, T2T®, Powerful Problem Solving and more.
- Experience NCTM’s Classroom Resource Collaboration Center and learn how you can help us gather, connect, and organize high-quality resources with teacher support based on real teachers’ experience.
- Connect with peers, social media, speakers, NCTM journal editors and authors in the Networking Lounge. A presentation schedule is available on the conference app.
- The Math Forum and NCTM host the Math Corner, a place to spend 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!

Your Opinion Counts

Thank you for attending the NCTM 2017 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.
Bookstore

Save 25% off the list price on all purchases made at the on-site NCTM Bookstore, located in Exhibit Hall 3/4 of the Henry B. Gonzalez Convention Center. 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 Texas 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, or cash in conjunction with tax exemption certificates.

The NCTM Bookstore is not equipped to handle shipping from the meeting site. A UPS Business Office, located at the front entrance of the Henry B. Gonzalez Convention Center, is ready to assist you with your shipping needs.

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 Henry B. Gonzalez Convention Center. Hotels that are within walking distance of the convention center will not have shuttle service. Note: There will be late night shuttle service Wednesday, April 5, to accommodate attendees of the Mathematics Education Trust Celebración Reception. Routes and schedules will be posted in your hotel lobby and can be found online at www.nctm.org/annualhousing. The schedule will be followed as closely as possible. If you have questions, please visit the shuttle desk located at the entrance to the Henry B. Gonzalez Convention Center.

Information Booth

There will be an NCTM Information Booth at the Henry B. Gonzalez Convention Center. It will be located outside of the NCTM Exhibit Hall 3/4 in the main lobby. Convention staff will be available to answer your questions.

Lost-and-Found

You may retrieve or turn in lost-and-found items at the NCTM Information Booth in the Convention Center. At the end of the conference, all lost-and-found items will be turned over to Convention Center Security.

Nursing Mother’s Room

Please inquire at the NCTM Information Booth in the main lobby of the Convention Center.

Restaurant Reservations

Explore the fabulous restaurants of San Antonio. Stop by the City Information Desk located in the registration area of the Exhibit Hall at the 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 registration area of the NCTM Exhibit Hall 3/4 of the Convention 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 Convention Center in the NCTM Exhibit Hall 3/4 during the conference. If you need medical services while in San Antonio, 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 2017 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 in the NCTM Exhibit Hall 3/4 at the Henry B. Gonzalez Convention Center.
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 Noon. Check out the map of the Exhibit Hall on pages 210–211 and the Exhibitor Directory on pages 212–224.

Exhibitor Workshops

Do you want more in-depth and personal interaction with exhibitors? Plan to attend the Exhibitor Workshops. These workshops offer a wide variety of topics with exhibitors showcasing their products and services. See the program for Exhibitor Workshop offerings, indicated by CW after the presentation number. New this year—some of the workshops will take place in the NCTM Exhibitor Workshop Theater in the Exhibit Hall.

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Once you have joined NCTM, membership in an NCTM Affiliate is a terrific way to round out your professional involvement. Affiliates offer you an opportunity to link with teachers in your state, region, or city for support, professional development opportunities, community outreach, political advocacy, and information sharing. The host Affiliates for the NCTM 2017 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 website at www.nctm.org.

**Affiliate Information**

**Alamo District Council of Teachers of Mathematics and Texas Council of Teachers of Mathematics**  
Linda Gann, llgann8@gmail.com

**Affiliates-at-Large**

**Adult Numeracy Network**  
Pam Meader, mdr151@aol.com

**Association of Mathematics Teacher Educators**  
Megan Burton, megan.burton@auburn.edu

**Association of State Supervisors of Mathematics**  
Charles Watson, chaswatson@sbcglobal.net

**Benjamin Banneker Association, Inc.**  
Claude Stuart, stuaent@aol.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**  
Tod Shockey, todshockey@gmail.com

**TODOS: Mathematics for ALL**  
Bob McDonald, mac@todos-math.org

**Women and Mathematics Education**  
Andria Disney, andriadisney@live.com

**About the Host Affiliates**

The **Alamo District Council of Teacher of Mathematics (ADCTM)** is an organization of mathematics teachers, supervisors, administrators, and students from San Antonio and surrounding areas. This organization provides opportunities for educators to advance their teaching of mathematics by providing professional growth opportunities, collaboration with other mathematics educators, and opportunities to contribute back to mathematics education. Building students’ understanding of and confidence in mathematics is at the core of our mission. We believe that all students can learn mathematics through meaningful and cognitively engaging instruction.

The **Texas Council of Mathematics (TCTM)** is a professional organization that encourages an active interest in mathematics. TCTM publishes a journal called *Texas Mathematics Teacher*. Through *Texas Mathematics Teacher* and the annual Conference for the Advancement of Mathematics Teaching (CAMT), educators have the opportunity to study and increase their knowledge of effective teaching practices in mathematics. We are 5,000+ teachers, administrators, and teacher-educators from Texas who are committed to improving teaching and learning in mathematics. TCTM’s mission is focused in five areas: recruit and retain mathematics teachers, support curriculum and instruction, advocate education policy, communicate with teachers and serve as the Texas partner affiliate to the National Council of Teachers of Mathematics (NCTM).
Henry B. Gonzalez Convention Center

OVERVIEW—CONVENTION CENTER LEVELS

Ballroom
Stars at Night Ballroom
HemisFair Ballroom
Meeting Rooms 301-305

Meeting Level
Meeting Rooms 205-225

Street Level
Exhibit Halls 1-4B
Bridge Hall
Lila Cockrell Theatre
Main Lobby/Business Center
West Lobby

River Level
Meeting Rooms 004-008
The LDR
Grotto

LEGEND
- Exhibit Halls
- Meeting Rooms
- Ballrooms
- Prefunction
- Restrooms
- Food Service
- Vertical Circulation

MARKET STREET
BALLROOM LEVEL

Hemisfair Ballroom
- 39,576 sq ft
- Rooms: 1, 2, 3, 4
- 13,895, 12,493, 13,837, 17,177 sq ft

Stars at Night Ballroom
- 54,717 sq ft
- Rooms: 1, 2, 3, 4
- 17,742, 19,420, 17,177 sq ft

Reflection Cove 1
Reflection Cove 2
Reflection Cove 3

NOTES

Reflection Cove 1
Reflection Cove 2
Reflection Cove 3
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Host Affiliates Liaison

Linda Gann, Alamo District Council of Teachers of Mathematics
and Texas Council of Teachers of Mathematics

The National Council of Teachers of Mathematics is the public voice of mathematics education, supporting teachers to ensure equitable mathematics learning of the highest quality for all students through vision, leadership, professional development, and research. With nearly 80,000 members and more than 200 Affiliates, NCTM is the world’s largest organization dedicated to improving mathematics education in prekindergarten through grade 12. The Council’s Principles and Standards for School Mathematics includes guidelines for excellence in mathematics education and issues a call for all students to engage in more challenging mathematics. NCTM is dedicated to ongoing dialogue and constructive discussion with all stakeholders about what is best for our nation’s students.

To learn more about NCTM products or services, including membership benefits and opportunities, visit www.nctm.org, e-mail nctm@nctm.org, or call (800) 235-7566.
This certificate is presented to

in recognition of attendance and participation at the

NCTM 2017 Annual Meeting & Exposition

San Antonio, Texas • April 5-8, 2017

Matthew Larson
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 700 presentations are offered for teachers of prekindergarten through college. Topics range from administration to geometry, precalculus to statistics.

*Note: PD time earned should be the time actually spent in sessions and/or workshops.*

<table>
<thead>
<tr>
<th>Date</th>
<th>Session #</th>
<th>Session Title</th>
<th>Presenter Name(s)</th>
<th>Start/End Time</th>
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TOTAL Professional Development Hours Accrued: ____________________________________________

*I certify that the above-named educator accrued the indicated number of professional development hours.*

Ken Krehbiel  
Acting Executive Director, NCTM

Matt Larson  
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.
# MTBoS: Math Twitter Blogosphere

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Salem, Massachusetts
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ExploreMTBoS.wordpress.com

The MTBoS is an informal network of math teachers who have found community online through Twitter and blogs. We’ve built resources, curricula, webinars, and have co-authored books. 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!

**A**

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mathathon.org

The St. Jude Math-A-Thon® is a free, education-based fundraising program benefiting St. Jude Children’s Research Hospital®. The program includes a free math curriculum supplement and sponsorship materials for K–grade 8. Families never receive a bill from St. Jude for treatment, travel, housing, and food—because all a family should worry about is helping their child live. Do the math, and help save lives with the St. Jude Math-A-Thon. Visit us at booth 820.

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**American Statistical Association**
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Alexandria, Virginia
703-684-1221
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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Amplify is reimagining the way teachers teach and students learn. Our products and services lead the way in data-driven instruction, one-to-one mobile learning and next-generation digital curriculum and assessment. Amplify has provided innovative technology to the K–12 market for more than a decade.

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Ascend Math is intensive math intervention that provides a unique study path for each student beginning at each student’s functional grade level; delivers a unique study path through each student’s individual skill gaps at every grade level; provides a unique study path for each student reaching below grade level and continuing through skill gaps at each level; and provides an individual study plan for each student reaching below grade level with a unique path through skill gaps at each level.

**B**

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Founded in 1973, the Bach Company has over 40 years of experience in serving the education community and is one of the largest educational dealers in the United States. Our pricing and service can not be beat! Product lines include Texas Instruments, Casio, HP, Sharp, Stokes Publishing, Top Rhino, Vernier, Duracell, Energizer, Sony, Kryptonite, and MasterLock. Send us your requests for bid pricing. We will not be undersold!

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Bedford, Freeman & Worth (BFW) Publishers is the most trusted source for innovative print and digital high school mathematics textbooks and teacher resources. We publish the best-selling book, The Practice of Statistics, now in its 5th edition, for AP Statistics and Rogawski’s Calculus for AP for the AP Calculus course. Please stop by booth 1108 to receive more information on these programs.

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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 K–grade 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!
Benjamin Banneker Association, Inc.

Booth 650
Orlando, FL
941-356-0726
bannekermath.org

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

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877-552-3766
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 #525 to learn more!

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800-993-6284
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.

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C

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https://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.

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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.

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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 us at www.casioeducation.com.

Catherine Fosnot & Associates: New Perspectives

Booth 1326
New London, Connecticut
917-523-2175
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. NewPerspectivesOnLearning.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.

Catnip’s Word Walls

Booth 229
San Antonio, Texas
210-289-5541
catnipswordwalls.com

Our word walls were created by a teacher with students in mind. Everything is hand drawn and extremely colorful, which makes them unique and eye catching! Each page has the word, definition, and a graphic/example. They could be considered mini anchor charts. Our word walls are as comprehensive as possible, while adhering to our state and national standards (Common Core and TEKS). They are the perfect addition to any math classroom, and support instruction through correct vocabulary.

Center for Mathematics and Teaching, Inc.

Booth 811
Sherman Oaks, California
310-310-4948
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.

Claire Lynn Designs

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Midlothian, Texas
972-723-2251
clairelynn.com

College Board, The

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New York, New York
212-713-8331
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.
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!

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CPM Educational Program
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916-638-1145
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 © 2013 is 100% aligned with CCSS content and practices. High school books offer both traditional and integrated pathways.

CueThink
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North Reading, Massachusetts
781-640-0526
cuetthink.com

CueThink is a tablet and web application for grades 2–12 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.

Curriculum Associates
Booth 909
North Billerica, MA
978-313-1269
CurriculumAssociates.com

Founded in 1969, Curriculum Associates, LLC designs research-based print and online instructional materials, screens and assessments, and data management tools. The company’s products and outstanding customer service provide teachers and administrators with the resources necessary for teaching diverse student populations and fostering learning for all students. Learn more at www.curriculumassociates.com.

D

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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.

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Booth 935
Rowley, Massachusetts
978-997-4385
didax.com

Didax publishes supplemental resources for 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.

Dinah.com
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210-698-0123
dinah.com

Dinah.com is the new name for the educational 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 PK to grade 12 in all subjects. She offers professional development for educators at the Dinah Zike Academy, a unique trainer of trainers facility in Comfort, Texas.

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There is nothing more magical than inspiring a child to follow their passions, fulfill their dreams and celebrate their accomplishments. At Disney Parks, our collection of standards-based, accredited field studies and educational seminars invite students to feel physics in action on thrilling attractions, team up to solve conservation challenges, explore new ways of thinking with Walt Disney Imagining, and much more! Put the magic of Disney storytelling to work in your lesson plans this year.

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215-895-1276
drexel.edu/soe

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hand2mind.com

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Eureka Math
Booth 731
Washington, D.C.
202-223-1854
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 nonprofit, 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.

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GraphLock is an application that gives the full functionality of a scientific and graphing calculator. GraphLock is designed to be used in testing environments due to its unique Lockdown feature that disables all phone functions (calls, texts, notifications) and turns the user’s phone solely into a calculator. GraphLock can also be used in non-lockdown mode where the user’s phone will function normally. With GraphLock, users will never have to carry around a calculator again!

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graphlock.com

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San Clemente, California
949-545-6374
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Kendo Hunt Publishing Company
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Dubuque, Iowa
563-589-1075
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LearnZillion provides school districts with a 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.

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mceducation.us

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MathForAmerica.org

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San Jose, California
408-350-2088
mathteacherscircle.org

Math Teachers’ Circles are professional communities of K–12 mathematics teachers and mathematicians. Groups meet regularly to work on interesting 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.
Our line of products: Provides pre–K–12 formative assessment and conceptual instruction using concrete manipulatives with research-based strategies and proven results. Includes the four essential elements of RTI: screening, decision making, explicit instruction, and progress monitoring. Instruction integrates the Concrete-Representational-Abstract (CRA) pedagogy with scripted lesson plans providing embedded PD. Objectives are correlated to state and national standards. Proven achievement gains. Optional web-based technologies.

**Mathatical**
Booth 739
Austin, Texas
530-420-5474
mathatical.com

61 percent 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. Mathatical offers engaging real-world lessons and projects aligned to Common Core State Standards for middle and high school. Lessons promote the CCSSM by providing opportunities for students to think critically and creatively, develop arguments, and critique the reasoning of others.

**MATHCOUNTS Foundation**
Booth 1236
Alexandria, Virginia
703-299-9006
mathcounts.org

MATHCOUNTS provides fun and challenging programs for sixth-, seventh-, and eighth-grade students. Through three programs—the MATHCOUNTS Competition Series, the National Math Club, and the Math Video Challenge—we strive to foster talent, curiosity, and a love of math in all students. We also provide free resources to educators, such as the School Handbook, with 300 problems aligned to Common Core standards. There are many paths to success in math; stop by to learn how we can help your students discover theirs.

**MathElf**
Booth 445
San Francisco, CA
216-318-3092
mathelf.com

MathElf offers a great iOS app that pairs students with tutors for a real-time tutoring experience. This is a great option for students looking for a bit of help as well as for teachers looking for additional income while helping dedicated students.

**MathLine at Howbrite Solutions**
Booth 533
Cokato, Minnesota
320-286-2597
howbrite.com

MathLine is a blended learning strategy offering a multisensory 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.

**Mathseeds**
Booth 627
New York, New York
917-338-4190
mathseeds.com

From the creators of Reading Eggs, Mathseeds teaches students in K–2 the core math and problem-solving skills needed to be successful at school with fun, highly interactive, and rewarding lessons. Mathseeds combines highly structured lessons with fun motivational elements that keep children engaged and keen to learn. Track your students progress against state standards and international numeracy standards. Reading Eggs is in 5,000 schools in the U.S. and 15,000 schools globally.

**Mathspace**
Booth 724
New York, New York
718-510-2582
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! 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!

**McGraw-Hill Education**
Booth 201
Columbus, Ohio
614-430-4482
mheducation.com

McGraw-Hill Education is the digital learning experiences company intent on changing the world of education. Drawing on its rich 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 it makes its learning solutions available in more than 60 languages.

Mentoring Minds
Booth 1037
Tyler, Texas
800-585-5258
mentoringminds.com

Founded more than a decade ago, Mentoring Minds, the Critical Thinking for Life Company, develops affordable, effective learning tools that give students the skills to succeed, not just in the classroom, but in life. Experienced educators create K–12 print and online resources that integrate best practices for instruction, assessment, and learning for students across the nation. For more information about Mentoring Minds and its educational resources, call 800-585-5258 or visit mentoringminds.com.

**Michigan State University**
Booth 535
East Lansing, Michigan
734-552-7234
prime.mt.su.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!

**MIND Research Institute**
Booth 808
Irvine, California
888-751-5443
mindresearch.org

MIND Research Institute is a neuroscience and education nonprofit that applies its distinctive visual approach to the development of math instructional software. MIND helps local schools create a blended learning environment to create a culture of critical thinkers for the next generation of STEM leaders. MIND’s ST Math® programs reach 800,000 students and 31,000 teachers in 2,500 schools in 40 states. For more information, visit www.mindresearch.org.

**Minibab Inc.**
Booth 432
State College, Pennsylvania
800-448-3555
minibab.com

Minibab® 17 is the leading software for statistics education worldwide, and it can be purchased via affordable semester rentals. Minibab is easy to use, with a comprehensive set of tools and powerful graphics capabilities that let you create stunning and informative graphs that bring data to life. Minibab integrates into curriculums seamlessly and affordably and is the package of choice at more than 4,000 colleges and universities. Visit www.minibab.com/academic.
Nasco
Booth 214
Fort Atkinson, Wisconsin
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 today’s rigorous standards and target STEM initiatives that engage 21st-century learning. We are skilled at creating cost-effective, customized kits to meet your classroom needs.

NASGEm: North American Study Group on Ethnomathematics
Booth 647
Estes Park, Colorado
970-371-0167

National Assessment of Educational Progress (NAEP)
Booth 1321
Washington, D.C.
202-842-3600
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 Council of Supervisors of Mathematics (NCSM)
Booth 645
Denver, Colorado
720-250-9582
mathedleadership.org

NCSM is a mathematics leadership organization for educational leaders that provides professional learning opportunities necessary to support and sustain improved student achievement. NCSM envisions a professional and diverse learning community of educational leaders that ensures every student in every classroom has access to effective mathematics teachers, relevant curricula, culturally responsive pedagogy, and current technology.

National Geographic Learning / Cengage Learning
Booth 543
Jacksonville, Florida
904-374-5588
ngl.cengage.com/

National Geographic Learning, a part of Cengage Learning, is a leading educational publisher of school, higher education, English Language Teaching, library and reference materials. At National Geographic Learning, we believe that an engaged and motivated learner will be a successful one, and we design our materials to motivate. We believe that learning can be exciting, inspiring, and transformational.

National Science Foundation
Booth 1336
Arlington, VA

NewPath Learning
Booth 538
Victor, New York
585-742-0164
newpathlearning.com

NewPath’s curriculum mastery games, flip charts, interactive whiteboard software, and visual learning guides provide comprehensive coverage of the Common Core and current state standards for EC–Grade 12 math, science, ELA, and social studies. The company also offers an Online Learning Program with ready-to-use lessons and tools/templates to develop and deliver custom lessons.

NextLesson
Booth 332
San Francisco, California
415-968-9655
nextlesson.org

NextLesson connects learning to the real world. We offer 10,000 applied learning resources that engage K–12 students through topics they love, such as books, movies, sports, and technology, and apply skills and knowledge 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!

Open Up Resources
Booth 1118
Menlo Park, California
347-967-6577
openupresources.org

Open Up Resources is a nonprofit developing the highest quality full-course curricula available to districts, provided for free to promote instructional equity. We partner with the country’s foremost materials experts to develop superb curriculum and deliver essential implementation support, from professional development to printing. Our mission is to provide students and educators with equal access to rigorous, standards-aligned core programs.

Origo Education
Booth 209
Earth City, Missouri
314-475-3061
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 & students. Our diverse selection of products bring a renewed enthusiasm to students’ learning experiences.

Overseas Placement Service for Educators
Booth 1234
Cedar Falls, Iowa
319-273-2083
uni.edu/placement/overseas

Offering services since 1976, the University of Northern Iowa Overseas Placement Service for Educators, a program of UNI Career Services, connects international K–12 schools with certified educators year-round. Services offered include the UNI Overseas Recruiting Fair, credential and referral services, and related publications. UNI is home to the original international fair for educators. Math teachers are in great demand! Stop by for a list of schools/countries participating!

Pear Deck
Booth 946
Iowa City, Iowa
peardeck.com

Founded by educators for educators, Pear Deck gives teachers and trainers superpowers to engage and assess every student in every row across all subjects in real-time. Pear Deck produces an interactive and community-focused classroom delivered through an innovative, real-time, Google-based app with unlimited storage. Import existing PDFs and Google Slides, start from scratch, or choose from a selection of pre-made sample decks. Start seeing 100% student engagement!

Pearson
Booth 725
Chandler, Arizona
480-316-0210
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.
These future CFOs started at 25¢ a cup.

Visit us at booth #201!

So many great futures start with success in math. So when students do well in math, they’re better preparing themselves for fulfilling and meaningful careers.

To learn more, visit mheducation.com/K12Math
For over 85 years, Perfection Learning has been a leader in reading, literature, and language arts 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; and programs for English Language Learners.

**PhET Interactive Simulations**

**Booth 1035**

Boulder, Colorado 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.

**Prodigy Math Game**

**Booth 942**

Burlington, Ontario, Canada 866-585-4655 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.

**Qinghua-Sempco**

**Booth 813**

Nashua, NH 603-889-1830 sempcoinc.com

SEMPCO, INC. has been working in curriculum development and product manufacturing for over 30 years. We create science and mathematics manipulative for schools and distributors throughout the country. Over the years, we have manufactured equipment and supplies for many different projects including major NSF (National Science Foundation) funded programs. We have also created a variety of custom and textbook specific curriculum kits as well as our own Investigations in Math Modules (IMM).

**R**

**Reasoning Mind**

**Booth 818**

Houston, Texas 832-255-2932 reasoningmind.org

Reasoning Mind is a nonprofit organization dedicated to helping provide a first-rate math education for every child. Come visit us and find out more about how our blended, adaptive learning programs and professional development opportunities can help your elementary students reach their academic potential.

**Renaissance Learning**

**Booth 1114**

Wisconsin Rapids, Wisconsin 715-424-3636 renaissance.com

Daily and periodic progress-monitoring assessments provide teachers with vital information about each student’s math-skills development by combining Renaissance Learning™ software, such as Accelerated Math™, Accelerated Math Fluency™, and STAR Math™, and classroom-proven best practices. The result: dramatically improved math skills for grades 1–12 students.

**S**

**Sadlier**

**Booth 1235**

New York, New York 800-221-5175 www.sadlier.com/school

**Saltire Software**

**Booth 847**

Tigard, Oregon 503-968-6251 ext. 102 saltire.com

Saltire makes a line of math software for middle school through college level students. Products feature constraint based modeling with symbolics in an exploratory problem-solving environment. Our newest product, web-based Geometry Expressions, is a free subset of the main Geometry Expressions package.

**Singapore College of Art and Design**

**Booth 239**

Savannah, Georgia 912-713-9583 scad.edu

Offering the most art and design degrees of any university in the U.S., with more than 100 programs of study across more than 40 majors and 70 minors, SCAD prepares talented students for thriving creative careers. The innovative SCAD curriculum is enhanced by cutting-edge technology and learning resources, as well as opportunities for internships, professional certifications and collaborative projects with industry partners — including BMW, Coca-Cola, Google, NASA and more.

**Scholastic**

**Booth 709**

New York, New York 212-343-6969 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.

**Shmoop**

**Booth 845**

Tustin, California shmoop.com

Shmoop wants to make you and your students’ better lovers of literature, STEM, poetry, test prep, and life. With experience in thousands of classrooms and over 15 MM unique visitors arriving on our doorstep every month, Shmoop understands why students are fleeing boredom and looking for more from their learning materials and from life.

**SIAM: Society for Industrial & Applied Mathematics**

**Booth 337**

Philadelphia, Pennsylvania 267-350-6383 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.

**Singapore Math Inc.**

**Booth 711**

Tualatin, Oregon 503-557-8100 SingaporeMath.com

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 711 to peruse our Singapore Math® books and to learn more about the Singapore approach to teaching and learning mathematics.
Solution Tree
Booth 1309
Bloomington, IN
800-733-6786
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.

Stenhouse Publishers
Booth 1325
Portland, Maine
800-988-9812
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 335
Sunnyvale, California
408-541-9145
stokespublishing.com


Student Achievement Partners
Booth 1112
New York, New York
212-510-8533
achievethecore.org

Student Achievement Partners is a nonprofit organization with one purpose: to help all students and teachers see their hard work lead to greater student achievement. We are dedicated to providing educators with the necessary tools to ensure that all students are college and career ready. The content we provide is assembled by and for educators and is freely available to everyone to use, modify and share. Visit us at AchieveTheCore.org!

SumBlox Group
Booth 642
Paradise, Utah
435-512-5161
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.

Texas Instruments
Booth 701
Dallas, Texas
214-567-6409
education.ti.com

TI provides free classroom activities that enhance math, science, and STEM curricula; technology that encourages students to develop a deeper understanding of concepts; and professional development that maximizes your investment in TI technology. TI offers handhelds, software, apps for iPad®, and data collection technology, all designed to promote conceptual understanding, and formative assessment tools that gauge student progress. Visit education.ti.com.

The Actuarial Foundation/Be An Actuary
Booth 843
Schaumburg, Illinois
847-706-3535
actuarialfoundation.org & beanactuary.org

The Actuarial Foundation supports mathematics achievement through an array of hands-on, real-world math resources. All of the lesson plans, materials, posters, online activities, and competitions are free! Go to www.actuarialfoundation.org. Be An Actuary “Actuary” is consistently one of the mostly highly rated career opportunities available for students who excel in math and business. There are limitless opportunities. See us also at www.beanactuary.org.

The MarkerBoard People
Booth 1133
Lansing, Michigan
800-379-3727
dryerase.com


The Math Learning Center
Booth 336
Salem, Oregon
800-575-8130
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.
Think Through Math
Booth 532
Pittsburgh, Pennsylvania
215-776-3875
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.

**TODOS: Mathematics for ALL**
**Booth 648**
Tempe, Arizona
480-515-5265
todos-math.org

The mission of TODOS: Mathematics for ALL is to advocate for equity and high-quality mathematics education for all students—in particular, Latina/o students. Our goals include advancing educators’ knowledge and ability that leads to implementing an equitable, rigorous, and coherent mathematics program that incorporates the role language and culture play in teaching and learning mathematics and to develop and support educational leaders who continue to carry out the mission of TODOS.

**U**
**US Census Bureau**
**Booth 912**
Alexandria, Virginia
571-982-8722
census.gov

The Statistics in Schools (SIS) program of the U.S. Census Bureau provides data, tools, and activities that educators can incorporate into their lessons to help teach statistics concepts and data analysis skills to students. The activities and resources are segmented by subject (geography, history and social studies, mathematics and statistics, and sociology) and grade (from kindergarten through high school) so statistics education can be brought to any classroom.

**US Math Recovery Council**
**Booth 1016**
Apple Valley, Minnesota
952-683-1521
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.

**W**
**WeDu communications**
**Booth 1315**
Mapo-gu, Seoul, South Korea
82231537460
wedu.co.kr

WeDu communications has been continuously 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 1142**
San Francisco, California
415-615-3144
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.

**Women in Mathematics Education**
**Booth: 649**
Philadelphia, PA
267-992-1612
www.me-usa.org

The purpose of Women and Mathematics Education is to: encourage women and girls to study and to have active 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 814**
Boulder, CO
303-910-6163
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; and use the award-winning Adaptive Practice proven to have a significant impacts on learning outcomes.

**World Scientific Publishing**
**Booth 449**
Hackensack, New Jersey
201-487-9655
worldscientific.com

Established in 1981, World Scientific Publishing Company today is one of the leading STM publishers. Publishing 500 titles a year and 120 journals, and with offices worldwide, our mission is to develop the highest quality knowledge-based products and services for the academic, scientific, professional, research and student communities. Please visit www.worldscientific.com for more information.

**Wowzers, LLC**
**Booth 749**
Cardiff, California
269-998-1152
wowzers.com

Wowzers is an engaging comprehensive online math program covering all core standards for grades K-8. The research-based program adapts to each learner and allows for an individualized path through the curriculum. Content is presented in multiple ways, and appeals to all learners (tactile, auditory and visual) Assessments mirror those found on high-stakes achievement tests and provide teachers and administrators with the information that they need to personalize learning for each student.
<table>
<thead>
<tr>
<th>Time</th>
<th>Thursday, 4/6</th>
<th>Friday, 4/7</th>
<th>Saturday, 4/8</th>
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<td>9:00 a.m.–</td>
<td>Host Chepina Rumsey</td>
<td>Erin Mekle</td>
<td>Sally Moomaw</td>
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<tr>
<td>9:20 a.m.</td>
<td>Topic Promoting Mathematical Argumentation (TCM)</td>
<td>Selecting and Sequencing Solution Strategies (TCM)</td>
<td>Early Addition: It Is in the Cards (TCM)</td>
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<td>Grace Kileman and Amy Lucenta</td>
<td>José Vilson</td>
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<td>Topic Beyond Good Teaching: Advancing Mathematics Education for ELLs</td>
<td>Routines for Reasoning</td>
<td>This Is Not A Test: A New Narrative on Race, Class, and Education</td>
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<tr>
<td>10:30 a.m.–</td>
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<td>Topic Beyond Good Teaching: Advancing Mathematics Education for ELLs</td>
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<td>Topic Access and Equity: Promoting High-Quality Mathematics in Grades 6–8</td>
<td>Engaging Students In Survey Design and Data Collection (MT)</td>
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<td>1:00 p.m.–</td>
<td>Host Tracy Zager</td>
<td>Ed Nolan, Juli Dixon, Janet Andreasen, Ethna Selcuk</td>
<td>Making Sense of Mathematics for Teaching: Grades 6–8, High School</td>
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<td>1:20 p.m.</td>
<td>Topic Becoming the Math Teacher You Wish You’d Had</td>
<td>Haciomeroglu, George Roy, and Farshid Safi</td>
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<tr>
<td>1:50 p.m.</td>
<td>Topic Powerful Problem Solving</td>
<td>Tashana Howse, and Jennifer Tobias</td>
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<td>2:00 p.m.–</td>
<td>Host Peg Smith</td>
<td>Kelly McGinn</td>
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<td>Topic 5 Practices for Orchestrating Productive Mathematics Discussions</td>
<td>A Worked Example for Creating Worked Examples (MTMS)</td>
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<td>A Worked Example for Creating Worked Examples (MTMS)</td>
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<td>3:00 p.m.–</td>
<td>Host Jennifer Bay-Williams</td>
<td>Gina Kilday</td>
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<td>3:30 p.m.–</td>
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<td>Gina Kilday</td>
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<td>3:50 p.m.</td>
<td>Topic Order of Operations: The Myth and the Math (TCM)</td>
<td>Routines to Develop Number Concepts for Grades 2–4</td>
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<td>4:00 p.m.–</td>
<td>Host Sue O’Connell</td>
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<td>4:20 p.m.</td>
<td>Topic Math in Practice</td>
<td>A Pleasure to Measure: Tasks for Teaching Measurement in Elementary Grades</td>
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<td>4:50 p.m.</td>
<td>Topic Conferring with Young Mathematicians at Work</td>
<td>A Pleasure to Measure: Tasks for Teaching Measurement in Elementary Grades</td>
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<td>Time</td>
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<td>Topic</td>
<td>Wednesday, 4/5</td>
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<td>9:00 a.m.–</td>
<td>Host: Ethan Weker</td>
<td>Math Debates</td>
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<td>9:10 a.m.–</td>
<td>Host: Sadie Estrella</td>
<td>Counting Circles</td>
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<td>Host: David Wees</td>
<td>Practicing Instruction Routines</td>
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<td>9:40 a.m.–</td>
<td>Host: Annie Fetter</td>
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<td>Host: David Wees</td>
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<td>10:00 a.m.–</td>
<td>Host: Ron Lancaster</td>
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<td>11:00 a.m.–</td>
<td>Host: Gina Kilday</td>
<td>Using Children’s Literature to Explore Math K-2</td>
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<td>11:30 a.m.–</td>
<td>Host: Gina Kilday</td>
<td>Using Children’s Literature to Explore Math 3-5</td>
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<tr>
<td>12:00 p.m.–12:20 p.m.</td>
<td>Host: Steve Leinwand</td>
<td>Breathing Classroom Life into the Eight NCTM Teaching Practices</td>
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<tr>
<td>12:30 p.m.–12:50 p.m.</td>
<td>Host: Andrew Stadel</td>
<td>Number Talks</td>
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<td>1:00 p.m.–1:20 p.m.</td>
<td>Host: Graham Fletcher</td>
<td>NCTM’s Classroom Resources Committee</td>
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<td>1:30 p.m.–1:50 p.m.</td>
<td>Host: Stephanie Verners and Kim Webb</td>
<td>Practicing Math Games from NCTM’s Activities with Rigor and Coherence</td>
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<td>2:00 p.m.–2:20 p.m.</td>
<td>Host: Regina Payne</td>
<td>Instructional Routines</td>
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<td>2:30 p.m.–2:50 p.m.</td>
<td>Host: Javier Garcia, Christine Roberts, Stephanie Verners, and Kim Webb</td>
<td>Instructional Routines</td>
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<td>3:00 p.m.–3:20 p.m.</td>
<td>Host: Scott Steketee</td>
<td>Formative Assessment</td>
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<td>3:30 p.m.–3:50 p.m.</td>
<td>Host: Chris Hunter and Christopher Danielson</td>
<td>Modeling</td>
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<td>4:00 p.m.–4:20 p.m.</td>
<td>Host: Daniel Luevanos</td>
<td>Beyond Drill and Practice</td>
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<td>4:30 p.m.–4:50 p.m.</td>
<td>Host: Malke Rosenfeld</td>
<td>Using Technology in the Math Classroom</td>
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<td>9:00 a.m.</td>
<td>Host Ethan Weker</td>
<td>Practicing Instructional Routines</td>
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<td>Sadie Estrella</td>
<td>David Wees</td>
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<td>Host Ethan Weker</td>
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<td>Annie Fetter</td>
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<td>Host Ron Lancaster</td>
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<td>Ron Lancaster</td>
<td>Emmanuel Schanzer</td>
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<td>Host Gina Kilday</td>
<td>Using Children’s Literature to Explore Math K–2</td>
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<td>Host Gina Kilday</td>
<td>Using Children’s Literature to Explore Math 3–5</td>
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<td>12:00 p.m.</td>
<td>Host Steve Leinwand</td>
<td>Breathing Classroom Life into the Eight</td>
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<td>12:20 p.m.</td>
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<td>12:30 p.m.</td>
<td>Facilitators: Kim Webb &amp; Stephanie Verners</td>
<td>Activity: Estimation 180 Number Talks</td>
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<td>1:00 p.m.</td>
<td>Host Graham Fletcher</td>
<td>Activity: Three-Act Math Tasks</td>
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<td>Graham Fletcher</td>
<td>Practicing Math Games from NCTM’s Activities</td>
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<td>1:30 p.m.</td>
<td>Host Stephanie Verners and Kim Webb</td>
<td>Activity: Notice Wonder Wall</td>
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<td>Suzanne Alejandre</td>
<td>Practicing Math Games from NCTM’s Activities</td>
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<td>2:00 p.m.</td>
<td>Host Regina Payne</td>
<td>Activity: Numberless Word Problems</td>
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<td>Regina Payne, Grace Kelemanik and Amy Lucenta</td>
<td>Instructional Routines</td>
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<td>Activity: Notice Wonder Wall</td>
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<td>Host Chris Hunter, Christopher Danielson</td>
<td>Practicing Math Games from NCTM’s Activities</td>
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<td>3:00 p.m.</td>
<td>Host Scott Steketee</td>
<td>Activity: Function Dances</td>
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<td>Scott Steketee, Francis (Skip) Fennell, Beth</td>
<td>Practicing Formative Assessment Strategies</td>
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<td>Host Chris Hunter, Christopher Danielson</td>
<td>Activity: Which One Doesn’t Belong?</td>
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<td>Host Daniel Luevanos</td>
<td>Activity: Clothesline Math Beyond Drill and</td>
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<td>Host Malke Rosenfeld</td>
<td>Activity: Math in Your Feet®</td>
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<td>Ask the NCTM Community #askT2T</td>
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Thursday 4/6
8:00 – 9:15 AM
ROOM 224
Early Beginnings: Creating Mathematical Thinkers
Jessica Bobo

12:30 – 1:00 PM
ROOM 004
Fraction (or Fractured?) Understanding
Debi DePaul

Friday 4/7
8:00 – 9:15 AM
ROOM 224
Just Give Me the Facts—But with Understanding
Rather than Gimmicks!
James Burnett

Saturday 4/8
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