Celebrate 100 Years

Looking Back and Moving Forward

NCTM turns 100 in 2020. Join your peers in Chicago as we celebrate our 100th anniversary at NCTM’s Centennial Annual Meeting & Exposition. In addition to compelling sessions, networking opportunities, and enriching content, we’re planning some special events and surprises to mark the occasion. Connect with thousands of math education professionals in Chicago as NCTM embarks on its second century.

“The premium event of our 100th anniversary is the NCTM Centennial Annual Meeting & Exposition, which will celebrate NCTM’s rich history and promising future.”

— Robert Q. Berry III
NCTM President, 2018–2020

Topics

• Implement the effective teaching practices
• Experience the depth and excitement of mathematics
• Look Back and Move Forward: A Centennial View
• Create positive change
• Build student agency, foster student identity, and promote social change

Register Now!

Learn more at nctm.org/100 and follow us on Twitter, LinkedIn, Facebook, Instagram, and YouTube. #NCTM100
The publications and programs of the National Council of Teachers of Mathematics present a variety of viewpoints. The content, affiliations, and views expressed or implied in this publication, unless otherwise noted, should not be interpreted as official positions of the Council. References to particular commercial products by a speaker should not be construed as an NCTM endorsement of said product(s). NCTM reserves the right to change speakers, change facilities, or modify program content.

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

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

Printed in the U.S.A.
Welcome to Salt Lake City and the beautiful landscape of Utah. It is a pleasure to have you all join us! While you are here, we hope you take advantage of the beautiful downtown area and enjoy the views of our inspiring mountains. The scenery of our mountains and the beautiful red rocks of the southern portion of our state are one reason why Utah has adopted the slogan, “Life elevated.” However, the scenery is only part of the story. We invite you to connect and get to know one another, engage with others, and seek to understand and be understood by your colleagues as you work to elevate your professional practice. Even more important than the beautiful scenery here in the state of Utah are the wonderful people. We consider all of you as part of our family. We hope you will take advantage of the opportunity during this NCTM Regional Conference to engage, be inspired and elevate your teaching practices and our profession as mathematics teachers.

The Program Committee has put in a great deal of time and effort spanning almost two years to provide you with a deep and rich learning opportunity during this conference. In this program, you'll find top professionals from our field recognized both nationally and internationally for their contributions to the work of mathematics education. The Focus Strands are relevant as well as significant for the times we find ourselves in as educators and for the many challenges we face. Our goal has been to provide learning opportunities for you that are relevant to your work, no matter what grade level or challenge you might be facing. You will find a focus on professionalism, access and equity, meaningful discourse, connecting with students’ contexts, and more. Whether it is a featured session, workshop, burst, or conversation at the Infinity Bar, we believe that you will find opportunities to engage and progress in your journey, which will in turn create opportunities for your students.

It is an honor to have Juli Dixon, professor of mathematics education at the University of Central Florida, and her two daughters join us for our keynote address. Their story is inspirational and exemplifies much of what we strive for as educators and human beings. Please join us for the opening session and an evening of inspiration that you will not forget.

On behalf of the NCTM Board of Directors, the Program and Volunteer Committees, NCTM Staff, and the many others who have worked to make this conference a reality, we welcome you and hope that you enjoy it!
The NCTM 2019 Regional Conference & Exposition officially begins on Wednesday with the Opening Session at 5:30 p.m. Presentations on Thursday and Friday begin at 8:00 a.m. and are scheduled concurrently throughout the day.

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

Please remember:

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

**New and Preservice Teachers Workshop**

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

**Thursday and Friday, Presentations 46 and 178**
9:45 a.m.–11:00 a.m.
Salt Palace Convention Center, 255 D

**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.

**Thursday and Friday**
7:15 a.m.–7:45 a.m.
Salt Palace Convention Center, Ballroom EFGHIJ

**Types of Presentations**

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

- **Sessions** (60 minutes) represent a common format where the speaker relates his or her ideas to an audience. Rooms are either theater style or classroom style and vary in size.
- **Workshops** (75 minutes) are rooms set with round tables for hands-on work.
- **Bursts** (30 minutes) are presentations that focus on a specific topic or idea. Rooms are set with round tables. The goal is information sharing, conveyed quickly and succinctly.
- **Exhibitor Workshops** (60 minutes) are opportunities for exhibitors to showcase their products and services away from the Exhibit Hall. Look for the symbol indicating exhibitor workshops in the program book.

**Grade Bands**

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

- Pre-K–2
- Grades 3–5
- Grades 6–8
- Grades 8–10
- Grades 10–12
- Higher Education—university- and college-level issues including both two-year and four-year institutions
- Research
- Coaches/Leaders/Teacher Educators
- General Interest—issues of interest to multiple grades and audiences
Focus Strands

**PROFESSIONALISM REDEFINED: TEACHER LEARNERS & TEACHER LEADERS**
As teachers we more frequently talk about what we can do to help our students, very infrequently do we talk about the struggles and realities that teachers deal with and what it takes to survive and thrive as an educator. Presentations in this strand will focus on re-energizing the concept of being a professional by helping teachers find a community in which they can learn to recognize the elements of quality practice. Additionally, this strand will focus on promoting teachers as leaders and advocates for themselves and their profession.

**ACCESS, EQUITY, AND EMPOWERMENT: TEACHING BRILLIANCE**
Seeing students as brilliant requires educators to gain a deep understanding of their resources, lived experiences, and knowledge. Presentations will investigate the ways that educators consider the impacts of privilege in the mathematics classroom and share strategies for disrupting that privilege and focusing on the brilliance of each and every student.

**TOOLS FOR TEACHING AND DISCOURSE: MORE THAN TALK**
What are best practices for facilitating mathematical discourse? What tools can teachers leverage to deepen the mathematical discourse in their classrooms? What tasks support such discourse? Presentations in this strand will focus on current and innovative practices that 1) incorporate the strategic use of mathematical discourse, 2) enhance students’ learning and understanding through the use of mathematical tools, and/or 3) encourage all students to participate fully in their learning community.

**LEVERAGING ASSETS: LEARNING TO ‘SHOP’ IN STUDENTS’ STORES**
Students enter mathematics classroom with diverse experiences and knowledge that create funds or stores of opportunity. With a focus on how to leverage students’ stores and position all students as knowers and doers of mathematics, sessions will address eliciting and using student thinking for understanding, acknowledging students as positive resources in mathematics learning, eliminating deficit thinking that dehumanizes mathematics and replacing it with a rehumanizing approach, and celebrating the dimensions of student diversity.

**DIFFERENTIATION: INCREASING OPPORTUNITY FOR ALL STUDENTS**
What are the possibilities when all students access the content? How can we as educators help to ensure that happens? In order to afford each and every students access, we must increase our skills at differentiating both the content and the environment. Sessions within this strand will afford educators the opportunity to explore learning spaces beyond the traditional classroom, innovative ways to provide accommodation and intervention, how to be flexible with time and methods to shape the learning environment to match the learner.

**MATHEMATICS: CONTINUALLY LEARNING THE CONTENT WE TEACH**
What are the important ideas of mathematics? How do these topics connect to each other? How are they best understood by novice and more advanced learners? In order to be constantly assessing our students and creating environments where they can best discover the beauty and elegance of mathematics, we can continue to learn about the subject we teach. Presentations in this strand will provide opportunities for teachers to develop a deeper understanding of mathematics.

---

**CPM EDUCATIONAL PROGRAM**
Empowering mathematics students and teachers for 30 years through exemplary curriculum, professional development, and leadership

- Curriculum written by a team of experienced teachers
- Problem-based lessons for active student engagement
- Free, comprehensive professional learning progression to support teacher expertise, growth, and leadership
- Educational nonprofit 501(c)(3)

We are pleased to support the NCTM Regional Conference in Salt Lake City. Stop by booth #414 to meet with a CPM mentor teacher, see our materials, and request a preview.

Visit CPM.org/cpminfo or scan the QR code to get more information and view our conference sessions.

---

**MORE MATH FOR MORE PEOPLE**
Insightful Education Sessions, Dynamic Exhibits

NCTM Regional Conferences & Expositions are an opportunity to share knowledge and learn with leaders in mathematics education. Gain new strategies to unleash the mathematical mind of each and every student.

- **Improve** your knowledge and skills with high-quality professional development and hands-on activities
- **Connect** and share with peers from throughout the region
- **Collect** free activities to engage and excite your students
- **Explore** an exhibit hall packed with exciting learning and giveaways
- **Learn** from education leaders and test the latest educational resources

**What you’ll walk away with:**

- Innovative ideas you can immediately use
- Updates on classroom best practices from recognized innovators
- In-depth discussions about the latest education resources
- Knowledge-sharing with like-minded peers
- Interaction with the latest tools and products in the Exhibit Hall

**Tips for a Rewarding Regional Conference & Exposition**

- Access the [conference app](#) for program and speaker information, to connect with other attendees, and to share your feedback. Visit [nctm.org/confapp](http://nctm.org/confapp).
- Get available speaker handouts at [nctm.org/planSaltLakeCity](http://nctm.org/planSaltLakeCity).
- Keep the conversations going, connect with other attendees and speakers, access and share session resources, ask questions, and more in the MyNCTM online community at [my.nctm.org/SaltLakeCity19](http://my.nctm.org/SaltLakeCity19).
- If you’re experiencing the conference with your colleagues, attend different presentations and share your learnings with one another after the conference.
- Silence your cell phone during presentations.
- Be safe! Remove your name badge when you leave the conference facilities.

**Registration and Access to Presentations**

You must wear your badge to attend all presentations and to enter the NCTM Exhibit Hall. Please be aware that the fee for a replacement badge is $10 and you will need to present a photo ID.

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

**For Your Child’s Safety**

Due to the size and professional nature of the conference, and for your child’s safety, children under the age of 16 are not permitted in the Exhibit Hall during show hours. Exceptions to this rule will be made for nursing mothers and their infants.

**Information Booth**

The Information Booth will be in the Salt Palace Convention Center. Staff can answer your questions about Salt Lake City and assist you with directions and local information, from transportation and historical sites to shopping and entertainment. In addition, you may retrieve or turn in lost-and-found items at the Information Booth. Unclaimed items will be turned over to Salt Palace Convention Center Security.

**First-Aid Station**

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

**Presentation Handouts**

Attendees can access available electronic presentation handouts through the conference app and online planner at [nctm.org/planSaltLakeCity](http://nctm.org/planSaltLakeCity). Handouts will be available one month after the conference.

**Exhibits**

Make time to visit the Exhibit Hall. The hours allow ample opportunity to explore, test, and purchase resources for your classroom. You’ll also be able to meet product specialists, get fresh ideas, and watch demonstrations on how products will help you in your classroom. We’ve provided dedicated time to visit the exhibits; no presentations will take place from 12:00 p.m. to 1:00 p.m. on Thursday and Friday. Check out the map of the Exhibit Hall on page 61 and the list of exhibits on pages 62–64.

**Exhibitor Workshops**

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

NCTM App
Download NCTM’s new year-round app, “NCTM Central,” which syncs with the online conference planner. Whether you have an iPhone, iPad, Android, or tablet, the app is your onsite sidekick! Get the app and select your event to access these features and more.

- **Notifications**—View event alerts and up-to-the-minute information
- **Schedule**—Search sessions and speakers, create your own itinerary, download handouts, take notes, and make personal appointments
- **Timeline**—View and swap ideas, photos, and lessons with other attendees
- **Exhibitors**—Search, filter, take notes, and contact and mark exhibitors to visit
- **Directory**—Create your own profile and search for and message other attendees
- **Maps**—View floor plans and maps
- **Social media**—Follow all the activity in the event stream.

Visit [nctm.org/confapp](http://nctm.org/confapp) for more information.

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

Wi-Fi
There will be complimentary wi-fi for NCTM Regional Conference & Exposition attendees.

Infinity Bar
Experts will be available to talk to individuals or groups of teachers about issues related to mathematics education. You will be able to sign up in advance to speak to an expert at a designated time.

Program Updates
Visit [nctm.org/SaltLakeCity2019](http://nctm.org/SaltLakeCity2019) for program updates including all the latest changes, cancellations, and additions. You can also follow along with the conference app to view event alerts and up-to-the-minute information.

Bookstore
View firsthand all the publications that NCTM has to offer. You will also find a variety of specialty products that you can use as gifts, prizes, and incentives to spread the word about the importance of mathematics. Start your wish list today by previewing NCTM’s wealth of resources at [nctm.org/store](http://nctm.org/store). The Bookstore is not equipped to handle shipping; the business center can assist you with your shipping needs.

*Note on sales tax exemptions: To be considered exempt from sales tax in the NCTM Bookstore, you must provide a copy of a Utah tax exemption certificate at the time of purchase. NCTM is required by law to keep a copy of the certificate; we cannot return it to you. Tax exemption certificates for states other than Utah are not valid for this Regional Conference.*

NCTM Central
Make your meeting experience complete with a visit to NCTM Central in the Exhibit Hall during exhibit hours.

- **Wednesday** 4:00 p.m.–6:00 p.m.
- **Thursday** 9:00 a.m.–5:00 p.m.
- **Friday** 9:00 a.m.–2:00 p.m.

Learn how NCTM supports you and the field of mathematics education:

- Get 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)**.
- Check out **Classroom Resources** and learn about NCTM’s collection of lesson plans, problems, and more.
- The **Networking Lounge** is a prime location to meet up with colleagues between presentations! Whether you want to make connections with fellow conference goers, exchange teaching tips, or catch up with friends, you’ll find a comfortable spot in the Networking Lounge. Relax and Recharge—make use of charging stations while you reflect with colleagues.
- Learn about NCTM’s **Professional Development** offerings. Information will be available about NCTM’s new Professional Learning Services and upcoming Regional Conferences and Annual Meetings.
HIGHLIGHTS
Opening Session: Redefining Success: Supporting All Students to Reach Their Full Potential, 1

GET SOCIAL
Stay informed and get connected with attendees by using #NCTMSLC19 on social media.

Conference App
nctm.org/confapp

Twitter
@NCTM

Instagram
@NCTM.math

Facebook
facebook.com/TeachersofMathematics

REGISTRATION HOURS
4:00 p.m.–7:00 p.m.

EXHIBIT & NCTM CENTRAL HOURS
4:00 p.m.–6:00 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.
Opening Session: Redefining Success: Supporting All Students to Reach Their Full Potential

Juli, Alex, and Jessica provide a unique perspective on how to support each and every student to learn. Juli, a university mathematics educator, provides the viewpoint of both the educator and the parent of children with special needs. Alex, in her fourth year in college, shares her story related to both medical and educational struggles. Jessica, a college sophomore, provides the position of both the sibling and student with a disability and connects her experiences as a high achiever to a new perspective on Universal Design for Learning.

Juli Dixon
Twitter: @thestrokeofluck
University of Central Florida, Orlando
Alexis Dixon
Student, University of Central Florida, Orlando
Jessica Dixon
Student, Florida State University, Tallahassee

Salt Palace Convention Center, Ballroom EFGHIJ
**HIGHLIGHTS**

Regional Conference Overview & Orientation, 2  
Using Representations to Build Students’ Mathematical Identities, 21  
My Mother Was a Math Teacher, 35  
Culturally Responsive Mathematics Teaching as Teacher Identity Development, 39  
Math Class as an Emergent Bilingual: Building Empathy and Strategies, 43  
New and Preservice Teachers Workshop, 46  
President’s Address: Catalyzing Change: Initiating Critical Conversations in Mathematics Teaching and Learning, 56  
Simple Games to Build Fluency with Basic Facts, 58  
Learning to Listen to What Students Say and Not Just What You Want to Hear, 67  
Using Explicit Instruction to Support Students Who Struggle, 71  
Fully Forming Your Professional Life as a Teacher of Mathematics!, 78  
NCTM Author Panel Talks, 79  
Exploring Points of Concurrency in Tetrahedrons, 89  
From x to Why: Supporting Students Who Struggle in Algebra, 96  
Designing Innovation and Engineering Creativity with Grants for Mathematics Educators, 99  
What You Wish You Could Get From Other Teachers That Would Help Improve Your Teaching, 116

**GET SOCIAL**

Stay informed and get connected with attendees by using #NCTMSLC19 on social media.

- [Conference App](nctm.org/confapp)
- [Twitter](@NCTM)
- [Instagram](@NCTM.math)
- [Facebook](facebook.com/TeachersofMathematics)

**REGISTRATION HOURS**  
7:00 a.m.–5:00 p.m.

**EXHIBIT & NCTM CENTRAL HOURS**  
9:00 a.m.–5:00 p.m.

**FIRE CODES**

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

2  
Regional Conference Overview and Orientation  
General Interest Session  
Whether you’re new to NCTM or a seasoned veteran, there is something for you at the conference! 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.
  
Jeffrey Shih  
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Nevada, Las Vegas  
Salt Palace Convention Center, 255 F

8:00 A.M.–9:00 A.M.

3  
Stop Teaching Strategies, Start Teaching Sense  
Pre-K–2 Session  
Too often students have been taught multiple strategies but then never use them or get them all confused. This session will investigate how we can help children develop strategies, instead of teaching them, in a manner that makes sense and lays a solid foundation which can be transferred to addition and subtraction of all numbers.
  
Christina Tondevold  
Twitter: @BuildMathMinds  
Build Math Minds, Orofino, Idaho  
Ann Elise Record  
Consultant, Concord, New Hampshire  
Salt Palace Convention Center, Ballroom FH

4  
Examining Students’ Development of Mathematical Properties through Grouping Strategies  
3–5 Session  
We will examine students’ development of mathematical properties through their grouping strategies within whole number and fraction multiplication and division problems. By analyzing student work and videos, we will look at the implicit, to explicit, to purposeful use of properties within student strategies and the important role grouping plays.
  
Brandon McMillan  
Twitter: @Brandon__McMill  
University of California, Los Angeles  
Salt Palace Convention Center, 251 C

5  
Questions That Elicit Students’ Mathematical Ideas: Supporting Meaningful Discourse  
3–5 Session  
This session explores how teachers can use questioning to support student discourse and engagement in the Standards for Mathematical Practice. We will look at research findings and classroom examples that illustrate how specific types of questions can promote math discussions in which all students have opportunities to reason, justify, and generalize.
  
Annie Sussman  
TERC, Cambridge, Massachusetts  
Salt Palace Convention Center, 255 B

6  
Tiers, Not Tears! One Strategy for Differentiating in Middle School Classrooms  
6–8 Session  
Come learn how we tiered instruction in two different middle school classrooms! We will share how we tailored tasks to students’ thinking when working on ratio reasoning and on linear functions. Engage in a discussion about the challenges of designing and implementing tiered instruction and leave with ideas for using it in your own classroom.
  
Rebecca Borowski  
Twitter: @elemathchick  
Indiana University, Bloomington  
Amy Hackenberg  
Indiana University, Bloomington  
Fetiye Aydeniz  
Indiana University, Bloomington  
Salt Palace Convention Center, Ballroom BD

7  
Why Do We Teach Mathematics? How Do We Convince Students That Learning Mathematics Is Important?  
8–10 Session  
Much of the focus on what students should know in mathematics has been on college and career readiness. Catalyzing Change suggests there is more to mathematics. What does this mean for us as teachers? Is knowing what factors are, how they connect to the roots of a function more important than being able to factor? Let’s revisit what we do and why.
  
Gail Burrill  
Past President, National Council of Teachers of Mathematics, Reston, Virginia; Michigan State University, East Lansing  
Salt Palace Convention Center, 355 B
8:00 A.M.—9:00 A.M.

**8  **

**TOOLS**

**Experiencing Alignment, Rigor, and Engagement: Open Up Resources for High School Math**

8–10 Session

Participants will learn about a district's journey piloting the new high school math program from Open Up Resources, developed by Illustrative Mathematics. Teachers will discuss their experience as they engaged in their own understanding of what it means to teach problem-based lessons and facilitate goal-oriented mathematical conversations.

Jeanette Scott  
Twitter: @jscott_math  
Phoenix Union High School, Arizona  
Kristine Cunningham  
Phoenix Union High School, Arizona

*Salt Palace Convention Center, 250 F*

**9  **

**TOOLS**

**SCITSITATS PA: That's AP Statistics Flipped!**

10–12 Session

Flipped course = quadrupled enrollment. Last year, 78.9 percent of 109 test takers earned a 3+. We now have 229 students in 10 sections. Attendees will do activities, make an EdPuzzle video, and receive electronic copies of our curriculum. We will also discuss advertising techniques to increase enrollment.

Candice Sagliano  
Lake Park High School West Campus, Roselle, Illinois  
Ben Bishop  
Lake Park High School West Campus, Roselle, Illinois

*Salt Palace Convention Center, Ballroom AC*

**10  **

**AEE**

**Creating District-Driven, Principal-Involved Systems for Math Curriculum Implementation!**

Coaches/Leaders/Teacher Educators Session

Learn how to engage your entire organization to create a system of support that generates an ongoing interaction between principals, teachers, and district office leaders. Rapidly turn principals into connected and confident instructional leaders that increase teacher capacity to successfully implement the Standards for Mathematical Practice.

David Hammond  
Twitter: @regihamm  
Bethel School District, Spanaway, Washington  
Kelley Boynton  
Bethel School District, Spanaway, Washington

*Salt Palace Convention Center, Ballroom J*

**11  **

**DIFF**

**Kinesthetic Strategies to Improve Math Outcomes**

General Interest Session

Turn your students’ love of movement into rigorous math practice. Learn how kinesthetic teaching strategies improve engagement and rapidly increase achievement for all students regardless of skill level and ability.

Suzy Koontz  
Learn Thru Movement/Math & Movement, Ithaca, New York

*Salt Palace Convention Center, 250 C*

**12  **

**AEE**

**Rehumanizing Mathematics Learning through Culturally Responsive Mathematics Teaching**

General Interest Session

Learn from the efforts of teachers in several districts to enact elements of culturally responsive math teaching as a way to increase student interest and success, engaging students’ cultural, linguistic, and community knowledge. You will examine examples of math tasks, discuss instructional practices, and reflect on our work as teachers of math.

Mark Ellis  
Twitter: EllisMathEd  
California State University, Fullerton

*Salt Palace Convention Center, 250 AB*

**13  **

**LEARN**

**When Will We Ever Use This? How about Some Answers to This Question? (Some Real, Some Humorous)**

General Interest Session

Math students often question why they need to learn certain math topics, especially when they (sometimes correctly) think that they will never use these concepts in their “real lives.” In this session, we will focus on actual (and some humorous) math applications in movies, TV, literature, legal trials, music, art, sports, puzzles and games, and so on.

Scott Oliver  
Adlai E. Stevenson High School (Retired), Lincolnshire, Illinois

*Salt Palace Convention Center, 255 E*
8:00 A.M.—9:00 A.M.

13.1 CW

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
Salt Palace Convention Center, 251 F

13.2 CW

Six (Un)Productive Practices in Mathematics Teaching

Exhibitor Workshop

Juli Dixon reveals six ways we undermine efforts to increase student achievement. These practices are commonplace and often required by administrators. As a result of this session, you will understand why they are often unproductive and may even lead to issues of access and equity. You will also work to generate a plan for what to do about it!

Houghton Mifflin Harcourt
Salt Palace Convention Center, 255 A

8:00 A.M.—9:15 A.M.

14 TOOLS

Exploring Concepts in Base Ten: Using Discourse to Engage All Learners

Pre-K–2 Workshop

During early elementary mathematics, students build their understanding of base ten. This understanding will shape all future mathematics learning. In this session, participants will experience a hands-on mathematical task paired with orchestrated discourse.

Carrie Caldwell
Salt Lake City, Utah
Salt Palace Convention Center, 251 AB

15 LEARN

When My 2 + 3 Isn’t the Same as Your 2 + 3
Pre-K–2 Workshop

“I don’t get what they want me to do!” is a refrain we often hear from students faced with word problems. Many times, they don’t know which operation to choose when making sense of a problem. Learn to recognize features of different problem situations and practical strategies to support students as they make sense of the different categories.

Kimberly Morrow Leong
Twitter: kmorrowleong
George Mason University, Fairfax, Virginia
Sara Delano Moore
ORIGO Education, Kent, Ohio
Linda Gojak
Past President, National Council of Teachers of Mathematics, Reston, Virginia; ORIGO Education, Kent, Ohio
Salt Palace Convention Center, Ballroom E

17 TOOLS

How Do You Engage Your Reluctant Learners with Mathematical Modeling in K–5?

3–5 Workshop

Further your understanding of the research behind mathematical modeling. Experience several highly engaging modeling lessons. By analyzing the modeling cycle and examining research found in the GAIMME report, you will walk away with more insight and have ideas that can be used immediately in your classroom to meet required modeling standards!

Bryan Wilson
Pearson, Boston, Massachusetts
Salt Palace Convention Center, Ballroom G

Hear what’s new from exhibitors—attend an exhibitor workshop. Look for the symbol throughout the program book.
October 16–18, 2019  |  Salt Lake City, UT

8:00 A.M.–9:15 A.M.

18 DIFF

**Integer Intervention: Strategies for Middle School Students**  
6–8 Workshop  
Helping middle school students understand integer operations so they can be successful in algebra and beyond is no easy task. Looking at intervention research and how that really plays out in a classroom will guide this session. We will explore strategies to develop concepts and build fluency.

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

**Salt Palace Convention Center, 255 D**

19 DIFF

**Moving from Cold Calling to Warm Calling to Increase Student Learning in Math**  
6–8 Workshop  
In this interactive session, participants will experience a deliberate way of selecting and sequencing student responses based on anticipating student responses. Participants will leave the training ready to move from cold calling (as a way to prompt engagement) to warm calling (as a way to increase engagement AND elevate more student voices).

*Anna Box*  
Seattle Public Schools, Washington  

**Salt Palace Convention Center, 151 G**

20 LEARN

**Quad Squad: Using Circles to Build Intuition, Reasoning, and Understanding of Quadrilaterals**  
8–10 Workshop  
Is it possible that we have underestimated and overlooked the power of the circle? As we explore the connections between concentric circles and quadrilaterals, we will see the power that circles provide in building intuition, creating connections between ideas, and opening the doors to reasoning and eventually proof.

*Sarah Galasso*  
Twitter: @SarahGMath  
Carnegie Learning, Anaheim, California  

**Salt Palace Convention Center, 150 G**

21 ASSETS

**Using Representations to Build Students’ Mathematical Identities**  
8–10 Workshop  
Each representation—whether table, graph, equation, story context, or diagram—reveals important mathematical features. What do they reveal about students’ thinking? What do they reveal to our students about what we value? Let’s learn to work with our students’ representations to understand mathematics and promote positive mathematical identities.

*Barbara Kuehl*  
Twitter: @barbarkuehl  
Mathematics Vision Project | MVP, Salt Lake City, Utah  

**Salt Palace Convention Center, 255 F**

22 LEARN

**Actively Engaging in Calculus**  
10–12 Workshop  
This workshop will provide active strategies for the calculus classroom. Participants will (1) engage in calculus content, (2) discuss strategies for implementation, and (3) reflect on the classroom impact. Topics included, but are not limited to, limits and continuity, differentiability, and connecting the first and second derivatives.

*Mary Pilgrim*  
Twitter: @maryepilgrim  
San Diego State University, California  
*Antonio Martinez*  
San Diego State University, California  

**Salt Palace Convention Center, 255 C**

23 LEARN

**Experimentation and Engagement: Using Simulations as a Means of Mathematical Modeling**  
10–12 Workshop  
What does it mean to model mathematically? See how tasks creating experiments and simulations provide students with an engaging and interactive form of mathematical model. You’ll learn how simulating financial scenarios involving money and risk can teach students topics in finance and probability through experimentation and discovery.

*Jack Marley-Payne*  
Twitter: @ficycleedu  
FiCycle, New York, New York  
*Philip Dituri*  
FiCycle, New York, New York  

**Salt Palace Convention Center, 251 DE**
8:00 A.M.–9:15 A.M.

24 PRO
Tweeting to Lead
Coaches/Leaders/Teacher Educators Workshop
Math educators across the country use Twitter to share resources, reflect on practice, and stay informed on current issues. Participants in this session will learn professional uses of Twitter, begin building a professional learning network (PLN), and engage in a live Edchat focused on math practice. Personal devices required; laptops encouraged.

Allison Riddle
Twitter: @UtahTOY2014
Davis School District, Farmington, Utah

Salt Palace Convention Center, Ballroom I

27 TOOLS
Deepening Math Understanding: Discourse Moves to Engage All Students in Collaborative Sense Making
3–5 Session
Deep understanding happens when students share their thinking and reasoning, not just the answer and the steps they took. Learn an instructional routine that leverages deliberate discourse moves to ensure all students—including English learners and students with learning disabilities—are talking together to make sense of important mathematics.

Grace Kelemanik
Twitter: @GraceKelemanik
Fostering Math Practices, Natick, Massachusetts

Amy Lucenta
Fostering Math Practices, Natick, Massachusetts

Salt Palace Convention Center, Ballroom I

9:30 A.M.–10:30 A.M.

25 TOOLS
Communicating Our Number Sense: Talking and Writing in Math Class
Pre-K–2 Session
Students need opportunities to communicate their number sense! Join us to discuss strategies for using talk and writing in math class to promote mathematical connections, mathematical reasoning, problem solving, and number sense. Participants will learn about talk-frame graphic organizers and number sense journals and will analyze student work.

Jessica Shumway
Twitter: @JessicaShumway
Utah State University, Logan

Kaitlin Bundock
Utah State University, Logan

Jessica King
Utah State University, Logan

Salt Palace Convention Center, 250 AB

28 TOOLS
Leveraging Electronic Resources and 1:1 Mathematics to Improve Discourse and Justification
6–8 Session
Do you teach in a 1:1 mathematics environment but aren’t sure what to do with the technology? Does your school subscribe to online math websites that frustrate you due to their mindless clicking nature? Are you not sure what to do with those popular 3-Act tasks you find online? Discover the answers to these questions and more here! Bring a device!

Clayton Edwards
Twitter: @doctor_math
Grundy Center Middle School, Iowa

Salt Palace Convention Center, 251 C

29 ASSETS
Preparing to Forget and Knowing When We Are Wrong
6–8 Session
Students often feel left out of mathematics learning when they forget steps or get answers wrong. We’ll share routines that celebrate forgetting and being wrong as normal, human aspects of knowing and doing mathematics, as well as prompts to help students engage with a topic when they’ve forgotten something, and reason about wrong answers.

Jordan Titus
Hornell City School District, New York

Rachel Bachman
Weber State University, Ogden, Utah

Salt Palace Convention Center, 255 E
9:30 A.M.–10:30 A.M.

30 **TOOLS**

**Algebra Tiles: From Equations to Polynomials**
8–10 Session
Through a progression activity, we will show a progression using algebra tiles from solving equations to factoring polynomials to completing the square and then leading to polynomial division. This is an interactive session that will leave you with a deeper understanding of how to use the tiles so all students can participate.

Joel Miller  
West High School, Salt Lake City, Utah
Nichole Nordstrom  
Rigby Middle School, Idaho

**Salt Palace Convention Center, 255 B**

31 **DIFF**

**Running a Successful Student Intervention Program at the Secondary Level**
8–10 Session
Supporting struggling students is always a challenge for math teachers. This session will provide you with examples of interventions including team teaching, peer coaching, visual representations, opportunities for student discussion, and techniques to get the most out of formative assessment to ensure all students are taught high-level content.

Rachel Giesmann  
Twitter: @giesmannr  
Lander Valley High School, Wyoming

**Salt Palace Convention Center, 250 C**

32 **TOOLS**

**Figure It Out: Putting Students in the Driver’s Seat**
10–12 Session
This session will share various strategies and results for shifting the classroom paradigm from teacher-driven to student-driven. When students act as their own teachers (figuring out concepts, planning their own review sessions, reflecting on their discoveries, and making connections on their own) their learning is deeper and more sustaining.

Amanda Jain  
Twitter: @AmandaJain11  
Carondelet High School, Concord, California

**Salt Palace Convention Center, Ballroom BD**

33 **PRO**

**Implementing a Mathematics Leadership Team Multiplies Teachers’ Instructional Expertise**
Coaches/Leaders/Teacher Educators Session
Time—there is never enough! It seems districts and schools all lack time when it comes to providing professional development for our teachers, our most precious investment. In 2017, we launched a Mathematics Leadership Team. The goal was to develop math teacher-leaders in each of our district schools. What happened was exponentially better.

Kathleen Granaas  
Twitter: @kgranaas1  
El Paso County Colorado School District 49, Peyton
Carolyn Merritt  
El Paso County Colorado School District 49, Peyton

**Salt Palace Convention Center, Ballroom J**

34 **PRO**

**We’ve Got Your Back: Supporting Teachers throughout Their Careers**
Coaches/Leaders/Teacher Educators Session
What support do you want from fellow teachers? What should you expect from a mentor? How can you help your peers to improve in their practice? Two teachers—one early career and one a veteran and a mentor—share their experiences about mentoring. We will look at examples of practice including discussions with teachers, lesson planning, and more.

Fred Dillon  
Twitter: fdizzle1955  
Institute for Learning, Strongsville, Ohio
Anthony Bokar  
Padua Franciscan High School, Parma, Ohio

**Salt Palace Convention Center, 355 B**

35 **LEARN**

**My Mother Was a Math Teacher**
General Interest Session
Mathematics is part of my heritage. Mom believed I should learn math for the same reason I learned to read. Math, like reading, opened my eyes to a world of many layers: a butterfly had symmetry, a fountain was a parabola, a stop sign an octagon. Math gave me a new lens for seeing beauty and writing about it.

Amy Harmon  
Twitter: aharmon_author  
Self-Employed Writer, Mapleton, Utah
Janet Sutorius  
Mathematics Vision Project, Nephi, Utah

**Salt Palace Convention Center, Ballroom FH**
9:30 A.M.—10:30 A.M.

35.1  \textit{Learn}

\textbf{Making Principles to Actions Come Alive with CPM Mathematics}
\textbf{8–10 Exhibitor Workshop}
Looking for ideas to incorporate NCTM’s eight teaching practices? Let CPM show you! Our nonprofit provides rich mathematics curriculum that is student-centered and problem-based, encouraging thinking, persevering, and sense making with complimentary PD for teachers. Experience the excitement students do, exploring CPM’s grades 6–12 curriculum.
CPM Educational Program
\textit{Salt Palace Convention Center, 251 F}

9:45 A.M.—11:00 A.M.

36  \textit{Tools}

\textbf{Mathematics Discourse in the Primary Grades: Helping Students Talk as They Use Their Senses to Learn}
\textbf{Pre-K–2 Workshop}
To create a community of math talk with young students, we will focus on what they are seeing, hearing, and doing in their lessons and engage them in using talk structures, language and sentence frames, and math manipulatives as they “do the math.” We will also organize skills into a yearly continuum to create productive discourse for all.
Carrie Ziegler
Salt Lake City School District, Utah
\textit{Salt Palace Convention Center, 255 F}

37  \textit{Tools}

\textbf{More Than Talk: Math Game Buddies = Math Success}
\textbf{Pre-K–2 Workshop}
You will learn the best games for using in cross-graded settings. Come with a teaching partner and learn games your students can do together one time a week. For older students in deepens understanding of foundational concepts, develops math language, for primary students 1:1 coaching. You will learn visual notetaking and math talk ideas throughout.
Jane Felling
Twitter: @Boxcarseduc
Box Cars and One-Eyed Jacks, Edmonton, Alberta, Canada
\textit{Salt Palace Convention Center, 251 G}

38  \textit{Learn}

\textbf{Build It, Fold It, Draw It: Develop Understanding of the Attributes of Polygons}
\textbf{3–5 Workshop}
Many of the attributes of polygons—side length, angle measure, symmetry, perimeter, and area—can be explored using paper folding, perimeter pieces, square tiles, and grid paper. We’ll work through a series of tasks that help students make sense of these attributes. Tasks are designed to have entry levels for all students.
Laurie Boswell
Twitter: @laboswell
Author, Big Ideas Math, Franconia, New Hampshire
\textit{Salt Palace Convention Center, 251 DE}

39  \textit{Assets}

\textbf{Culturally Responsive Mathematics Teaching as Teacher Identity Development}
\textbf{3–5 Workshop}
What’s the self-work we need to do to realize the promise of culturally responsive mathematics teaching (CRMT)? Come learn about CRMT and why it’s not an add-on to teaching, and instead a shift in teacher identity. CRMT teachers can transform themselves, and rehumanize math for themselves and their students.
Maria Zavala
Twitter: @mdrzavala
San Francisco State University, California
\textit{Salt Palace Convention Center, 255 C}

40  \textit{Diff}

\textbf{Metacognition and Co-Created Anchor Charts in Middle School Math}
\textbf{6–8 Workshop}
What’s the difference in a teacher-made poster and a “co-created anchor chart?” Data suggests students learn more from one than the other. In this interactive session, participants will explore the power of “co-created anchor charts” as a way to elevate student voice, create neuropathways, and concretize middle school math learning.
Anna Box
Seattle Public Schools, Washington
\textit{Salt Palace Convention Center, Ballroom E}
9:45 A.M.–11:00 A.M.

41 **LEARN**
Reflections, Translations, and Rotations: Are There Any Connections among These Transformations?
6–8 Workshop
This session will examine the relationships among the three geometric transformations—reflections, translations, and rotations. We will also examine how the sequence of transformations can be used to connect the three transformations. Finally, we will discuss how understanding these relationships will help students make sense of transformations.

Dawn Teuscher
Brigham Young University, Provo, Utah

Porter Nielsen
Brigham Young University, Provo, Utah

Salt Palace Convention Center, 250 DE

42 **TOOLS**
Do You Desmos? Using Desmos to Increase Engagement and Understanding in Your Classroom
8–10 Workshop
Come learn with two Desmos Fellows! We will be sharing activities and teacher moves that have created deeper learning, more relevant and thoughtful discussions, and a greater level of engagement in our classroom through Desmos’ Activity Builder. These free activities can be used immediately in your classroom.

Juan Gomez
Twitter: @JGomezMathEd
Carmel Unified School District, California

Kathy Henderson
Seven Hills School, Walnut Creek, California

Salt Palace Convention Center, Ballroom I

43 **ASSETS**
Math Class as an Emergent Bilingual: Building Empathy and Strategies
8–10 Workshop
What is it like to learn math when you are a novice in the primary language of instruction? What strategies can teachers use to make complicated contexts accessible without lowering the richness of the task? Come build your repertoire of language support by experiencing and reflecting on math class through the eyes of an emergent bilingual.

Joe Herbert
Twitter: @herbertmath628
Berkeley High School, California

Salt Palace Convention Center, 251 AB

44 **TOOLS**
Get Students Out of Their Seats to Talk!
10–12 Workshop
An important way to engage students in discourse is to get students on their feet working in small groups with a vertical surface to do their work on and a good mathematically rich task to solve. In this workshop, we will experience two forms of this scenario and evaluate their possibilities and effectiveness.

Vicki Lyons
Twitter: @valyons
Lone Peak High School, Highland, Utah

Salt Palace Convention Center, 151 G

45 **PRO**
The What, Why, and How of Student Learning
Coaches/Leaders/Teacher Educators Workshop
So all of your teachers have posted their learning objectives, now what? This workshop will provide the next steps of leveraging teacher clarity to impact student learning. Through analysis of qualitative data, we will walk you through how student voices influence teacher instruction in the classroom and in school learning communities.

Katherine Nitka
Salt Lake City School District, Utah

Greg Maughan
Salt Lake City School District, Utah

Laura Cheney
Salt Lake City School District, Utah

Salt Palace Convention Center, Ballroom G

46 New and Preservice Teachers Workshop
General Interest Workshop
Find answers to your questions on topics such as classroom management, parents, motivation, and keeping your sanity. Connect with other new teachers, learn from experienced professionals, and find resources to engage you and your students. You might even win a prize!

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

Salt Palace Convention Center, 255 D
11:00 A.M.–12:00 P.M.

47 DIFF
Supporting Students with Severe Special Education Needs in Early Number Development
Pre-K–2 Session
This presentation discusses development of coherent instruction through collaborative planning for early childhood students identified with severe special education needs. A case study of Cameron, a first-grade student identified with Down syndrome, will exemplify effects of inclusive mathematics practices in a first-grade classroom.
Beth MacDonald
Utah State University, Logan
Sara Urbanek-Carney
Edith Bowen Laboratory School, Logan, Utah
Allison Roxburgh
Edith Bowen Laboratory School, Logan, Utah

Salt Palace Convention Center, 255 E

48 LEARN
“Read to Me” Strategies Linking Literature and Multiplication
3–5 Session
Participants will be introduced to eight to ten quality children’s literature books that will bring math to life through building vocabulary and promoting language development. The presenter will share story-based activities to reinforce multiplication skills including multiplication facts, problem solving, and multiplication number patterns.
Deborah Ondov
Minnesota State University, Mankato

Salt Palace Convention Center, Ballroom BD

49 LEARN
Losing the Amazing Race: How Relying on a Division Algorithm Ruined Their Chance to Win $1,000,000
3–5 Session
When a team of two professional clowns couldn’t perform the standard division algorithm some 30 years after learning it, their dreams of winning $1,000,000 were crushed. Come learn how understanding concepts and connections, could have kept this team in the race. We’ll explore the progressions that bring understanding to a complicated algorithm.
Bonnie Spence
Twitter: @BonnieUMontana
University of Montana, Missoula

Salt Palace Convention Center, 251 C

50 TOOLS
Explorations of Transformations: Looking for Patterns in Geometric Transformations
6–8 Session
During middle grades, students experience informal geometric transformations that they later solidify in secondary mathematics. In this session, participants will experiment with these geometric transformations through a mathematical task and will build a foundation for formal geometric proofs necessary in later grades.
Rachel Rolf
Salt Lake City School District, Utah
Carrie Caldwell
Salt Lake City School District, Utah

Salt Palace Convention Center, Ballroom AC

51 TOOLS
From a Traditional Path to MVP: Our Continuing Journey to Implement the Mathematics Vision Project
8–10 Session
Panel discussion to share the challenges and success of moving from teaching in a traditional pathway to an integrated approach using the MVP materials from the point of view of a middle school teacher of advanced students, a high school teacher of students from varying achievement levels and grades, and a principal extensively involved in the transition.
David Davies
Weiser High School, Idaho
Marie Thomas
Weiser Middle School, Idaho
Joseph Endicott
Weiser Middle School, Idaho

Salt Palace Convention Center, 355 B

52 ASSETS
Using Geometric Modeling to Bring Food to the Desert
8–10 Session
We will present a problem/project-based learning unit integrating geometry, statistics, social studies, and civic engagement to provide students, families, and other community members with access to healthy and affordable food. We will also explore the social justice issues, from a mathematics perspective, that result in food deserts.
Shakiyya Bland
Twitter: @DrShakB1
USD 497, Lawrence Public Schools, Kansas

Salt Palace Convention Center, 250 F
53  LEARN  
Capitalizing on Prior Knowledge: Using the Area Model to Teach High School Topics  
10–12 Session  
Make use of what your students know! Students come to us with a working knowledge and procedural skill set rooted in the use of area models. Tap into that knowledge and use it to teach a range of topics including multiplication and factoring polynomials and as an alternative to synthetic division and long division of polynomials.  
Paula Landry  
Great Minds, Lafayette, Louisiana  
Tim Hanilton  
Great Minds, Washington, D.C.  
Salt Palace Convention Center, 250 C

54  PRO  
Preparing the Profession for 2025: Issues and Trends in Mathematics Education  
10–12 Session  
Our profession is changing. What’s happening and where might we be in 2025? We will examine current and possible shifts in content, practice, and policy for grades 10–14. Participants will increase their awareness of national issues and trends and watch for unintended consequences that may hinder equity and access for students.  
Ted Coe  
Twitter: @drtedcoe  
Achieve, Inc., Washington, D.C.  
Salt Palace Convention Center, 255 B

55  LEARN  
Let’s Have Fun Using Two Hands-On Activities to Generate Linear Models  
Coaches/Leaders/Teacher Educators Session  
Participants will do a water-dripping experiment using a graduated cylinder and a foam cup with a hole in the bottom. Time is the independent variable and volume is the dependent. The second activity to be done uses a damp tennis ball rolled on grid easel paper. A worksheet for each activity will be provided.  
Kathleen Mittag  
University of Texas at San Antonio (Retired)  
Sharon Taylor  
Georgia Southern University, Statesboro  
Salt Palace Convention Center, Ballroom J

56  DIFF  
President’s Address—Catalyzing Change: Initiating Critical Conversations in Mathematics Teaching and Learning  
General Interest Session  
The National Council of Teachers of Mathematics formed three writing teams at the early childhood/elementary, middle school, and high school levels with the intent to initiate the critical conversations needed to address issues in school mathematics. The Catalyzing Change series focuses on recommendations in school mathematics with the purpose of initiating critical conversations for improving mathematics teaching and learning in school mathematics. This talk is intended to initiate critical conversations based on the key recommendations from the Catalyzing Change series.  
Robert Q. Berry, III  
President, National Council of Teachers of Mathematics, Reston, Virginia; University of Virginia, Charlottesville  
Salt Palace Convention Center, Ballroom FH

57  DIFF  
The Mathlexia Odyssey: Seeing Math through Colorful Eyes  
General Interest Session  
An engaging and colorful presentation that explores math through the eyes of students with various learning styles. Those with learning disabilities often say “I suck at math,” when in fact they actually have highly intuitive and strong mathematical abilities. Alternative approaches to math are essential and lead ultimately to math success for all!  
Lori Kiteala  
The Mathlexia Odyssey, Montreal, Quebec, Canada  
Salt Palace Convention Center, 250 AB

58  DIFF  
Simple Games to Build Fluency with Basic Facts  
Pre-K–2 Burst  
Kids love to play games! We will burst into five games that help students develop fluency with addition and subtraction facts using strategies rather than memorization. Each game can be adjusted to work with multiple strategies for use in class or at home.  
Linda Gojak  
Twitter: @LindaGojak  
Past President, National Council of Teachers of Mathematics, Reston, Virginia; Mathematics Consultant, Willowick, Ohio  
Salt Palace Convention Center, 251 AB
Supporting Students with Intellectual Disability in the Inclusive Mathematics Classroom

3–5 Burst
In this presentation, we will present our work combining evidence-based practices within the concrete-semiconcrete-abstract instructional framework to teach elementary students with intellectual disabilities to solve additive, result-unknown word problems in inclusive general education mathematics classrooms.

Jessica Bowman
Twitter: @jessicaabowman
University of Utah, Salt Lake City

Salt Palace Convention Center, 151 G

---

Make It Stick

6–8 Burst
Students often seem to have a concept mastered, only to demonstrate weeks later that their learning did not “stick.” Participants will work through a task that illustrates how we can help that learning stick.

Jane Porath
Twitter: @janeporath
TCAPS, Charlevoix, Michigan

Salt Palace Convention Center, Ballroom E

---

Chronic Math Failure: Solutions for Students at High Risk of Dropping Out

8–10 Burst
Students at high risk of dropping out are also likely to be drastically behind in math skills. Many school solutions focus on finding the right textbook, the right grading method, or the right online support software. This session will provide the perspective of a student with chronic math failure, and we will offer ideas for how to restart success.

David Albertsen
Granite School District, Salt Lake City, Utah

Salt Palace Convention Center, Ballroom G

---

Equivalent Inequalities

10–12 Burst
It’s likely that you learned, and are teaching, to “flip” the sign in an inequality when you multiply or divide both sides of an inequality by a negative number. But is that really the only time we need to switch the sign? What is the underlying mathematical reason that we switch the sign? We’ll explore these questions and uncover the answer together.

Kelly MacArthur
University of Utah, Salt Lake City

Salt Palace Convention Center, 255 F

---

f(ax + b): A New Approach to Terrifying Transformations

10–12 Burst
There’s a reason our students struggle to interpret transformations that involve both horizontal stretches and shifts: We ask them to think backwards, by starting with a parent function’s outputs and then determining inputs. Learn how to teach these tricky transformations far more intuitively by moving forwards: starting with inputs.

Amy Hand
Twitter: MathSenseLLC
MathSense, Brooklyn, New York
Allyson Rohrbach
MathSense, Brooklyn, New York

Salt Palace Convention Center, Ballroom I

---

Maximize Your Impact: A Model for Influencing Teachers and Increasing Classroom Discourse

Coaches/Leaders/Teacher Educators Burst
Coaches and specialists have a unique opportunity to influence students by impacting teacher instruction. In this workshop, we will explore multiple models to promote change in small and large ways. Each model emphasizes the role discourse plays in improving student content knowledge as well as teacher content and pedagogical knowledge.

Elizabeth Felt
Jordan School District, Saratoga Springs, Utah
Melissa Garber
Jordan School District, Sandy, Utah

Salt Palace Convention Center, 251 DE
Exploring Mathematical Ideas and Wonderings, Asking Critical Questions: Who’s Exploring and Asking?

General Interest Burst

How can we encourage and support student mathematical wonderings and questioning giving students a significant voice in learning spaces? Let’s explore ways we can create a environment for student leadership in mathematical investigations where they offer their wonderings, ask questions, and lead the dialogue.

Trena Wilkerson
Twitter: @TrenaWilkerson
President-Elect, National Council of Teachers of Mathematics, Reston, Virginia; Baylor University, Waco, Texas

11:30 A.M.–12:00 P.M.

Got Game? Shift Your Practice with Rigorous, Engaging Activities to Build Number Sense

General Interest Burst

Come and enjoy a fast-paced, fun presentation which focuses on the need to shift our paradigm on how we develop number sense with young students. Research has shown that games are an effective way to engage students in developing number sense. We will critically examine how the design of these games and can illuminate mathematics, and not obscure meaning.

Amy Kinder
Twitter: Amynmath
Canyons School District, Utah

11:30 A.M.–12:00 P.M.

Learning to Listen to What Students Say and Not Just What You Want to Hear

General Interest Burst

NCTM encourages teachers to elicit and use student mathematical thinking. One step between is listening and making sense of the thinking. I will talk about listening carefully to students to identify the mathematics in their thinking so that thinking can authentically discussed and not used as a launching point for what the teacher wants to discuss.

Blake Peterson
Brigham Young University, Provo, Utah

1:00 P.M.–2:00 P.M.

Connecting Mathematical Arguments and Representations to Support Student Learning

Research Burst

The practice of connecting arguments to representations in math and science can be productive for learning and sense making. Come learn about recent research exploring ways to support preservice elementary teachers facilitating these connections for their students. We will share examples and techniques that others can implement.

Lauren Barth-Cohen
University of Utah, Salt Lake City
Tracy Dobie
University of Utah, Salt Lake City
Michael van Opstall
University of Utah, Salt Lake City

1:00 P.M.–2:00 P.M.
Using Explicit Instruction to Support Students Who Struggle

With a focus on Multi-Tiered Systems of Support, many teachers are trying to develop highly engaging Tier 1 core instruction and Tier 2 interventions. This session presents ways to avoid “teaching by telling” and instead use connections to prior knowledge and multiple representations to support students’ development of mathematical understanding.

Karen Karp
Johns Hopkins University, Baltimore, Maryland
Salt Palace Convention Center, Ballroom FH

Ditching the Tricks: Using Students’ Prior Knowledge to Conceptualize Three Middle School Concepts

Conceptual understanding is key, but why does it seem like there are some content areas where we can’t help but go back to the same old tricks? In this workshop, we will explore the ways that we completely changed how we teach order of operations, integers, and algebraic expressions by drawing on prior student knowledge and number sense.

Erin Flotte
Twitter: @class_tangents
Villa Academy, Seattle, Washington
Lindsay Kapek
Villa Academy, Seattle, Washington
Salt Palace Convention Center, Ballroom J

Math Games: No Seriously! These Are Games—Winners and Learners

Connecting the eight Math Practices to learning through playing games is the object and design of this session. These teacher-created games are made to be used in a large classroom setting to provide all students with a fun and creative way to review and reinforce math concepts previously taught. Each game focuses on one of the Math Practices.

Susan Chadaz
Tremonton, Utah
Salt Palace Convention Center, 250 AB

Use Choice, Differentiation, and Self-Assessment to Increase Success for Each and Every Student

When we hear the frustration in “I just don’t understand any of it!” what can we do? Come and learn effective strategies for encouraging students to articulate their confusions about mathematical concepts and for differentiating developmentally-appropriate challenges. Help your students build confidence and learn to communicate mathematically.

Connie Schrock
Twitter: @cfryschrock
Emporia State University / NCSM President, Kansas
Salt Palace Convention Center, Ballroom BD

Polynomial Long Division: Why Do We Care?

Polynomial long division is taught in almost all algebra 2 and/or precalculus classes, but rarely do we consider how polynomial long division connects to other ideas in mathematics. In this session, we will explore how polynomial long division can be used to directly introduce students to calculus and derivative rules.

Joseph Obrycki
Niles Township High School District 219, Skokie, Illinois
Salt Palace Convention Center, 255 E

The Financial Life Cycle: Centering a Math Course on Financial Applications

Do you want to incorporate applications of math your students can relate to into your teaching? Finance is an application all students will find valuable. This session shows how you can create a coherent high school math elective that teaches the central precepts of personal finance. It is based on the Nobel Prize-winning Life Cycle Hypothesis.

Philip Dituri
Twitter: @ficycleedu
FiCycle, New York, New York
Salt Palace Convention Center, 251 C
1:00 P.M.–2:00 P.M.

77 TOOLS
Five Essentials to Ensure Every Student Succeeds
General Interest Session
There are so many factors that contribute to student success that sometimes educators don’t know where to focus. This session will engage participants in identifying the essential elements to ensure student success and will include experiences and tools to use in the classroom.

Diana Suddreth
Twitter: disudds
Suddreth Consulting, North Salt Lake, Utah
Joleigh Honey
Utah State Board of Education, Salt Lake City

Salt Palace Convention Center, 255 B

1:00 P.M.–2:15 P.M.

80 ASSETS
COVE Early Learning: Where Content Overlaps Verbal Language & Efficacy
Pre-K–2 Workshop
Explore COVE Early Learning—where math content overlaps verbal-language and efficacy. We will analyze pre-K exploration activities; map the activities for learning; and analyze student engagement via video for content understanding, use of verbal language, and efficacy. We will analyze teacher moves for supporting student thinking and reasoning.

Kristin Klingensmith
Twitter: kaklingensmith
Institute for Learning, University of Pittsburgh, LRDC, Pennsylvania

Salt Palace Convention Center, 255 D

NCTM Author Panel Talks
General Interest Session
Be part of the lively discussion as authors talk about the big ideas from their books:
The Essential Understanding and the Putting Essential Understanding into Practice Series; Deepening Student’s Mathematical Understanding with Children’s Literature; and 5 Practices for Orchestrating Productive Mathematics Discussions.

Margaret (Peg) Smith
Consultant, Gibsonia, Pennsylvania
Barbara Dougherty
University of Hawaii, Manoa
Debra Fuentes
Brigham Young University, Provo

Salt Palace Convention Center, 250 C
1:00 P.M.—2:15 P.M.

82 **TOOLS**
**“Talk” Star Routines to Amp Up Classroom Discourse**
3–5 Workshop
Want your students to be “talk” stars? Create a respectful classroom environment and use questions with multiple entry points to promote discourse that will be music to your ears. Workshop participants will engage in a variety of high-yield instructional routines, examine what makes these routines rock, and create tasks to use with their students.

Melissa Garber  
Twitter: missgarbmath  
Jordan School District, Sandy, Utah

Elizabeth Felt  
Jordan School District, Saratoga Springs, Utah

*Salt Palace Convention Center, 255 F*

83 **LEARN**
**FUNdamentals of Fractions**
3–5 Workshop
This session focuses on hands-on investigations of fraction concepts. Participants will experience nonstandard word problems as they explore different ways to illustrate concepts. In addition, they will be provided with several ready-to-use activities that they can implement immediately in their classrooms.

Jennifer Hooper  
Utah Valley University, Orem

Debra Ward  
Utah Valley University, Orem

*Salt Palace Convention Center, 150 G*

84 **DIFF**
**Differentiation Matters! Learn to Differentiate Instruction for Middle School Students**
6–8 Workshop
Come learn how to differentiate instruction for middle school students. We will share a framework for differentiating, including both “low prep” and “high prep” strategies. Together we will design tasks that provide productive choices for students and consider how to conduct whole classroom discussions in differentiated classrooms.

Amy Hackenberg  
Indiana University School of Education, Bloomington

Patricia Walsh  
Monroe County Community School Corporation, Bloomington, Indiana

Marie Johannisson  
Monroe County Community School Corporation, Bloomington, Indiana

*Salt Palace Convention Center, 255 C*

85 **DIFF**
**Math Learning Disabilities, Dyslexia, and ADHD: Understanding Connections, Remediating Effectively.**
6–8 Workshop
80 percent of people with specific language impairment (SLI) and 31 percent of people with ADHD struggle with math, yet many students never get high-quality math remediation. Join board-certified educational therapist Diana Kennedy to learn the symptoms and causes of math LDs and their relationship with dyslexia and ADHD. Learn precepts, strategies, and games to help all math students excel.

Diana Kennedy  
Twitter: @TeacherDBK  
Mindspark, San Anselmo, California

*Salt Palace Convention Center, 251 DE*

86 **ASSETS**
**Building a Growth Mindset in Your Students through Engaging Them in the Mathematical Practices**
8–10 Workshop
Cultivating a growth mindset in our students requires a shift in how we view the teaching and learning of mathematics. Focusing on the Standards for Mathematical Practice, participants will leave with activities and easy-to-implement strategies that make asking questions, making conjectures, and noticing structure an everyday experience.

Patrick Sullivan  
Twitter: sullymathrocks  
Missouri State University, Springfield

*Salt Palace Convention Center, Ballroom G*

87 **ASSETS**
**Maintaining the Focus When Giving Students Voice**
8–10 Workshop
What it means to elicit and use students’ mathematical thinking in instruction depends on the teacher’s perception of the role students and the teacher play in the classroom. This session will demonstrate the connection between the teacher’s daily learning goals and the selection of student work to achieve the purpose of the lesson.

Janet Sutorius  
Mathematics Vision Project, Nephi, Utah

*Salt Palace Convention Center, 250 DE*
### 1:00 P.M.—2:15 P.M.

**88 Tools**

**Engaging Students Using Meaningful Tasks—LIVE!**

10–12 Workshop

Much attention has been given to using rich mathematical tasks as a way to promote greater student engagement, equity, and deep meaningful learning. However, teachers often wonder, “How do I actually implement these tasks effectively?” Rather than talking about how to do it, participants will experience it with real “live” students.

**Edward Gilbert**
Twitter: @TedGilbert
Karl G. Maeser Preparatory Academy, Lindon, Utah

**Dana Steinhorst**
Karl G. Maeser Preparatory Academy, Lindon, Utah

**Josh Bundy**
Karl G. Maeser Preparatory Academy, Lindon, Utah

*Salt Palace Convention Center, Ballroom E*

### 2:30 P.M.—3:30 P.M.

**91 Learn**

**Teaching Geometry to Young Children: Parts and Properties**

Pre-K–2 Session

Young children learn more geometry if taught math attributes and properties. A recent study illustrates how young children can learn geometry and processes such as justification joyfully. Participants will view video of and engage in complementary classroom activities that establish a solid foundation for children, including struggling learners.

**Douglas Clements**
Twitter: DHClements
University of Denver, Colorado

**Julie Sarama**
University of Denver, Colorado

*Salt Palace Convention Center, Ballroom FH*

### 1:00 P.M.—2:15 P.M.

**89 Learn**

**Exploring Points of Concurrency in Tetrahedrons**

10–12 Workshop

We will compare/contrast locus definitions for the segments/lines that form the points of concurrency in a triangle, and extend these concepts to their analogs in three-dimensional space to understand how the points of concurrency in a tetrahedron are formed, and what special properties they possess. We will distribute 3D-printed tetrahedron models.

**Troy Jones**  
Westlake High School, Alpine School District, Saratoga Springs, Utah  

**Steve Phelps**  
Madeira High School, Cincinnati, Ohio

*Salt Palace Convention Center, 251 AB*

### 2:30 P.M.—3:30 P.M.

**92 AEE**

**The Brilliance of Black Kids (and Other Colors Too): Math Tales from the Motor City**

3–5 Session

How students see themselves and how they believe others see them as learners of mathematics greatly influences their success. Learn how I empower my students to use mathematics as an analytical tool to read and write the world. Come engage in different activities that leverage children’s linguistic, cultural, and experimental knowledge.

**Monica Tienda**  
Twitter: @matienda  
Oak Park School District, Royal Oak, Michigan

*Salt Palace Convention Center, 355 B*

### 1:00 P.M.—2:15 P.M.

**90 Pro**

**The Coach, The Novice, and The Expert**

Coaches/Leaders/Teacher Educators Workshop

NCTM’s Principles to Actions advocates for teachers to understand what students know and need to learn and then challenge and support them to learn it well. Coaches apply this principle to teachers. In this session, participants will explore the different philosophies of coaching and determine ways to promote the expert and train the novice.

**Barb Everhart**  
Twitter: @berealcoach  
BeRealCoach, Minneapolis, Minnesota

*Salt Palace Convention Center, Ballroom I*

### 2:30 P.M.—3:30 P.M.

**93 Learn**

**Using the Tape Diagram to Solve Word Problems**

3–5 Session

This session is designed to improve participants’ ability to effectively model and teach multiplication and division word problems by using the tape diagram. Participants will engage in authentic experiences with a variety of word problem types. These activities encourage reflective discussion about the intersection of content and pedagogy.

**Christine Bell**  
Lutz, Florida

*Salt Palace Convention Center, 250 C*
94 **TOOLS**

Classroom Carnivals: Engaging Students in Collaborative Competition

6–8 Session

Participants will engage in a rotation activity that uses hands-on tools, sentence frames, and self-checking stations to encourage the participation of each and every student. The stations are linked together by a circus-theme structure to increase student interest. Participants will discuss ways to adjust the activity for their own students.

Aaron Rumack  
Twitter: @sngndnc  
White River School District, Renton, Washington

*Salt Palace Convention Center, 255 B*

95 **LEARN**

What Are the Chances My Students Are Going to LOVE Doing Probability?

6–8 Session

We will take a look at the progression of the statistics and probability domain through middle school. We’ll investigate problems that facilitate understanding of both theoretical and experimental probabilities. We’ll also investigate chance processes and the role of simulation.

Jennifer Outzs  
Indian Shores, Florida

*Salt Palace Convention Center, 251 C*

96 **DIFF**

From x to Why: Supporting Students Who Struggle in Algebra

8–10 Session

In this workshop, participants will explore hands-on tasks that move from concept to skill and consider the associated instructional strategies. These classroom-ready tasks promote high student engagement and allow multiple entry points to accommodate a wide range of learners.

Barbara Dougherty  
Twitter: @DoughertyBarb  
University of Hawaii, Curriculum Research & Development Group, Honolulu

*Salt Palace Convention Center, Ballroom AC*

97 **TOOLS**

Using Desmos to Embed the MPACs in Your AP Calculus Class

10–12 Session

The Mathematical Practices for AP Calculus (MPACs) state that students must reason with definitions and theorems, connect concepts, implement algebraic/computational processes, connect multiple representations, build notational fluency, and communicate. Desmos graphs and activities are ideal for embedding the MPACs in your teaching—come see how!

Dave Cesa  
Twitter: @davecresa  
Charlotte Latin School, North Carolina

*Salt Palace Convention Center, Ballroom BD*

98 **AEE**

Equitable Access to Advanced Math in One Large Urban District: Successes and Challenges

Coaches/Leaders/Teacher Educators Session

In this interactive session, participants will review Seattle public data about the relationship between demographic factors and access to advanced math, consider the similarities and differences to their own district, and learn about the strategies Seattle is using to double the number of historically underserved students of color in advanced math classes.

Anna Box  
Seattle Public Schools, Washington

*Salt Palace Convention Center, 255 E*

99 **AEE**

Designing Innovation and Engineering Creativity with Grants for Mathematics Educators

General Interest Session

What are the Mathematics Education Trust (MET) resources that can help you to be a leader in mathematics teaching and learning? Collaborate with others to improve your classroom, school, and state using grants from MET. We will look at grants you can apply for and provide tips on how to write powerful proposals.

M. Alejandra Sorto  
Trustee, MET Board of Trustees, Reston, Virginia

*Salt Palace Convention Center, 250 F*

---

**Thank you** to all of the volunteers who have helped make this conference a success!
2:30 P.M.–3:30 P.M.

100  **TOOLS**
**Problem Strings: A Lesson Format for All Students**
General Interest Session

A problem string is a purposefully designed sequence of related problems that helps students mentally construct mathematical relationships and nudges them toward a major, efficient strategy, model, or big idea. Because it puts students’ ideas at the center, teachers listen deeply to students and structure math conversations around their thinking.

Pamela Harris
Twitter: @pwharris
Texas State University, San Marcos

_Salt Palace Convention Center, 250 AB_

101  **AEE**
**Supporting Preservice Elementary Teachers’ Learning of Equity & Diversity Issues in Math Education**
Research Session

How can we support preservice elementary teachers’ learning of equity and diversity issues in math education? We are currently analyzing data from a larger teacher education project involving a number of hypothetical classroom scenarios focused on math content as well as equity issues. We will present some of our scenarios, findings, and future directions.

José Gutiérrez
University of Utah, Salt Lake City

Rachel Francom
University of Utah, Salt Lake City

Kevin Greenberg
University of Utah, Salt Lake City

_Salt Palace Convention Center, Ballroom J_

2:45 P.M.–4:00 P.M.

102  **AEE**
**Making Math Instruction Accessible to All K-2 Students**
Pre-K–2 Workshop

Participants will learn multiple strategies that can be incorporated immediately such as think alouds, real objects, sentence frames, manipulatives, and more to incorporate into their classroom.

Leigh Ann Fisher
Canyons School District, Sandy, Utah

Sallianne Wakley
Canyons School District, Sandy, Utah

_Salt Palace Convention Center, Ballroom G_

103  **DIFF**
**Shaping the Environment for Intervention**
Pre-K–2 Workshop

Let’s increase opportunity for all students through sound curriculum that develops practices, critical reasoning, modeling, and communication skills with interventions that make a difference. Participants will consider the barriers and possible solution strategies based on the eight research recommendations that match our learners.

Pia Hansen
Math Learning Center, Cheyenne, Wyoming

_Salt Palace Convention Center, 250 DE_

104  **TOOLS**
**Growing Mathematicians with Number Lines**
3–5 Workshop

In this interactive session for K–5 educators, participants will explore the progression from number tracks to number lines and engage in games and activities, using both digital and print resources, to help students improve their understanding of relative position and magnitude.

Melinda Schwartz
ORIGO Education, Garland, Texas

Heather Monks
ORIGO Education, Earth City, Missouri

_Salt Palace Convention Center, 151 G_

105  **LEARN**
**What’s Your Angle on Angles? Exploring a Progression in Geometry**
3–5 Workshop

Do your students struggle to “see” angle relationships? Are protractors perplexing? This session will provide lessons and hands-on activities to illuminate angle measurement understanding, explore application of angle relationships in middle school, and connect this understanding to transformational geometry and high school trigonometry.

Elizabeth Peyser
Curriculum Associates, Wichita, Kansas

_Salt Palace Convention Center, 251 AB_
2:45 P.M.—4:00 P.M.

106 \textbf{TOOLS}

\textbf{Creating Mathematically Rich Discourse in the Middle School Classroom}  
6–8 Workshop
This session will explore the teaching and learning supports housed in Nevada's Instructional Materials Resource Center (IMRC). Participants will be introduced to the new middle school material in a hands-on approach. We will investigate a couple of activities together. Come ready to play and enjoy mathematics that will challenge our thinking.

David Brancamp  
Sierra Nevada College, Reno  
\textit{Salt Palace Convention Center, 255 F}

107 \textbf{PRO}

\textbf{Grab a Greeting Card; Build a Box; Teach Geometry with a Purpose}  
6–8 Workshop
Transform used greeting cards into boxes—but more importantly, discover and refine geometry concepts and definitions, make conjectures, and answer probing questions about parallelograms, rectangles, squares, and quadrilaterals while participating in this highly interactive hands-on activity. We will also discuss ratio, proportion, area, and volume.

Nicholas Restivo  
Twitter: @TweetMOEMS  
MOEMS, Bellmore, New York  
\textit{Salt Palace Convention Center, 150 G}

108 \textbf{LEARN}

\textbf{“What’s Fair?”: Using Mathematics to Model Fairness in Society}  
8–10 Workshop
Young people have a strong sense of fairness, and mathematics can help them examine and critique their ideals and those of others. Experience activities where students explore fair division, voting systems and representation, and game theory, and then develop their own models for fair distribution of resources in a society.

Steven Starr  
StarrWorksMath, Chicago, Illinois  
\textit{Salt Palace Convention Center, 255 C}

109 \textbf{LEARN}

\textbf{Using Geometric Models to Visualize Rates of Change}  
8–10 Workshop
Let’s do math! Engage in math tasks that use geometric models and multiple representations to explore rates of change of various functions. Gain new ideas for how to deepen student understanding of linear, exponential, and quadratic functions. Use created representations to collaborate with colleagues to more precisely define each function.

Joleigh Honey  
Twitter: @joleighhoney  
Utah State Board of Education, Sandy  
\textit{Salt Palace Convention Center, 251 DE}

110 \textbf{TOOLS}

\textbf{Hop on the Productive Struggle Bus}  
10–12 Workshop
Work through a task that promotes productive struggle. Following the task, we will analyze how productive struggle is encouraged in the task so that you can then work in a small team to create a task that can be used to promote productive struggle in your classroom.

Anthony Bokar  
Padua Franciscan High School, Parma, Ohio  
Fred Dillon  
University of Pittsburgh, Pennsylvania  
\textit{Salt Palace Convention Center, Ballroom E}

111 \textbf{TOOLS}

\textbf{Integrate Problem Solving, Technology, and Math Modeling Using Data Involving Important Social Issues}  
10–12 Workshop
Challenge your students to solve rigorous, relevant math problems that create social awareness. Climate change, opioid deaths, payday loans, gerrymandering, hot car temp deaths—all provide excellent data that can be modeled and interpreted mathematically. Learn how to implement these activities into your classroom for grades 8–12. Get ALL materials.

Tom Reardon  
Twitter: @tomreardon3  
Fitch High School / Youngstown State University, Poland, Ohio  
\textit{Salt Palace Convention Center, Ballroom I}
2:45 P.M.–4:00 P.M.

112 LEARN
What Do the Vertex Form of Quadratics and Logarithm Rules Have in Common?
10–12 Workshop
Bring mathematical surprise to your classroom. There’s another reason why logarithm rules work, and it’s not just because of exponent rules and inverses. During this interactive workshop, we will make use of structures to explore transformations of functions, then we will use our learning to make sense of the exponential and logarithmic operations.

Kristi Martin
Twitter: DrMartinMath
Tumwater School District, Washington

David Parascand
Tumwater School District, Washington

Zachary Suderman
Tumwater School District, Washington

Salt Palace Convention Center, 255 D

4:00 P.M.–5:00 P.M.

113 LEARN
Using the Sophistication of Counting to Add and Subtract
Pre-K–2 Session
Young students often spend one-two years in the first two levels of addition and subtraction; involving counting concept skills. As number sets get larger, ways students count become complex. Come and explore the counting models and strategies that students use as they gain accuracy and fluency with not only computation, but size of numbers as well.

Carrie Ziegler
Salt Lake City School District, Utah

Salt Palace Convention Center, 255 B

114 AEE
Using Stuck Points to Build Productive Dispositions in Young Learners
Pre-K–2 Session
How do young students feel when they get “stuck” in math? Do they still see themselves as authors of mathematics when they encounter challenges? With the support of classroom video footage, participants will learn strategies for empowering young learners to see “stuck points” as an opportunity for celebration and learning.

Adam Johnson
Curriculum Associates, North Billerica, Massachusetts

Salt Palace Convention Center, 250 F

115 TOOLS
Let’s “Number” Talk!
3–5 Session
Promoting mathematically productive talk is essential for students to develop conceptual understanding. In this session, participants will learn the how and why behind the successful implementation of Number Talks. Leave with an understanding of how the mathematical disposition of your students can be transformed through Number Talks.

Susan Loveless
Twitter: @susanloveless23
Rutherford County Schools, Murfreesboro, Tennessee

Salt Palace Convention Center, 251 C

116 ASSETS
What You Wish You Could Get From Other Teachers That Would Help Improve Your Teaching
3–5 Session
An analysis of Japanese and U.S. lesson plans show that some are good at helping teachers improve their teaching. The most prominent feature is the use of student mathematical thinking. It is a lot easier to make effective instructional choices when you know how students will respond. Come find out how to write what teachers could really use.

Doug Corey
Brigham Young University, Provo, Utah

Salt Palace Convention Center, 255 E

117 DIFF
Differentiation Strategies for Equitable Classrooms with a Focus on English Language Learners
6–8 Session
Explore a middle school math curriculum that is sure to challenge the way you think about scaffolding instruction. During this interactive session, participants will apply multiple content- and activity-specific differentiation techniques within lessons to better understand how to incorporate differentiation strategies into their core curriculum.

Tammy Baumann
Open Up Resources, Erie, Pennsylvania

Salt Palace Convention Center, 250 C
4:00 P.M.–5:00 P.M.

118 AEE
Singin’ and Signin’ Teaches the Way Kids Learn!
6–8 Session
Learn a student-centered and engaging methodology and curriculum ensuring mastery of rigorous standards that motivates and provide access and equity for ALL students, regardless of background, with respect to measurable success outcomes. Leave with PowerPoint lessons on area, circumference and volume that provide modeling, manipulatives, and song lyrics.
Siegrid Stillman
Fallbrook Union Elementary School District, California
Salt Palace Convention Center, Ballroom AC

119 AEE
Access for All Students: Structured Scaffolds in the Math Classroom
8–10 Session
All students can actively engage in productive struggle and grade-level mathematics if the instruction is scaffolded appropriately. Learn specific, high-yield instructional strategies for the secondary math classroom that will increase access and equity for all students.
Malia Hite
Twitter: @maliaht
Jordan School District, West Jordan, Utah
Salt Palace Convention Center, Ballroom BD

120 TOOLS
A New Perspective on Teaching Trigonometry
10–12 Session
In this talk, we show a different approach to trigonometry that shifts the focus from the unit circle to the graphs of basic trigonometric functions and their properties. Using this approach, students do not need to memorize the unit circle. We will show progression of topics and how to solve basic trigonometry problems using the new approach.
Sandra Fital-Akelbek
Weber State University, Ogden, Utah
Salt Palace Convention Center, 250 AB

121 ASSETS
Setting the Stage for Everything Else: Using Mathematical Goals to Focus Learning
10–12 Session
Intentional teaching practices when teachers learn to select and sequence student work for classroom discussion. Participants in this session will consider samples of student work that draw upon students’ diverse ways of thinking, while building a connected and coherent mathematical storyline aligned with the mathematical goals of the lesson.
Scott Hendrickson
Brigham Young University, Provo, Utah
Salt Palace Convention Center, Ballroom J

122 PRO
Leading a Mathematics Team Focused on Learning and Equity
Coaches/Leaders/Teacher Educators Session
How does a team of teachers work together to improve the learning of every student? How does the team learn from one another to grow effective practices? This session will explore protocols team leaders can use to establish equity and help teams make sense of standards, design common assessments, and analyze data and respond.
Mona Toncheff
Twitter: @toncheff5
NCSM President-Elect, Phoenix, Arizona
Salt Palace Convention Center, 355 B

123 TOOLS
Teaching the Literacies for Mathematical Learning, Doing, and Knowing
General Interest Session
Access to learning, doing, and knowing mathematics requires students to acquire fluency with the literacies particular to the discipline of mathematics. In this session, teachers will learn how to identify and teach the specific literacies necessary for students to learn mathematics, participate in mathematical activity, and demonstrate competence.
Daniel Siebert
Brigham Young University, Provo, Utah
Salt Palace Convention Center, Ballroom FH
4:30 P.M.–5:00 P.M.

124  TOOLS
Losing the Alligators and Focusing on Inequality
Pre-K–2 Burst
We’ve all seen them. . . . Who hasn’t tried to make a concept
easier by trying to make a connection to something familiar
to kids? Yet, in our attempt to help, we actually may hinder
student learning. This burst will address the dangers of
allowing alligators to creep into instruction, and it will
provide a rationale for conceptual alternatives.
Stefanie Livers
Twitter: @LiversStefanie
Missouri State University, Springfield

Salt Palace Convention Center, Ballroom E

125  TOOLS
Math Recess: Creating a Schoolwide Culture of
Mathematics
3–5 Burst
Students are sensitive to the messages about math that they
get from parents, teachers, and the culture at large. We would
like to share some of the ways that we have worked to engage
our entire community in joyful mathematical play through
parent newsletter math challenges, faculty puzzles, and math
recess to build a strong mathematical culture.
Amanda Fox
Twitter: @amanda_renard
Presidio Knolls School, San Francisco, California

Salt Palace Convention Center, 255 D

126  LEARN
Utilizing Key Ideas as the Foundation for Teaching
Fraction Operations
3–5 Burst
Almost inevitably students in elementary school struggle
with fraction concepts and operations. One of the biggest
questions that teachers may ask is how can we make these
ideas stick? This presentation will focus on how the presenter
utilized key conceptual ideas to help fraction concepts
become permanent.
Jason Hart
Jordan School District, West Jordan, Utah

Salt Palace Convention Center, 255 C

127  ASSETS
“When Am I Ever Going to Use This?!” Rethinking
Why Students View Mathematics as Useful (or
Not)
6–8 Burst
This presentation explores recent research on the usefulness
of mathematics. We will examine comments from a diverse
group of middle school students about when and what kinds
of math is useful—and what they say might surprise you! We
will conclude by discussing strategies to help students see
math as useful in ways that are meaningful to them.
Tracy Dobie
Twitter: @tracydobie
University of Utah, Salt Lake City

Salt Palace Convention Center, 250 DE

128  DIFF
What Does Effective Fraction Intervention Look
Like in Middle School or Beyond?
6–8 Burst
These practical research-based ideas empower struggling
learners by catching them up with fractions while
maintaining access to grade level content. Differentiation
ideas are included too. A knowledgeable teacher is the best
student pathway to success!
Mark Goldstein
Center for Mathematics and Teaching, Redondo Beach, California

Salt Palace Convention Center, Ballroom G

129  AEE
Detracking: Using Math Labs to Empower All
Learners
8–10 Burst
We discuss the potential for math labs to rewrite students’
math stories, giving them agency in their learning and
reconnecting with their inherent brilliance. We discuss
taking a holistic approach to student learning, attending to
emotional needs, and exposing students to new-yet-accessible
math concepts, and we compare various interventions.
Amanda Cangelosi
Twitter: @mocangelomaths
University of Utah, Salt Lake City
Nathan Auck
Utah State Board of Education, Salt Lake City

Salt Palace Convention Center, 255 F
4:30 P.M.–5:00 P.M.

130 DIFF
Escape from the Mundane Math Class with Problem-Based Learning for Grades 6–12
8–10 Burst
Put your problem-solving and teamwork skills to the test to unlock the clues and solve the mystery to escape! Experience problem-solving and mathematical modeling activities that you can take back to your classroom in this lively and challenging Escape Room environment!
Bryan Wilson
Pearson, Denver, Colorado
Salt Palace Convention Center, Ballroom I

131 TOOLS
Expanding Talk to Support Mathematical Thinking
8–10 Burst
The 5 Practices for Orchestrating Mathematical Discourse promote one way to support classroom discourse that leverages student thinking. This burst shares a tool that we use to expand teachers’ views of talk and connections to student learning.
Ayanna Perry
Twitter: AyannaPerry2
Knowles Teacher Initiative, Bowie, Maryland
Salt Palace Convention Center, 251 AB

132 LEARN
If the Sign Is Positive, Shift Left; If It’s Negative, Shift Right?
10–12 Burst
Tables and graphs confirm that horizontal shifts of functions are counterintuitive, but why? During this quick session, we will make use of structures and multiple representations, including diagrams and words, to explore transformations. Leave this session with a conceptual understanding of which direction the graph will shift.
Kristi Martin
Twitter: DrMartinMath
Tumwater School District, Washington
David Parascand
Tumwater School District, Washington
Zachary Suderman
Tumwater School District, Washington
Salt Palace Convention Center, 151 G

133 TOOLS
Fostering Mathematical Discourse through Inquiry-Based Tasks
Coaches/Leaders/Teacher Educators Burst
Inquiry-based tasks can promote active engagement in the elementary mathematics classroom. These tasks also lead to meaningful discourse, allowing all students to be engaged in the mathematics. Join us to learn about inquiry-based tasks that engage students through mathematical discourse and promote conceptual understanding of mathematics.
Allison Roxburgh
Utah State University, Logan
Joseph Kozlowski
Utah State University, Logan
Salt Palace Convention Center, 150 G

134 TOOLS
Positioning Students as Sense Makers: Questioning Our Questions
Higher Education Burst
The questions we ask as teachers determine to a large extent how our students experience mathematics. Sometimes, unfortunately, our questions send negative mathematical messages to our students. Come discuss strategies for asking more meaningful questions—questions that position students as sense makers and that send positive mathematical messages.
Keith Leatham
Brigham Young University, Provo, Utah
Salt Palace Convention Center, 251 DE

Membership questions?
We’ve got answers!
Visit Member Services in NCTM Central.
HIGHLIGHTS
Regional Conference Overview & Orientation, 135
Orchestrating Productive Discussions: Teachers Taking on and Overcoming the Challenges, 140
Beyond Worksheets! Developing Number Sense and Fluency for ALL Students through Classroom Routines, 159
GeoGebra Does THAT? Doing Statistics and Data Analysis in GeoGebra, 164
Flexibility: More Than a Teacher Trait, 167
New and Preservice Teachers Workshop, 178
Taking Action: Implementing the NCTM High-Leverage Teaching Practices for Mathematics, 181
Planning for Productive Struggle: Invest in Students, Know Students, Recognize Their Brilliance, 189
We’re All Language Learners: Advancing Academic Language Levels through the Learning Cycle, 207
Culturally Responsive Mathematics Instruction: From Theory to Practices, 209
Do You Use the Math You Teach? How to Find Problems That Show the Power of Mathematics in Real Life, 221
Representational Competence: A Renewed Focus on Empowering Students, 226
It’s All About That Base (Teaching about Logarithms), 229
Yes, We Can Change the World Using Mathematics (Using Mathematics as a Catalyst for Social Justice), 239

GET SOCIAL
Stay informed and get connected with attendees by using #NCTMSLC19 on social media.

Conference App
nctm.org/confapp
Twitter
@NCTM
Instagram
@NCTM.math
Facebook
facebook.com/TeachersofMathematics

REGISTRATION HOURS
7:00 a.m.–2:00 p.m.

EXHIBIT & NCTM CENTRAL HOURS
9:00 a.m.–2:00 p.m.

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

135  Regional Conference Overview & Orientation
General Interest Session
Whether you’re new to NCTM or a seasoned veteran, there is something for you at the conference! 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.

Jeffrey Shih
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Nevada, Las Vegas

Salt Palace Convention Center, 255 F

8:00 A.M.–9:00 A.M.

136  DIFF Tasks That Leverage Conceptual Number Understanding for Students Identified as Low Achieving
Pre-K–2 Session
This presentation uses unique task progressions that are developed to promote students identified as low achieving and engage students’ subitizing and counting actions. Through these task progressions, participants will connect effective instructional moves to Principles to Actions when teaching all students.

Beth MacDonald
Utah State University, Logan
Allison Roxburgh
Utah State University, Logan
Annika Jenson
Utah State University, Logan

Salt Palace Convention Center, Ballroom AC

137  DIFF Math for ALL Students Really Means ALL Students
3–5 Session
Examine how the Mathematics Teaching Practices provide embedded differentiation for all students. Explore ways to provide specific supports and challenges for students with disabilities, students identified as gifted and talented, and English Language learners. Receive resources and practice planning for differentiation.

Shannon Ference
Twitter: @shannonference
Utah State Board of Education, Salt Lake City
Becky Unker
Utah State Board of Education, Salt Lake City

Salt Palace Convention Center, 255 B

138  LEARN Part-Whole Relationships Provide Access to Solving Complex Word Problems Using Tape Diagrams
3–5 Session
We will explore the coherence of part-whole relationships using the tape diagram. We will learn how this model supports students in solving increasingly complex problems and in making sense of mathematics and thus building confidence. Participants will gain a better understanding of how tape diagrams represent numerical relationships.

Lori Sponenburgh
Twitter: lorispon
Great Minds, Washington, D.C.

Salt Palace Convention Center, 250 F

139  LEARN Making Math Moments That Matter
6–8 Workshop
Wondering how to create a classroom culture where students don’t want to stop exploring mathematics when the bell rings? Get introduced to our three-part framework for building easy-to-plan and fun-to-deliver lessons that kids will not only love but also will learn from! Learn how you can help meet the needs of all learners regardless of student readiness.

Kyle Pearce
Twitter: @MathletePearce
Greater Essex County District School Board, Belle River, Ontario, Canada
Jon Orr
John McGregor Secondary School, Tilbury, Ontario, Canada

Salt Palace Convention Center, 151 G

140  TOOLS Orchestrating Productive Discussions: Teachers Taking on and Overcoming the Challenges
6–8 Session
There are many challenges teacher face when facilitating mathematics discussions (e.g., identifying learning goals, launching a task to ensure student access, holding all students accountable for the ideas discussed). This session will provide teachers with strategies for addressing these and other challenges.

Margaret (Peg) Smith
Consultant, Gibsonia, Pennsylvania

Salt Palace Convention Center, Ballroom FH
Check out these and other new releases at nctm.org/store

Mathematical Thinking: From Assessment Items to Challenging Tasks
This compilation of problem-based activities encourages students to engage in productive struggle and deep thinking.
STOCK #14854

The 5 Practices in Practice: Successfully Orchestrating Mathematical Discussion in Your Middle School Classroom
Take a deeper dive into understanding the five practices—anticipating, monitoring, selecting, sequencing, and connecting—for facilitating productive mathematical conversations in your middle school classrooms.
STOCK #15790

Math That Matters: Targeted Assessment and Feedback for Grades 3 to 8
This resource by popular professional developer Marian Small comprehensively addresses different mathematical domains for grades 3–8.
STOCK #15893

Putting Essential Understanding into Practice: Number and Numeration, Pre-K-2
What tasks can you offer—and what questions can you ask—to determine what your students know or don't know—and move them forward in their thinking?
STOCK #14348

Create meaningful and transformative K–5 STEAM learning experiences for each and every student. Make the most of your limited instructional time and become part of the Step into STEAM movement!
STOCK #15854

Visit our bookstore at NCTM Central and SAVE AT LEAST 25% on all purchases!
8:00 A.M.–9:00 A.M.

141 DIFF Choice-Driven Math: Enhancing Engagement with Learners in the Middle
8–10 Session
Student engagement means they’re with you. They care about what’s going on and they want to figure this out. It happens more often when they’ve made choices and are doing more than following a script. Come for some examples of middle-level math activities that feature student choice, and hear from one another. Could this work in your classroom?
Mark Roddy
Seattle University, Washington

Salt Palace Convention Center, 251 C

142 TOOLS Creating Continuous and Dynamic Learning for All Students
8–10 Session
How do we create a learning habitat for all students? Your apathetic students may actually be isolated! Explore a variety of daily practices that help every student win. Come create a lesson using inquiry-based, active thinking strategies that eliminate isolation, foster risk-taking, and encourage dialog while raising each student’s accountability.
Peggy Hartwig
Twitter: @mthartwig
Discovery Education, Marshfield, Wisconsin

Salt Palace Convention Center, 255 E

143 DIFF Exploring Proficiency: An Increased Opportunity for All
10–12 Session
Come join us as we discuss the power behind defining proficiency. Empower students to assess their own learning and set goals for increasing their mathematical understanding. A definition of proficiency allows teachers to shape a learning environment to match the learner and provide interventions necessary to support all students.
Orson Spencer
Twitter: @SpencerMike1
Juab High School, Nephi, Utah
Dawn Barson
Lehi, Utah

Salt Palace Convention Center, 355 B

144 TOOLS How Do You Engage Your Reluctant Learners with Mathematical Modeling?
10–12 Session
Further your understanding of the research behind mathematical modeling. Experience several highly engaging modeling lessons. By analyzing the modeling cycle and examining research found in the GAIMME report, you will walk away with more insight and have ideas that can be used immediately in your classroom to meet required modeling standards!
Bryan Wilson
Pearson, Denver, Colorado

Salt Palace Convention Center, 250 C

145 LEARN What Is an Infinite Series and Why Should I Care?
10–12 Workshop
What is an infinite series and why are they important? Students can work with them, but do the kids understand what the things ARE? Combine history with arithmetic, analysis, tech, 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
Twitter: rm11235813
Greenhills School, Ann Arbor, Michigan

Salt Palace Convention Center, 255 C

146 PRO Collective Unit Planning: A Way to Promote Professionalism and Quality Practice in the Classroom
Coaches/Leaders/Teacher Educators Session
We will examine how collaborative unit planning across schools builds a community of teacher leaders and learners. Participants will use the lens of the Comprehensive Mathematics Instruction (CMI) framework to unpack standards, describe proficiency, and repackage standards into a trajectory of learning cycles.
Nicole Berg
Twitter: @berg_nicole
Nebo School District, Spanish Fork, Utah
Sterling Hilton
Brigham Young University, Provo, Utah

Salt Palace Convention Center, Ballroom BD
**8:00 A.M.–9:00 A.M.**

147 **ASSETS**

**Moving beyond Noticing to Making Students’ Mathematical Ideas Central in Instruction**

General Interest Session

To promote equity and access, instruction should be informed by students’ mathematical ideas. In this session, I demonstrate how to develop instruction through highlighting, building on, and referring back to students’ mathematical ideas. Videos of sixth-grade students solving problems will be shown to demonstrate such instruction.

Richard Kitchen
University of Wyoming, Laramie

**Salt Palace Convention Center, 250 AB**

148 **TOOLS**

**Up for Debate! Empowering Students through Argumentation in Math Class**

General Interest Session

Imagine: debate, often a staple of the humanities classroom, as an integral part of your math class! Come learn and experience ideas for creating a healthy math-debating and discussion-centered classroom that will empower and engage students of all levels. Let’s get our students constructing viable arguments and standing up to debate!

Chris Luzniak
Twitter: @cluzniak
The Archer School, Los Angeles, California

**Salt Palace Convention Center, Ballroom J**

---

**8:00 A.M.–9:15 A.M.**

149 **DIFF**

**Beyond Literature Connections: Storytelling in Math**

Pre-K–2 Workshop

There is a plethora of children’s books that address all areas of the curriculum with engaging stories and whimsical illustrations, along with accompanying lesson plans. Math in literature has exploded! How about literature in math? What if our students approached math in a way similar to literature? What if they became the authors?

Teresita Cuesta
Sidwell Friends School, Washington, D.C.

**Salt Palace Convention Center, Ballroom E**

150 **TOOLS**

**Number Sense and Reasoning Routines in K–2**

Pre-K–2 Workshop

Do your K–2 students struggle with reasoning about numbers and quantity, addition and subtraction, decomposition, or even counting principles? Are you looking for practical, high-quality tasks to engage students and ignite discussion? In this session, participants learn about dynamic, doable activities that engage students in meaningful ways.

**John SanGiovanni**
Twitter: @JohnSanGiovanni
Howard County Public School System, Westminster, Maryland

**Salt Palace Convention Center, 251 AB**

---

151 **AEE**

**Making Math Accessible to All through Literature, Language, and Community**

3–5 Workshop

Language, literacy, and culture are personal attributes of each and every student, as well as an integral part of learning mathematics. Strategies, approaches, and practices will be presented to advocate for equitable teaching for all students creating a mathematical community that flourishes.

**Kristie Manley**
Twitter: @kmanley0628
Jefferson County Public Schools, Louisville, Kentucky

**Salt Palace Convention Center, 255 D**

152 **LEARN**

**Gain a Deeper Understanding of Fractions on the Number Line**

6–8 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**
Twitter: @SusieHakansson
TODOS: Mathematics for ALL, Venice, California

**Salary Palace Convention Center, 250 DE**
8:00 A.M.—9:15 A.M.

153  ASSETS
But How Do We Assess Deep Understanding?
Assessment Challenges and Solutions
8–10 Workshop
The most frequently-asked question about inquiry-based instruction is, “How do you assess both procedural and conceptual understanding?” We’ll discuss the potential impacts of three categories of assessments—spontaneous formative, planned formative, and planned summative—and we will practice writing questions that provide actionable student learning data.
Amy Hand
Twitter: MathSenseLLC
MathSense Consulting, Brooklyn, New York
Allyson Rohrbach
MathSense Consulting, Brooklyn, New York
Salt Palace Convention Center, 150 G

154  LEARN
Hands-On Elementary Symmetry: Rotate and Reflect in 3D
8–10 Workshop
Deepen your understanding of symmetry by expanding the concept to 3D. Explore reflection and rotation of simple and exotic solids using models, mirrors, and plastic rods. Translate your new insights into classroom practice and discourse. Elaborate on mathematical and practical consequences of the results.
Aniceta Skowron
Geometro, Ancaster, Ontario, Canada
Salt Palace Convention Center, 255 F

155  TOOLS
Creative Activities, Strategies, and Technology to Better Prepare Your Students for the ACT and SAT
10–12 Workshop
Get interactive activities that align directly to the types of questions that are on the ACT/SAT. Obtain proven test-taking strategies that encourage multiple solution paths. Use a graphing calculator effectively to teach deeper conceptual understanding. Students learn and retain the math better, not just score better on these high-stakes exams!
Tom Reardon
Twitter: @tomreardon3
Fitch High School / Youngstown State University, Poland, Ohio
Salt Palace Convention Center, 251 DE

156  DIFF
Math for All: Universal Design for Learning in a Standards-Based Classroom
Coaches/Leaders/Teacher Educators Workshop
Comprehension of mathematics can be improved for all students by utilizing principles of Universal Design for Learning in a unified approach of curriculum planning and pedagogy. The presentation will show how support practices traditionally utilized for accommodations to specialized subpopulations can benefit the entire spectrum of learners.
Naomi Church
Twitter: @nchurch11
Florida Diagnostic and Learning Resources System, Fort Lauderdale
Salt Palace Convention Center, Ballroom I

156.1  TOOLS
Splat! The Explosively Popular Inkblot Math Strategy That Rapidly Fuels Discourse
3—5 Workshop
Splat! The visual math strategy which has propelled number sense conversations in classrooms around the world will be showcased in this session. Participants will learn how to use powerful questions in key moments to leverage the strategy—and will leave with more than 100 animated, ready-to-use PowerPoint Splat lessons.
Steve Wyborny
Ontario School District, Oregon
Salt Palace Convention Center, Ballroom G

9:30 A.M.—10:30 A.M.

157  DIFF
Differentiate Powerfully and Joyfully: The Learning and Teaching with Learning Trajectories Tool
Pre-K–2 Session
Differentiation is most powerful through formative assessment. Learning and Teaching with Learning Trajectories, [LT]; a research-based tool that supports teachers in delving deeply into understanding their students’ thinking with sequences of videos along the trajectories and the use of videos and pdfs of effective activities.
Douglas Clements
Twitter: DHClements
University of Denver, Colorado
Julie Sarama
University of Denver, Colorado
Salt Palace Convention Center, Ballroom J
9:30 A.M.–10:30 A.M.

158 AEE
Facilitate Powerful Mathematics Discussions Using Student Thinking and Connections
Pre-K–2 Session
Come experience powerful teaching and learning practices for engaging and empowering every student in mathematics. Leave with practical strategies that encourage students to share their mathematical ideas in a collaborative environment. And yes, younger students can do this—we’ll look at classroom videos to see these strategies in action!
Danielle Curran
Twitter: danigirl1216
Curriculum Associates, Reading, Massachusetts
Salt Palace Convention Center, 250 AB

159 DIFF
Beyond Worksheets! Developing Number Sense and Fluency for ALL Students through Classroom Routines
3–5 Session
“My students don’t have any number sense!” Do you find yourself saying this over and over? Let’s look at routines that can be adapted for ALL students in grades 3–5 and provide opportunities to understand how numbers work and what operations mean, while developing fluency with basic facts and understand rational numbers. And... how to get started tomorrow!
Linda Gojak
Twitter: @LindaGojak
Past President, National Council of Teachers of Mathematics, Reston, Virginia; Mathematics Consultant, Willowick, Ohio
Salt Palace Convention Center, 251 C

160 LEARN
Finding Pythagoras Visually
6–8 Session
Do your students forget the Pythagorean theorem two weeks after you have taught it? Do they struggle with how to apply it to novel situations? Spend an hour exploring a more visual way to appeal to your students.
Jane Porath
Twitter: @janeporath
Traverse City Area Public Schools, Charlevoix, Michigan
Salt Palace Convention Center, 251 C

161 TOOLS
Using Discussion to Make Sense in a Mathematics Classroom
6–8 Session
Discover how to engage students in discussion during an algebra lesson! You will learn how to support student learning through implementing three levels of sense making in a whole class discussion. Activities to support students deepen their understanding of expressions and equations by attending to the changing concept of variables will be shared.
Diana Moss
Utah State University, Logan
Jenny Nehring
Utah Valley University, Orem
Salt Palace Convention Center, 255 E

162 ASSETS
Multiple Representations and Perseverance: A Tool for When the Going Gets Tough
8–10 Session
Getting students to create a variety of representations and connect the key features of the representations is a strategy that teachers can develop in students to give them a pathway when they are stumped and don’t know how to proceed. The focus will be on how different representations can help students persevere and make sense of the mathematics.
Janet Sutorius
Mathematics Vision Project, Nephi, Utah
Salt Palace Convention Center, 355 B

163 LEARN
Ready, Stats, Go!
8–10 Session
Statistics is a commonly skipped and misunderstood topic in high school math classrooms. What curriculum is available and what technology could you use? This presentation will use readily available downloadable lessons that align with the Standards for Mathematical Practice. Graphing calculators and apps will be used in this hands-on look at stats.
Jennifer White
Uinta County School District #1, Evanston, Wyoming
Salt Palace Convention Center, 250 C

The NCTM Annual Meeting & Exposition is headed to the fall!
St. Louis | October 21–24, 2020

ASSETS
Leveraging Assets: Learning to Shop’ in Students’ Stores
DIFF
Differentiation: Increasing Opportunity for All Students
LEARN
Mathematics: Continually Learning the Content We Teach

October 16–18, 2019 | Salt Lake City, UT
164 **TOOLS**

**GeoGebra Does THAT? Doing Statistics and Data Analysis in GeoGebra**

10–12 Session

GeoGebra—widely used in algebra and geometry classes—has a robust set of statistics tools. In this session, you will learn how GeoGebra can be used to develop quantitative literacy in Statistics or AP Statistics through exploratory data analysis, creating dynamic data and regression displays, and conducting inference procedures and simulations.

*Steve Phelps*
Twitter: @giohio
Madeira High School/ Madeira City Schools, Cincinnati, Ohio

*Troy Jones*
Westlake High School, Alpine School District, Salt Lake City, Utah

[Salute Palace Convention Center, Ballroom AC](#)

165 **LEARN**

**Rethinking High School Pathways through Algebra and Function**

10–12 Session

NCTM’s *Catalyzing Change* calls for shifts in the high school curriculum. What algebra/function content is essential for all students in their journey through mathematics, no matter their intended goals? How do we build a coherent pathway through this content for all students? And what is the role of technology in achieving this vision?

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

[Salute Palace Convention Center, Ballroom AC](#)

166 **PRO**

**Taking Action with the Teaching Practices**

Coaches/Leaders/Teacher Educators Session

Want to take action with the effective Mathematics Teaching Practices and improve mathematics instruction for an entire district? Come hear about one district’s journey in providing specialized training for building level math teacher leaders and how it improved mathematics instruction and student learning for all.

*Mary Fugate*
Twitter: mrsf4math
Bradley County Schools, Cleveland, Tennessee

*Angela Epperson*
Bradley County Schools, Cleveland, Tennessee

*Sarah Gann*
Bradley County Schools, Cleveland, Tennessee

[Salute Palace Convention Center, 255 B](#)

167 **LEARN**

**Flexibility: More Than a Teacher Trait**

General Interest Session

Flexibility is necessary for procedural fluency! We want students to look at problems like 308 – 299 or 3(y – 5) – 2(y – 5) = 0, and notice something about the values that lead to an efficient strategy choice. We will explore routines and questioning strategies to help your students become flexible thinkers, and thereby stronger mathematicians.

*Jennifer Bay-Williams*
Twitter: @JBayWilliams
University of Louisville, Kentucky

[Salute Palace Convention Center, Ballroom FH](#)

167.1 **CW**

**“Match the Graph” with Robots**

8–10 Exhibitor Workshop

Interpreting a graph of position vs. time or velocity vs. time is often a challenge for students. What if we could connect these representations with physical activity and the excitement of robotic vehicles? In this session, we will code robotic vehicles to drive paths described in each of these ways. No coding experience needed to get started.

*Texas Instruments*
Dallas, Texas

[Salute Palace Convention Center, 251 F](#)

167.2 **CW**

**Core Curriculum by MidSchoolMath—The Team That Created the Nation’s Largest Middle School Conference**

6–8 Exhibitor Workshop

Setting the bar among the highest recorded effect sizes in educational research, experience curriculum influenced by the work of Carol Dweck, Dan Meyer, and Jo Boaler. While “The Math Simulator” technology sets it apart, it is the pedagogical format that drives the exceptional learning gains. Core Curriculum by MidSchoolMath could be your program.

*MidSchoolMath*
Taos, New Mexico

[Salute Palace Convention Center, 255 A](#)
9:45 A.M.—11:00 A.M.

168  LEARN

Understanding Place Value: When 97 Is More Than 90 + 7
Pre-K–2 Workshop
What are the big ideas students need to understand to have a deep and flexible knowledge of place value? How can teachers assess and support the development of such understanding? What does it look and sound like? We will examine student thinking via work samples, dialogue, and activities that promote a deeper understanding of place value in K–2.
Karen Economopoulos
Twitter: Inv3_Math
TERC, Cambridge, Massachusetts
Megan Murray
TERC, Cambridge, Massachusetts
Salt Palace Convention Center, 255 C

169  AEE

Using Stop Motion Animation to Support Elementary Students’ Spatial Reasoning
Pre-K–2 Workshop
Stop motion video is a powerful tool for supporting students’ spatial and geometric reasoning and stimulating discourse on space and spatial relationships. Participants will design and create stop motion video stories using manipulatives, analyze their peers’ videos, and use the videos to guide discourse.
Krista Ruggles
Utah Valley University, Orem
Kristen Apraiz
University of Florida, Gainesville
Salt Palace Convention Center, 251 DE

170  LEARN

Perimeter, Area, Volume: Beyond the Formulas
3–5 Workshop
Many students misuse these crucial formulas. When students have a conceptual understanding of measurement with the ability to visualize the figures and attributes they are measuring, they will be more successful. We will explore and experience ideas and tasks that contribute to student success. You will leave with ideas to implement immediately.
Keith Krone
Boise State University, Idaho
Jacquelyn Ismail
Boise State University, Idaho
Salt Palace Convention Center, 250 DE

171  LEARN

Which Model Should I Use? Choosing and Using a Variety of Representations
3–5 Workshop
We work to use and connect multiple representations in teaching. At some levels, physical models are straightforward, while symbolic representations are dominant elsewhere. This session shows how to match the representations with the math and how to connect representations. We will use counters, bar models, and number lines as key representations.
Sara Delano Moore
Twitter: @saradelanomoore
ORIGO Education, Kent, Ohio
Salt Palace Convention Center, Ballroom I

172  LEARN

Developing Conceptual and Representational Understanding of Integers and Integer Operations
6–8 Workshop
Many middle school math teachers have solid procedural understanding of integer operations, but have only superficial conceptual and representational understanding. This workshop provides opportunities to deepen understanding of integers and of integer operations in all three domains of understanding: conceptual, procedural, and representational.
Sterling Hilton
Brigham Young University, Orem, Utah
Nicole Berg
Nebo School District, Spanish Fork, Utah
Salt Palace Convention Center, 251 AB

173  LEARN

Think about It: Posing Problems to Encourage Student Participation
6–8 Workshop
What motivates students to want to solve a problem? How you pose a problem can have an impact. Participants will discuss the factors that affect motivation, learn how to turn ordinary exercises into extraordinary problems, solve great problems posed by others, and consider strategies for using any problem to its full potential.
Patrick Vennebush
Twitter: @pvennebush
Discovery Education, Falls Church, Virginia
Salt Palace Convention Center, Ballroom E
Discrete or Continuous . . . That Is the Question
8–10 Workshop
While graphing functions is an essential mathematical understanding, students (and teachers) often fail to differentiate between graphs of discrete and continuous relationships. This session will use actual student experiences and questions to explore function continuity by examining relationships where the question of continuity is unclear.

Kami Dupree
Utah State University, Logan
Karen Feld
American Fork Junior High School, Utah
Lori Kalt
American Fork Junior High School, Utah

Salt Palace Convention Center, 151 G

Group Activities to Get Students Talking in AP Calculus
10–12 Workshop
Get students talking and writing about math. We will use several of my favorite collaborative work structures to explore key concepts from AP Calculus. Activities include Derivative Card Sort, Stand and Talk (Notice & Wonder) Free Response Write, Whiteboard Series Challenge, and Integral Jigsaw. All activities can be adapted for multiple topics.

Karen Hyers
Twitter: @keyhyers
Tartan High School, Oakdale, Minnesota

Salt Palace Convention Center, 150 G

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

Salt Palace Convention Center, 255 F

Putting Student Thinking at the Center of Instruction: 3 Shifts for Teaching Mathematics
Coaches/Leaders/Teacher Educators Workshop
Assessment practices often reflect a deficit view of students, focusing on what they do NOT know. This session introduces three shifts in assessment practice that instead focus on what students DO know. The Student Work Clinic, used alone or within a collaborative team, features strategies for using work samples to guide assessment and instruction.

Kimberly Morrow Leong
Twitter: kmorrowleong
George Mason University, Fairfax, Virginia

Salt Palace Convention Center, Ballroom G

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

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

Salt Palace Convention Center, 255 D

Instructional Routines to Transform Young Children into Math “Talk Stars”
Pre-K–2 Session
We will examine several high-yield instructional routines. The focus is designed to take students’ math conversations from one-word numerical responses to in-depth reasoning and sense making. Young children are naturally curious and love to investigate their world. Implementing these simple routines will harness their mathematical intuition.

Melissa Garber
Twitter: missgarbmath
Jordan School District, West Jordan, Utah

Salt Palace Convention Center, 251 C

Make the most of your membership by downloading NCTM Central, the new NCTM app! Learn more at nctm.org/confapp.
11:00 A.M.–12:00 P.M.

180 DIFF
Differentiated Math: Math Work Stations Made Easy
3–5 Session
Differentiated math work stations are an essential component for meeting the needs of all students in a classroom. Learn the essential components for organizing and setting up your classroom to begin station-based differentiated math instruction, the keys to implementing math stations, and math station ideas to bring back to your classroom today!
Anne Thies
Twitter: @edprof18
Concordia University Chicago, River Forest, Illinois

Salt Palace Convention Center, 255 B

181 AEE
Taking Action: Implementing the NCTM High-Leverage Teaching Practices for Mathematics
3–5 Session
Gain a deeper understanding of the eight mathematics teaching practices from Principles to Actions and how they form a framework for teaching mathematics. This session will engage participants in analyzing and discussing artifacts of teaching taken from NCTM’s Taking Action series.
DeAnn Huinker
Twitter: dh11235
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Wisconsin—Milwaukee

Salt Palace Convention Center, Ballroom FH

182 DIFF
Empowering Diverse Learners to Learn Algebra through the Implementation of the CRA Approach
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.
Brooke Callan
Pattonville High School, St. Louis, Missouri
Joseph Sencibaugh
Webster University, St. Louis, Missouri

Salt Palace Convention Center, 250 C

183 LEARN
Want to Develop Fluency with Functions? Algebrafy Patterns!
6–8 Session
Participants will be provided with classroom-ready hands-on lessons that enable students to connect patterns and recursive rules to functions. Emphasis will be placed on connecting concrete, pictorial, and abstract representations to help students develop conceptual understanding, refine procedural fluency, and analyze change in various contexts.
Thomas Beatini
Twitter: @BeatiniTom
Union City Board of Education, New Jersey

Salt Palace Convention Center, 355 B

184 TOOLS
Building: A Way to Productively Use High-Leverage Student Mathematical Thinking
8–10 Session
Explore with us some ways to productively use student mathematical thinking during instruction, and learn how to take advantage of teachable moments. We will describe four sub practices that are included in the teaching practice of building (make precise, grapple toss, orchestrate, make explicit), and we discuss what it might look like to enact them well.
Blake Peterson
Brigham Young University, Provo, Utah
Keith Leatham
Brigham Young University, Provo, Utah

Salt Palace Convention Center, Ballroom AC

185 DIFF
Seniors—Financially Literate for Today and Tomorrow
10–12 Session
In this class, seniors will explore their financial life from first job through retirement. Topics will cover banking, purchasing cars and houses, tax filings and budgeting, and retirement savings options. The class also runs a simulation where the students earn a weekly paycheck where they pay bills and suffer weekly surprise expenses.
James Schierer
King City High School, California

Salt Palace Convention Center, 250 F
11:00 A.M.–12:00 P.M.

186 LEARN
Square Roots with the Babylonian Algorithm as an Introduction to Dynamical Systems
10–12 Session
How would you approximate the square root of some random positive number? Start by guessing! We will develop an algorithm, perhaps the exact one the Babylonians invented, and then explore iterative maps, Newton’s method (with a Desmos applet), fixed points, and basins of attraction. See some beautiful images of fractals in the complex plane.

Brynja Kohler
Utah State University, Logan

Salt Palace Convention Center, 250 AB

187 PRO
Adventures in Mathematics Coaching
Coaches/Leaders/Teacher Educators Session
What do knowledge of students, collaborative relationships, and positioning ourselves as lead learners have in common? They are central to the work of instructional coaching. This session features examples of how a mathematics coach built relationships, leveraged theories of action, and applied NBCT (National Board Certification for Teachers) thinking to improve student learning.

Aaron Rumack
Twitter: sngndnc
White River School District, Renton, Washington

Salt Palace Convention Center, Ballroom J

188 TOOLS
How to Facilitate Mathematical Discourse with English Language Learners: Getting Started
General Interest Session
This workshop will increase teacher self-efficacy in their ability to successfully create a classroom where all students can actively participate in meaningful discussions regardless of the English language learners’ level of language acquisition using free resources such as Number Talks, Dot Talks, Which One Does Not Belong, and 3- Act Tasks.

Darlyne De Haan
Bridgeton Public Schools, New Jersey

Salt Palace Convention Center, 255 E

11:30 A.M.–12:00 P.M.

189 AEE
Planning for Productive Struggle: Invest in Students, Know Students, Recognize Their Brilliance
General Interest Session
How can we empower students in owning their learning by better understanding them and what they bring to the learning experience? How does this knowledge aid in planning for productive struggle? We will engage in activities and discussions related to planning for productive struggle that supports the emergence of each student's brilliance.

Trena Wilkerson
Twitter: @TrenaWilkerson
President-Elect, National Council of Teachers, Reston, Virginia; Baylor University, Waco, Texas

Salt Palace Convention Center, Ballroom BD

190 DIFF
Getting Started with Number Tracks & Number Lines to Model Addition & Subtraction
Pre-K–2 Burst
Number lines are powerful and abstract models for primary students. Explore the number track and strategies for transitioning to number lines in this hands-on session. Differentiate tasks by selecting different models and see how students can represent different addition and subtraction situations using this important family of tools.

Sara Delano Moore
Twitter: @saradelanomoore
ORIGO Education, Kent, Ohio

Salt Palace Convention Center, 151 G

191 LEARN
Fractions: From Misunderstanding to Deep 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
Twitter: debi_depaual
ORIGO Education, Gig Harbor, Washington

Salt Palace Convention Center, Ballroom E
11:30 A.M.–12:00 P.M.

192  PRO  
Hua Long Dian Jing, Matome, and Mise en Commun: How Language Can Help Us Reflect on Our Practice
6–8 Burst
Teachers in different countries have different words to describe what happens in the mathematics classroom. Come learn about key terms in other languages as a way of reflecting on our own practice and priorities. In this presentation, we explore the question, “How can we use language as a lever for shifting our mathematics practice in the classroom?”
Tracy Dobie  
Twitter: @tracydobie
University of Utah, Salt Lake City
Salt Palace Convention Center, Ballroom I

193  DIFF  
Feedback and Assessment for Emerging Bilinguals in Secondary Mathematics Courses
8–10 Burst
This session is based on a case study which examined teacher feedback to emerging bilingual secondary students. We will look at research-based recommendations as well as examples we have gathered to provide participants with ideas they can use immediately in their own classrooms.
Rachel Bower
Nevada State College, Henderson
Vanessa Mari
Nevada State College, Henderson
Salt Palace Convention Center, Ballroom G

194  DIFF  
Building Capacity for Success in Calculus
10–12 Burst
Students often struggle with calculus. What are some things we can do in courses before calculus to help them be better prepared? These range from an emphasis throughout high school on the Mathematical Practices for AP Calculus to making changes in the curriculum we teach to better support student understanding of key concepts necessary for success.
Gail Burrill
Past President, National Council of Teachers of Mathematics, Reston, Virginia; Michigan State University, East Lansing
Salt Palace Convention Center, 255 D

195  LEARN  
Teaching Statistics through Elections: How Local Events Bring Classroom Topics to Life
10–12 Burst
Teaching statistics at a university located in Broward County, Florida, I’ve used the Bush vs. Gore election and it’s polling issues to illustrate concepts like confidence level and margin of error. But, students now weren’t alive in 2000 so they didn’t relate. The contentious 2018 election recount provided some new local enthusiasm for the classroom.
Jason Gershman
Nova Southeastern University, Fort Lauderdale, Florida
Salt Palace Convention Center, 255 C

196  PRO  
Developing Deliberate School-University Collaborations in Teacher Preparation Programs
Coaches/Leaders/Teacher Educators Burst
It is typical for undergraduate teacher preparation programs to contain a practicum component wherein pre-service teachers are tasked with contacting secondary school teachers to arrange observation/lesson hours. This is an alternative scenario to lessen the burden on teachers, enhance the experience for preservice teachers, and build cohesion.
Amanda Cangelosi  
Twitter: @mocangelomaths
University of Utah, Salt Lake City
Salt Palace Convention Center, 255 F

197  DIFF  
Getting Families Access to Critical Math Activities, Games, Tools, and Books
Coaches/Leaders/Teacher Educators Burst
This session will highlight specific mechanisms to involve parents/caregivers in supporting children in learning and liking mathematics. More specifically, we will show how caregivers can assess their children on tasks that predict later math success. And, then, we will specify which activities, games, tools and books would be best.
Jonathan Brendefur
Boise State University, Idaho
Jana Estes
Developing Mathematical Thinking Institute, Boise, Idaho
Salt Palace Convention Center, 251 DE
11:30 A.M.–12:00 P.M.

198 PRO
Coaches/Leaders/Teacher Educators Burst
Teachers and math coaches often use adopted curriculum material to plan and instruct mathematics. Minor adjustments to textbook lessons can promote inquiry-oriented teaching. Join us to learn three strategies for adapting curriculum materials that lead to higher engagement and more opportunities for students to construct mathematical understanding.
Joseph Kozlowski
Utah State University, Logan
Jessica Shumway
Utah State University, Logan
Allison Roxburgh
Utah State University, Logan
Salt Palace Convention Center, 150 G

199 DIFF
Classroom + Behavior + Management = Teacher Empowerment for Increasing Academic Outcomes
General Interest Burst
Are non-compliant students challenging your authority? Are unresponsive students diminishing your teaching impact? Do repeated warnings or requests drain you of your teaching energy? Research indicates that classroom management was rated as the most important variable to building and sustaining a high-achieving classroom.
Tamar Duran
Twitter: TamarJDuran
Consultant, Center for Teacher Effectiveness, New Mexico
Salt Palace Convention Center, 250 DE

1:00 P.M.–2:00 P.M.

201 TOOLS
Talking Math with Kids
Pre-K–2 Session
This presentation will explore how to engage the children in our life in meaningful mathematical conversations outside the classroom in order to encourage mathematical curiosity and positive dispositions, and how to provide advice and resources for the parents of our students who wish to do the same.
Amy Tanner
Twitter: @dr_amytan
Brigham Young University, Orem, Utah
Salt Palace Convention Center, Ballroom BD

202 DIFF
Using Physical and Virtual Manipulatives to Teach Multiplication, Division, and Fractions to Students
3–5 Session
Physical and virtual manipulatives significantly affect the development of problem-solving skills and conceptual understanding for students with disabilities, who require a greater level of support at Tier II or Tier III. Participants attending this session will learn how to use physical and virtual manipulatives as instructional interventions.
Dan Sinclair
Teach4Mastery, Fallbrook, California
Joseph Sencibaugh
Webster University, St. Louis, Missouri
Jennifer Bond
Webster University, St. Louis, Missouri
Salt Palace Convention Center, Ballroom AC

203 DIFF
How Can I Solve It?
6–8 Session
Participants will practice a series of problems they can use with students to build their conceptual understanding of simplifying algebraic expressions and solving equations. Algebra tiles are used throughout the session on problems that include: determining perimeter, combining like terms, comparing expressions, and solving equations.
Lisa Jasumback
CPM Educational Program, Salt Lake City, Utah
Salt Palace Convention Center, Ballroom FH
1:00 P.M.–2:00 P.M.

204 **LEARN**
How Do Incomplete Definitions Influence Students’ Understanding of Reflections as Transformations?
8–10 Session
In order to leverage the power behind the mathematical definition of reflections as a transformation, we examine how curriculum, teacher decisions, and student interpretations of reflections relate to one another.

Porter Nielsen
Brigham Young University, Provo, Utah
Salt Palace Convention Center, 250 F

205 **PRO**
Teaching Students to Think: The Realities, Struggles, and Benefits of Task-Based Teaching
8–10 Session
Teachers find the transition to task-based instruction difficult. We’ll share our transition to task-based teaching and what fuels our desire to sustain it. Participants will engage in a mathematical task and discuss the struggles and benefits of implementing tasks in the classroom.

Lauren Rigby
Nebo School District, Spanish Fork, Utah
Nikki Mendenhall
Nebo School District, Provo, Utah
Salt Palace Convention Center, 250 AB

206 **LEARN**
The Big Impact of 3 Surprising Mathematical Ideas
10–12 Session
2 x 3 = 3 x 2. Spheres aren’t prisms. We say that a function and its asymptote meet, but don’t touch. In general, though, commutativity isn’t a given, the key feature of a surface is its holes, and functions may cross their horizontal asymptotes. Let’s glean insights from algebra, analysis, and topology to better inform our high school math teaching.

Dave Cesa
Twitter: @davecesa
Charlotte Latin School, North Carolina
Salt Palace Convention Center, 255 E

207 **TOOLS**
We’re All Language Learners: Advancing Academic Language Levels through the Learning Cycle
10–12 Session
Learn to support the use of academic language by understanding language levels and how they advance through a learning cycle. Experience how academic vocabulary is built, formalized, and reinforced through a sequence of mathematical tasks that engage students mathematically and capitalize on their previous experiences.

Barbara Kuehl
Twitter: @barbarakuehl
Mathematics Vision Project, Salt Lake City, Utah
Salt Palace Convention Center, 251 C

208 **ASSETS**
Identifying and Utilizing Students’ Assets When Planning and Teaching Mathematics
Coaches/Leaders/Teacher Educators Session
This presentation brings to light the importance of recognizing students’ assets when designing and implementing lessons in mathematics. The research notes that utilizing students’ assets supports student success. Examples of asset-based teaching strategies will be shared, and participants will make connections to their own practice.

Krista Ruggles
Utah Valley University, Orem
Salt Palace Convention Center, Ballroom J

209 **DIFF**
Culturally Responsive Mathematics Instruction: From Theory to Practices
General Interest Session
All classrooms need to be culturally responsive, particularly classrooms with culturally and linguistically diverse students! Yet, this global idea can be hard to interpret into specific classroom actions. We will break down CRMI into four components and explore teaching strategies to ensure that every student has access to important mathematics.

Jennifer Bay-Williams
Twitter: @JBayWilliams
University of Louisville, Kentucky
Salt Palace Convention Center, 355 B
1:00 P.M.–2:00 P.M.

210 AEE
Embracing Mistakes: A Path to Deeper Understanding
General Interest Session
Educators can help students learn to become comfortable accepting and then embracing the mistakes made along their learning journey. Come discover strategies and ideas that will help you deepen student learning and create classroom conditions that truly encourage students to become comfortable with seeing their mistakes as learning opportunities.
Jeremy Smith
Twitter: @effort2learn
Cache County School District, Smithfield, Utah

Salt Palace Convention Center, 255 B

211 DIFF
Lower the Floor, Raise the Ceiling: Teaching Problem Solving to ALL Students
General Interest Session
Teaching students to reason and problem solve is the cornerstone of quality math instruction. This session will highlight several engaging strategies such as Three Reads and the Three-Act Math Task and more that will provide multiple entry points for all students to engage in the math and ignite a passion for problem solving in your classroom!
Susan Loveless
Twitter: @susanloveless23
Rutherford County Schools, Murfreesboro, Tennessee

Salt Palace Convention Center, 250 C

1:00 P.M.–2:15 P.M.

212 DIFF
Let’s “Center” on Strong Predictors of Math Success!
Pre-K–2 Workshop
Spatial reasoning and measurement are the strongest predictors of future mathematical success. We will experience various center activities that will enhance these areas for your students. All center activities can be differentiated to assist each of your young learners. You will leave with materials to easily implement next week!
Jana Estes
Developing Mathematical Thinking Institute, Boise, Idaho
Keith Krone
Boise State University, Idaho

Salt Palace Convention Center, 150 G

213 ASSETS
SOAR in Mathematics by Using Assets to Solidify Unfinished Learning
Pre-K–2 Workshop
Starting from deficits is like building a house on unstable foundation, so instead, let’s work from assets and SOAR! Join us as we identify what students know and understand, use a planning tool that is designed to build on assets, and consider the types of opportunities students need to think and reason to solidify their unfinished learning.
Kristin Klingensmith
Twitter: kaklingensmith
Institute for Learning, Univ of Pittsburgh, Pennsylvania
Salt Palace Convention Center, 255 F

214 DIFF
Math with Dignity: Customizing Instruction for Students with Significant Content Gaps
3–5 Workshop
How do we create instruction for students who have significant content gaps that allows them to learn the skills they need while still having the dignified experience of successfully engaging with the same math as their peers? This workshop will demonstrate process that helps build a bridge from their last point of success to grade level content.
Laura Marie Coleman
Twitter: @teach2abilities
Great Minds, Washington, D.C.
Salt Palace Convention Center, 251 DE

215 DIFF
Supporting Differentiation with Kinesthetic Learning and Family Engagement Events
3–5 Workshop
Learn how to create events that engage families and build student skills. Connecting brain science with programming that meets a wide range of student needs, this highly interactive presentation will teach you to create events that bring new learning to children and their parents, engage families and community groups, and empower families.
Suzy Koontz
Learn Thru Movement/Math & Movement, Ithaca, New York
Salt Palace Convention Center, 255 C
1:00 P.M.–2:15 P.M.

**216 AEE**

**Culturally Relevant Mathematics through Art: Engaging the Whole Learner**

6–8 Workshop

Art can be integrated with math to connect to the cultures and identities of students, particularly those who have been disenfranchised. We will experience ways in which cultural art can engage students in math, discuss strategies to include art in math lessons, and create our own math-inspired art by hand or digitally.

Megan Schmidt  
Twitter: @veganmathbeagle  
University of Minnesota, St. Paul

Stephen Weimar  
Rutledge, Pennsylvania

*Salt Palace Convention Center, Ballroom G*

---

**217 DIFF**

**Mathematics Intervention: Structures and Strategies to Help Students Catch Up**

6–8 Workshop

Typically support classes focus on below grade level skills, an insidious form of tracking that does little to help students succeed in their core math classes. Based on RTI research and reality, participants will look at ways to structure programs and strategies that lead to success through examples from proportional reasoning and functions.

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

Cynthia Raff  
Center for Mathematics and Teaching, Pasadena, California

*Salt Palace Convention Center, 255 D*

---

**218 LEARN**

**Skiing Deeper into Slope**

8–10 Workshop

We will do tasks related to slope concepts across the curriculum: from middle school to high school and beyond. Topics will include: graphing lines, linear regression, average rate of change, and instantaneous rates of change.

Jennifer Hooper  
Utah Valley University, Orem

Alan Parry  
Utah Valley University, Orem

*Salt Palace Convention Center, 250 DE*

---

**219 LEARN**

**What’s Rate of Change Got to Do with It?**

8–10 Workshop

“Rate of change” plays a key role in calculus which can be traced back to concepts of ratio, proportions, and slope. We will focus on the role rate of change plays in mathematics. We will explore and reflect upon the ideas of ratio, proportion, slope, and rate of change as building blocks to support learning as students advance through mathematics.

Mary Pilgrim  
Twitter: @maryepilgrim  
San Diego State University, California

David Berger  
Menomonie High School, Wisconsin

Jake Leibold  
Menomonie High School, Wisconsin

*Salt Palace Convention Center, Ballroom E*

---

**220 ASSETS**

**“All Models Are Wrong . . . But Some Are Useful”: The Art, Science, and Relevance of Math Modeling**

10–12 Workshop

Madison East High School has participated in the High School Mathematics Competition in Modeling (HiMCM) for 21 years. Come experience the modeling process. Discuss team preparation, classroom application, and associated challenges. Participants will leave with resources and ideas for making CCSS Standards for Mathematical Practice #4 transparent, nontrivial, and exciting.

Cynthia Chin  
Madison Metropolitan School District, Wisconsin

*Salt Palace Convention Center, 251 AB*

---

**221 LEARN**

**Do You Use the Math You Teach? How to Find Problems That Show the Power of Mathematics in Real Life**

10–12 Workshop

My best problems come from situations where I have actually used math to solve a real problem in my life, from 3D printing loaded dice to wondering about tie-dyed t-shirts. We will work on some of these problems that I use to motivate and apply math, then talk about how to find such problems. Many of these have made great STEM fair projects.

Doug Corey  
Brigham Young University, Provo, Utah

*Salt Palace Convention Center, 151 G*
1:00 P.M.–2:15 P.M.

222 **TOOLS**
"Think Pair Show Share": UDLizing Talk Moves to Increase Classroom Discourse
Coaches/Leaders/Teacher Educators Workshop
We unpack principles of Universal Design for Learning to invite increased opportunities for discourse for all students using Chapin, O'Connor, and Anderson’s (2009) Talk Moves as a means of promoting rich mathematical discourse. We present snapshots from small group and classroom research to illustrate how UDL opens access to discourse for all.
Beth MacDonald
Utah State University, Logan
Jessica Hunt
North Carolina State University, Raleigh
Juanita Silva
North Carolina State University, Raleigh

**Salt Palace Convention Center, Ballroom I**

2:30 P.M.–3:30 P.M.

223 **LEARN**
Making the Most of Misconceptions: The Mistakes That build Mathematicians
Pre-K–2 Session
In mathematics, researchers and mathematicians have shown that learning from mistakes is part of the process of mastering mathematics. Utilizing the components of a Eureka lesson, participants will acknowledge the points of success a student demonstrates and engage in the active practice of identifying and correcting misconceptions.
Jeremy Centeno
Great Minds, Panama City Beach, Florida

**Salt Palace Convention Center, 255 E**

224 **TOOLS**
Students’ Actions with Early Number to Guide Educators’ Instruction
Pre-K–2 Session
This presentation will discuss different types of students’ actions when solving subitizing and counting tasks in early grade levels. Participants will use these actions and associated categories to determine how students develop part-whole reasoning with number. Participants will use instructional models to develop heterogenous grouping ideas.
Beth MacDonald
Utah State University, Logan
Kristy Litster
Utah State University, Logan
Allison Roxburgh
Utah State University, Logan

**Salt Palace Convention Center, 250 F**

225 **TOOLS**
Building Community for Productive Math Talk
3–5 Session
Meaningful mathematical discourse is essential in enhancing students’ mathematical knowledge. This workshop will provide teachers with strategies for building a strong math talk community and identifying the five guiding principles and talk moves to engage students, help them make connections, and exchange ideas respectfully.
Cindy Robinson
Twitter: @crobingotkids
Enhancing Teacher Practices, Beaverton, Oregon

**Salt Palace Convention Center, 250 C**

226 **AEE**
Representational Competence: A Renewed Focus on Empowering Students
3–5 Session
Principles to Actions highlights representations as a high-leverage teaching practice. It is only through representations that students have access to mathematical ideas. Examine what it means to develop representational competence and empower students through connections among visual, physical, contextual, verbal, and symbolic representations.
DeAnn Huinker
Twitter: dh11235
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Wisconsin–Milwaukee

**Salt Palace Convention Center, 355 B**

227 **DIFF**
Integer Card Games—Moving Students from Concrete to Pictorial to Abstract
6–8 Session
Experience an engaging way to teach students all about integers. You will participate in multiple games that can be used to teach integer concepts such as placement on a number line, opposites, addition and subtraction, multiplication and division, and so much more!
Jana Stockstill
Great Minds, Inc., Bolivar, Missouri

**Salt Palace Convention Center, Ballroom BD**
2:30 P.M.–3:30 P.M.

228 PRO

**Draw Yourself Doing Mathematics: Navigating Student Emotions**

*8–10 Session*

The recently developed “Draw yourself doing mathematics” prompt gives insight into what students think mathematics is, where it happens, who is involved in the doing, and how the students feel about mathematics. These drawings often showcase powerful emotions that the presenters developed tangible classroom strategies to address.

Rachel Bachman  
Weber State University, Ogden, Utah  
Cora Neal  
Weber State University, Ogden, Utah

*Salt Palace Convention Center, Ballroom FH*

229 TOOLS

**It’s All About That Base (Teaching about Logarithms)**

*10–12 Session*

How can we help students understand what logarithmic functions are and how they fit into the structure of mathematics in terms of inverses and applications? By starting with a challenging task, explore how students create a conceptual understanding of logarithms that can lead to stronger procedural fluency.

Fred Dillon  
Twitter: fdizzle1955  
Institute for Learning, Strongsville, Ohio

*Salt Palace Convention Center, 255 B*

230 AEE

**Transforming Grading Practices to Promote Student Empowerment and Deeper Learning**

*10–12 Session*

Rather than supporting learners, many grading practices penalize learners for unfinished learning thereby fostering a belief in many learners that they cannot do math. With structures in place, removing grades empowers learners, encourages risk-taking and learning at greater depth, and supports all learners in believing they can learn math.

Christie Tolbert  
Twitter: @christiecaye  
Nebo School District, Mona, Utah  
Porter Nielsen  
Brigham Young University, Provo, Utah

*Salt Palace Convention Center, Ballroom AC*

231 LEARN

**Supporting Students in Understanding Fractions: Fractions Are More Than Parts and Wholes!**

*Coaches/Leaders/Teacher Educators Workshop*

Do you want your students to have a deeper understanding of fractions? Join us to learn how to construct fractions as measures! You will engage with tasks that focus on using different representations of fractions. Engage with fractions activities that encourage making sense of discrete, linear, and circular representations.

Diana Moss  
Utah State University, Orem  
Jenny Nehring  
Utah Valley University, Orem

*Salt Palace Convention Center, Ballroom J*

232 TOOLS

**Deepening Learning with a Student Debrief**

*General Interest Session*

Student success is accelerated when we know precisely what our students know and can do. Ending lessons with a student debrief is a chance to give our students voice and deepen their understanding as they explain their work and compare it to the work of others. Questioning is a key to better conversations.

Ricky Mikelman  
Twitter: @rmmath  
Great Minds Inc, Houston, Texas

*Salt Palace Convention Center, 250 AB*

233 DIFF

**Visualize It! Using Visual Images to Promote Number Sense and Fluency**

*General Interest Session*

Conceptualizing visual images of quantity is foundational for number sense development and developing fluency from conceptual understanding. This session will focus on how to use and create visual images that help students understand numbers, their relationships, and how to work flexibly and reason with numbers.

Susan Loveless  
Twitter: @susanloveless23  
Rutherford County Schools, Murfreesboro, Tennessee

*Salt Palace Convention Center, 251 C*
2:45 P.M.—4:00 P.M.

234 DIFF
D.A.P. … Easy as 1, 2, 3!
Pre-K–2 Workshop
Navigating through Developmentally Appropriate Practice, Core standards, intentional planning, engagement, and differentiation can seem overwhelming . . . but it doesn’t have to be! Join us for an interactive workshop investigating ways we can meet the expectations before us while maintaining appropriate practices in our kindergarten classrooms.
Kim Babka
Granite School District, Salt Lake City, Utah
Michelle Farmer
Granite School District, Salt Lake City, Utah
Salt Palace Convention Center, 255 D

235 LEARN
Using a Conceptual Approach to Build Addition and Subtraction Fact Fluency with Understanding!
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 master the basic addition and subtraction facts—with understanding!
James Burnett
Twitter: @jamesburnett69
ORIGO Education, Brendale, Queensland, Canada
Salt Palace Convention Center, 151 G

236 DIFF
Basic Fact Fluency: How to Finally Help Students Become Fluent
3–5 Workshop
This session will engage participants in research-based activities designed to increase students’ fluency with basic multiplication, addition, and subtraction facts. Examples from classroom work as well as key research findings will be shared. Connections to multidigit operations and algebraic thinking will also be addressed.
Sam Strother
DMTI Inc, Boise, Idaho
Jonathan Brendefur
Boise State University, Idaho
Salt Palace Convention Center, 255 F

237 DIFF
Exploring Financial Literacy at the Elementary Level: A Conversation for All
3–5 Workshop
The term “financial literacy” is being used more often in an integrated mathematics curriculum, but what does that look like for our elementary students? This workshop provides participants with authentic, hands-on activities and ideas to easily integrate financial literacy into EVERY mathematics classroom.
Lindsay Gold
Twitter: @lindsayanngold
University of Dayton, Ohio
Michael Houston
Riverside Beaver County School District, Ellwood City, Pennsylvania
John Ashurst
Riverside Beaver County School District, Ellwood City, Pennsylvania
Salt Palace Convention Center, 150 G

238 LEARN
Hold the Line—Understanding Linear Functions
6–8 Workshop
How can we teach linear functions by connecting their graphs, tables, and equations? We will do a visual task, use an instructional routine that verbalizes student thinking, and work a task about discovering key features of linear equations to show how students will develop conceptual understanding of and procedural fluency with linear functions.
Ben Allen
America’s School of Heroes, Ozone Park, New York
Salt Palace Convention Center, Ballroom G

239 AEE
Yes, We Can Change the World Using Mathematics (Using Mathematics as a Catalyst for Social Justice)
6–8 Workshop
Our students are exposed to numbers in the “real world,” but they are not typically exposed to strategies to critically analyze those numbers, and they are not given the opportunity to use numbers to change the world. This session will share an engaging method of teaching mathematics to bring about social justice—thus empowering all students.
Leilani Nautu
Southern Utah University, Cedar City
Salt Palace Convention Center, 251 DE
2:45 P.M.—4:00 P.M.

240  **TOOLS**

Rich and Accessible 3D Geometry: Pythagoras Theorem and Conic Sections
8–10 Workshop
Come to extend the Pythagoras theorem to 3D—make some lines within solids touchable, construct and explore resulting triangles, and draw and use the theorem. Then explore cross-sections of cubes, cones, and cylinders using models and pipe cleaners. Demonstrate and discuss when conic sections are parabola or hyperbola.

Aniceta Skowron
Geometro, Ancaster, Ontario, Canada

Salt Palace Convention Center, Ballroom G

241  **TOOLS**

The Fast and the Curious
8–10 Workshop
Why let science teachers have all the fun? Come learn how to incorporate hands-on, student-centered modeling labs within a project-based learning unit. Use constant velocity and gravity cars to collect data and promote your discussion of slope, intercepts, intersecting lines, and quadratic regression.

Alison Espinosa
Twitter: @Aspinose
Salt Lake City School District, Utah

Celia Gubler
Salt Lake City School District, Utah

Salt Palace Convention Center, 251 AB

242  **TOOLS**

Empowering Student Voice & 21st-Century Skills in Digital 3-Act Math Tasks
10–12 Workshop
We will explore 3-Act Math tasks known for engaging students and show how to empower student voice with the use of digital tools to enhance communication, collaboration, modeling, and creativity. This approach promotes equity and builds resilience in problem-solving and critical thinking, while making math class fun and ripe with real-world relevance!

Cory Henwood
Twitter: @coryhenwood
Iron County School District, Cedar City, Utah

Salt Palace Convention Center, Ballroom I

243  **LEARN**

Tea, Guinness, & Crop Yields: The Many Faces of Statistics
10–12 Workshop
Statistics has worn many faces throughout the history. Framing statistics within a historical & contextual perspective provides new opportunities in which students can read about and investigate topics. Participants will walk away with a series of online resources and new knowledge to use as well as authentic STEM integrations taken from literature.

Mary Martin
Middle Tennessee State University, Murfreesboro

Tammy Jones
TLJ Consulting Group, Lebanon, Tennessee

Salt Palace Convention Center, 250 DE

244  **PRO**

Tackling Tough Conversations
Coaches/Leaders/Teacher Educators Workshop
Have you ever had a problem communicating with adults, or are you not sure quite how to coach a teacher on how to improve their practice? This workshop is for coaches and teacher leaders who want to transform conversations into positive action! We will address communication patterns and how you can influence positive change through productive conversation.

Laura Cheney
Twitter: @Laura_Cheney
Salt Lake City School District, Utah

Katherine Nitka
Salt Lake City School District, Utah

Salt Palace Convention Center, Ballroom E

Shop and save at the NCTM Bookstore in NCTM Central!
A math intervention program for K–5

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.

mathlearningcenter.org/intervention
We thank our sponsors for generously supporting NCTM by offering products and services to enhance your conference experience. Please stop by to thank the following sponsors when you are in the Exhibit Hall.

MidSchoolMath

In-Kind Sponsor

Texas Instruments
Your Passion. Our Technology. Student Success.
Join an NCTM Affiliate Today

Once you have joined NCTM, membership in an NCTM Affiliate is a terrific way to round out your professional involvement. Affiliates offer you an additional opportunity to connect with teachers in your state, region, or city for support, professional development opportunities, community outreach, political advocacy, and information sharing.

A list of Partner Affiliates in the conference region and the Affiliates-at-Large appears on page 57. To join one of these organizations, email the Affiliate contact for membership information. NCTM has Affiliates throughout the United States and Canada.

For a list of all organizations affiliated with NCTM and information on how to join, visit the Affiliate Directory at nctm.org/Affiliates/Directory.

About the Host Organization

The Utah Council of Teachers of Mathematics is a professional organization of educators, individually and collectively dedicated to the improvement of classroom instruction in mathematics at all levels. Our mission is to provide leadership by doing the following:

- Promoting interest in mathematics and its teaching in the state of Utah
- Improving the teaching of mathematics at all levels
- Maintaining a close liaison with the Utah State Office of Education
- Representing the interest of mathematic teaching and mathematics teachers to the public
- Encouraging cooperation, pride, and fellowship in the profession of mathematics teaching

Formulate Fantastic Features

Mathematics Teacher: Learning and Teaching PK–12 (MTLT), NCTM’s exciting, new journal with a unique point of view—your view as a practicing teacher of mathematics—is seeking submissions for its feature articles, specifically focused on grade bands PK–2 and 3–5.

Front & Center: Submissions must touch on a topic that spans PK–12. When submitting, choose the Manuscript Type category “All grades PK–12.” This article should try to appeal to the wide range of MTLT readers.

Word count: 3500–5000

Feature article (grade-band specific): Submissions should focus on a narrow grade band (PK–2, 3–5, 6–8, 9–10, 11–12). When submitting, choose the grade-band category that fits your article.

Word count: 3000–3500

Focus article (grade-band specific): Submissions should focus, as well, on a narrow grade band (PK–2, 3–5, 6–8, 9–10, 11–12). This tier allows authors to share a single, well-developed idea. When submitting, choose the grade-band category that fits your article.

Word count: 1000–1500

Access https://mc04.manuscriptcentral.com/mtltpk12 to submit manuscripts. Limit your article or submission to the total word count listed above, including references and figures (where applicable). You are encouraged to include such digital components as a video clip, audio file, Livescribe™ file, SMART Board™ file, or other form of multimedia to enhance the submission.
Affiliate Information

Alaska
Alaska Council of Teachers of Mathematics
April Scott, datjscott@yahoo.com

Arizona
Arizona Association of Teachers of Mathematics
Lori Everson, lori.everson@caurusacademy.org

California
Alameda Contra Costa Council of Mathematics Educators (California)
Belinda Lesser, blamonde42@yahoo.com
California Mathematics Council
Gretchen Muller, gmueller@mac.com
California Mathematics Council, Northern Section
Gretchen Muller, gmueller@mac.com
California Mathematics Council, Southern Section
Gretchen Muller, gmueller@mac.com

Colorado
Colorado Council of Teachers of Mathematics
Laurie Hillman, laurie.hillman@weldre4.org

Hawaii
Hawaii Council of Teachers of Mathematics
Deborah Kula, deborahkula@gmail.com

Idaho
Idaho Council of Teachers of Mathematics
Danielle Desjarlais, ddesjarlais@nsd131.org

Montana
Montana Council of Teachers of Mathematics
Hilary Risser, hrisser@mtech.edu

Nevada
Nevada Mathematics Council
Carrie Hair, chair@washoeschools.net
Northern Nevada Mathematics Council
Kathy Lawrence, klawrence@washoeschools.net

New Mexico
New Mexico Council of Teachers of Mathematics
Ronda Davis, davis_r@aps.edu

Oregon
Oregon Council of Teachers of Mathematics
Nancy Swarat, swaratn@umatillasd.org

Utah
Utah Council of Teachers of Mathematics
Karen Feld, karenfeld@alpinedistrict.org

Washington
Washington State Mathematics Council
Dan Herforth, campheron@gmail.com

Affiliates-at-Large

Adult Numeracy Network
Pam Meader, mdr151@aol.com

Association of Mathematics Teacher Educators
Maggie McGatha, maggiemcghatha87@gmail.com

Association of State Supervisors of Mathematics
Charles Watson, chaswatson@sbcglobal.net

Benjamin Banneker Association, Inc.
Shelley Jones, jonessem@ccsu.edu

Council of Presidential Awardees in Mathematics
Donald Scheuer, mathguy1@verizon.net

NCSM: Leadership in Mathematics Education
Kristine Cunningham, kcunningham@phoenixunion.org

North American Study Group on Ethnomathematics
Chadd McGlone, cwmcglone@yahoo.com

Society of Elementary Presidential Awardees
Cindy Hasselbring, c.hasselbring@sbcglobal.net

TODOS: Mathematics for ALL
Susie Hakansson, shakans@g.ucla.edu

Women and Mathematics Education
Andria Disney, andriadisney@live.com
NCTM Board of Directors

Robert Q. Berry III, President
University of Virginia, Charlottesville

Trena L. Wilkerson, President-Elect
Baylor University, Texas

Ken Krehbiel, Executive Director

Sarah Bush
University of Central Florida, Orlando

Linda Davenport
Boston Public Schools, Massachusetts

David Ebert
Oregon High School, Wisconsin

Lorie Haif
Fayetteville Public School District, Arkansas

DeAnn Huinker
University of Wisconsin–Milwaukee

Beth Kobett
Stevenson University, Maryland

Carol Matsumoto
Kindergarten/K–6 Resource Teacher (Retired), Winnipeg, Canada

Jennifer Outzs
Seminole Middle School, Florida

Jeff Shih
University of Nevada, Las Vegas

Jason Slowbe
Great Oak High School, California

Daniel J. Teague
North Carolina School of Science and Mathematics

Denise Walston
Council of The Great City Schools, Washington D.C.

NCTM wishes to thank our 2019 Salt Lake City Regional Conference Committees for their generous support and dedication planning this Regional Conference.

PROGRAM COMMITTEE

Travis Lemon, Program Chair
Alpine School District, Lehi, Utah

Katie Anderson-Pence
University of Colorado, Colorado Springs

Laila Nur
MFA, LA, California

Ayanna Perry
Knowles Teacher Initiative, Morristown, New Jersey

Stefanie D. Livers
Missouri State University, Ozark

Tammy Baumann
Open Up Resources, Erie, Pennsylvania

Ryan Casey
Boston Public Schools, Massachusetts

PROGRAM DEVELOPMENT GROUP

Fred Dillon
Institute for Learning, Strongsville, Ohio

VOLUNTEER COMMITTEE

Joleigh Honey, Volunteer Chair
Utah State Board of Education, Sandy, Utah

Amy Kinder
Canyons School District, Salt Lake City, Utah

Amanda Cangelosi
University of Utah, Salt Lake City
GREAT MATH at your DOORSTEP

NCTM REGIONAL CONFERENCES & EXPOSITIONS unite you with math education leaders and colleagues in a setting that fosters collaboration, conversation, and the sharing of knowledge. Learn about superior resources and innovative ideas that will help drive student success in your classroom, school, and district.

YOU’LL HAVE ACCESS TO—
- new strategies you can immediately put to use in the classroom;
- updates on best practices from recognized innovators;
- in-depth discussions about the latest math education tools;
- opportunities to connect, learn, and share with like-minded peers; and
- the latest educational products and resources in the exhibit hall.

WHO SHOULD ATTEND?
- PK–Grade 12 classroom teachers
- Math coaches
- Administrators
- Math teacher educators
- Preservice teachers
- Math specialists

Join NCTM in Tampa, Baltimore, or Dallas and access information and tools that will help lead your students to success in the classroom and beyond.

nctm.org/regionals

Success in the classroom and beyond.

Information and tools that will help lead your students to greater achievement.

Join NCTM in Tampa, Baltimore, or Dallas and access innovative resources and ideas that will help drive student success in your classroom, school, and district.

Learn about innovative resources that foster collaboration and unite you with math education leaders and colleagues in a setting where you can improve your practice.

WHO SHOULD ATTEND?
- Math specialists
- Preservice teachers
- Math teacher educators
- Administrators
- Math coaches
- PK–Grade 12 classroom teachers

YOU’LL HAVE ACCESS TO—
- In-depth discussions about the latest updates on educational products and resources
- Educational products like-minded peers; connect, share, learn, and grow with other math educators
- New strategies you can immediately put to use in the classroom; new best practices from recognized innovators

#NCTMTampa20 #NCTMBmore21 #NCTMDallas21
Big Ideas Learning, LLC
Booth 208
Erie, Pennsylvania
www.bigideaslearning.com
Big Ideas Math is a complete and continuous solution built for student success, with programs available from kindergarten through algebra 2. Big Ideas Math was written by renowned authors Dr. Ron Larson and Dr. Laurie Boswell and features cutting-edge technology to support and enhance the curriculum. Big Ideas Math’s complete and innovative technology package includes additional resources, customizable online assessments, virtual tools and manipulatives, skills practice, and much more. Resources are available to help teachers with RTI, differentiation, ELL support, and extension to truly achieve a Universal Design for Learning. Students have access to an interactive textbook, online homework, games, manipulatives, graphic organizers, and vocabulary cards. Big Ideas Math provides teachers the power to effectively reach every student, parents the opportunity to be involved in their student’s education, and students the tools they need to succeed!

Borenson and Associates, Inc.
Booth 319
Allentown, Pennsylvania
www.borenson.com
Borenson and Associates, Inc., seeks 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, since 1990 more than 50,000 teachers of grades 3–8 have attended the popular Making Algebra Child’s Play® workshop. Our newest workshops are the Developing Fractions Sense® workshop, an intensive three-day fractions experience to empower your teachers, and the Hands-On Equations Fractions® workshop, a concrete introduction to fractional linear equations.

Box Cars & One-Eyed Jacks Inc.
Booth 406
Edmonton, Alberta, Canada
www.boxcarsandoneeyedjacks.com
Box Cars and One-Eyed Jacks is a leading pre-kindergarten to grade 10 consulting and publishing company specializing in games and teaching strategies for classrooms across North America. We publish award-winning math and literacy game books for primary, upper elementary, and middle years students. Our award-winning books easily align with state and provincial curriculum standards across North America including the Common Core State Standards for Math. Box Cars and One Eyed Jacks will help you support and inspire learning.

Center for Mathematics and Teaching, Inc.
Booth 321
Porter Ranch, California
www.mathandteaching.org
We are a nonprofit organization that provides engaging, student-centered intervention programs for middle school students and professional development for teachers.

CPM Educational Program
Booth 414
Elk Grove, California
www.cpm.org
CPM provides grades 6–12 math texts that use problem-based learning for student-centered classrooms.

Curriculum Associates
Booth 400
North Billerica, Massachusetts
www.CurriculumAssociates.com
Curriculum Associates is a rapidly growing education company committed to making classrooms better places for teachers and students. We believe that all children have the chance to succeed, and this drives the decisions we make every day. Our research-based, award-winning products, including cloud-based i-Ready®, provide teachers and administrators with flexible tools that deliver meaningful assessments and data-driven, differentiated instruction for children. We serve millions of students with our i-Ready®, Ready®, BRIGANCE® and other programs because of our laser focus on educators’ needs over our own bottom line, and a belief that thoughtful and continuous innovation leads to a positive impact on classrooms and measurable growth for students. Learn more at www.curriculumassociates.com.

Didax Inc.
Booth 103
Rowley, Massachusetts
www.didax.com
Didax creates innovative hands-on resources to improve the teaching and learning of mathematics. Our materials include books, manipulatives, games, and more to support students in pre-K–grade 12. We are proud to be the provider of Unifix® Cubes and related resources in the U.S. In addition, we have several outstanding partnerships within the math community.
We work with Great Minds, the creators of the Eureka Math™ curriculum, to provide the only authorized grade-level manipulative kits that support the curriculum. We also work with Math Perspectives to provide Kathy Richardson’s K–2 assessment and curriculum materials including the online assessment system for Assessing Math Concepts™ and the instructional program Developing Number Concepts.

Eureka Math by Great Minds
Booth 107
Washington, D.C.
www.eureka-math.org
Eureka Math—also known as EngageNY Math—connects math to the real world in ways that take fear out of math and build student confidence—while helping students achieve true understanding lesson by lesson, and year after year. The Eureka Math curriculum was written by a team of teachers and mathematicians who took great care to present math in a logical progression from PK through grade 12. Eureka works to establish conceptual understanding first, to dramatically reduce gaps in student learning and instill persistence in problem solving, preparing students to understand advanced math. Eureka Math provides educators with a comprehensive curriculum, in-depth professional development, print materials, digital tools, and support for educators and parents. Learn more at eureka-math.org or call 844-853-1010.

ExploreLearning
Booth 401
Charlottesville, Virginia
www.explorelearning.com
ExploreLearning develops two best of breed online solutions that help students succeed in math and science: Gizmos, the world’s largest library of highly interactive simulations for math and science in grades 3–12; and Reflex, the most powerful math fact fluency program ever developed. Both have been recognized by the SIIA CODiE Awards (Gizmos in 2016 (finalist), 2015 (finalist), 2013, 2010, 2007, and 2006, Reflex in 2017 (finalist), 2016, 2014, and 2012) in addition to many other accolades. Gizmos provide an inquiry-driven experience for students, helping them develop deep conceptual understanding and accelerate their ability to apply math and science skills. Students can manipulate key variables, generate and test hypotheses, and engage in extensive “what-if” experimentation. Learn more at www.explorelearning.com. Reflex is a game-based solution that helps districts meet Common Core and state requirements for math fact fluency. Reflex provides an exciting, individualized, and adaptive experience for each student and includes powerful reporting tools for educators. Learn more at www.reflexmath.com.
Houghton Mifflin Harcourt

Houghton Mifflin Harcourt (NASDAQ: HMHC) is a global learning company dedicated to changing people’s lives by fostering passionate, curious learners. As a leading provider of pre-K–12 education content, services, and cutting-edge technology solutions across a variety of media, HMH enables learning in a changing landscape. HMH is uniquely positioned to create engaging and effective educational content and experiences from early childhood to beyond the classroom. HMH serves more than 50 million students in over 150 countries worldwide, while its award-winning children’s books, novels, nonfiction, and reference titles are enjoyed by readers throughout the world. For more information, visit www.hmhco.com. Follow HMH on Twitter, Facebook, and YouTube.

Imagine Learning Inc.

Imagine Learning Inc. is the developer and publisher of Imagine Learning, the leading pre-K–12 math and English language arts (ELA) system that supports student-centered learning. Imagine Learning offers live 1:1 differentiated instruction from certified math teachers. Even students with limited success in math can develop the essential foundations and conceptual understanding they need to confidently move to the next level. Because the system is adaptive, students learn in their zone of proximal development with the right degree of challenge. Instruction is always supported by meaningful practice and the application of knowledge at the conceptual level. Live teacher support 75 hours a week. Adaptive learning pathways. Explicit, standards-based instruction. Fundamentals of higher-order thinking. College and career-readiness skills. SAT and ACT test preparation.

Learning Wrap-Ups

Learning Wrap-Ups is the developer and publisher of Learning Wrap-Ups, Learning Palette, and Learning Palette Online. These unique products have been developed to assist the K–5 student with instruction. The products Include 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 that PD. Objectives are correlated to state and national standards. Proven achievement gains. Optional web-based technologies.

Math Teachers Press

We provide PK–12 formative assessment and conceptual instruction using concrete manipulatives with research-based strategies and proven results. Our products Include 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 that PD. Objectives are correlated to state and national standards. Proven achievement gains. Optional web-based technologies.

MidSchoolMath

MidSchoolMath is a leader in Core Curriculum for grades 5 through 8 and hosts the nation’s largest middle school math conference.

NCTM Equity Affiliates

The NCTM Equity Affiliates include BBA, TODOS, and WME. All three organizations are dedicated to advocating for equity and high-quality mathematics, particularly for African-American students, Latina/o students, and females, by developing and supporting educational leaders and providing resources to support teachers and educators in leveling the playing field for mathematics learning. The NCTM Equity Affiliates invite you to come by the booth to learn more about and join their organizations.

ORIGO Education

ORIGO Education provides a complete solution for its customers by combining an innovative range of mathematics products with quality professional learning services. ORIGO—Latin for “original” or “the source”—reflects our commitment to being a premier source of inspiration for math teachers. Our product range illustrates this commitment by offering a diverse selection of creative products that bring a renewed emphasis to students’ learning experiences. ORIGO 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 demonstrates a commitment to excellence by creating products that inspire and empower teachers and students.

Pearson K-12 Learning

Pearson US Learning Services is a leading pre-K–12 learning company with expertise in print and digital educational curriculum and professional services. Our educational solutions are powered by innovative technology to advance learning and teaching across North America. We believe that learning builds opportunities to create fulfilling careers and better lives. For more information about our learning solutions, stop by our booth #222 or visit Pearson-School.com.

ST Math, created by MIND Research Institute

Spatial-Temporal (ST) Math® is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate, and challenge pre-K–8 students toward higher achievement. Over 200 visual games create a unique pathway of interconnected content challenges to provide differentiated instruction for individual students, regardless of skill level. Longitudinal and broad-based studies across a wide variety of student groups continue to demonstrate ST Math’s efficacy in building lifelong learners prepared for success in STEM fields. ST Math currently reaches more than 1.2 million students and 53,000 teachers at 3,900 schools in 47 states. For more information, visit stmath.com. See the Math and Grow with ST Math!
Stenhouse Publishers
Booth 307
Portsmouth, New Hampshire
www.stenhouse.com

Stenhouse Publishers provides professional development books and videos by teachers, for teachers. Our titles cover a range of content areas—from literacy and mathematics to science, social studies, the arts, and environmental education—as well as a variety of topics, including classroom management, assessment, and differentiation. All of our work is grounded in sound theory and research and informed by authors’ years of experience in the classroom. We don’t offer programs or one-size-fits-all solutions. Instead, the teachers who write books for Stenhouse and appear in our videos share practical strategies, inspirational ideas, student work and dialogue, and stories from the classroom.

Texas Instruments
Booth 301
Dallas, Texas
www.education.ti.com

TI listens to mathematics and science educators and responds with tools, strategies and programs they need to prepare students for success in school, college, and careers. TI provides free classroom activities that enhance math, science, and STEM curricula, technology that encourages students to develop a deeper understanding of concepts, and professional development that maximizes your investment in TI technology. TI offers handhelds, software, apps for iPad®, and data collection technology, designed to promote conceptual understanding, and formative assessment tools that gauge student progress. Visit education.ti.com.

The Math Learning Center
Booth 313
Salem, Oregon
www.mathlearningcenter.org

The Math Learning Center (MLC) offers innovative and standards-based materials for elementary classrooms. Bridges® in Mathematics, Number Corner®, and Bridges® Intervention are designed to develop mathematical confidence and ability not only in students but also in teachers. In support of our nonprofit mission we also offer a range of free resources, from math apps to free lessons and books for educators.

TODOS: Mathematics for ALL
Booth 110
Temple, Arizona
www.todos-math.org

TODOS: Mathematics for ALL advocates for equity and high-quality mathematics education for all students—in particular, for Latina/o students—by developing and supporting educational leaders and providing resources to support teachers and educators in leveling the playing field for mathematics learning. TODOS invites you to come by the booth to learn more about TODOS and why you should join.

WeUseMath.org
Booth 218
Provo, Utah
weusemath.org

Program Advertisers (in alphabetical order)

Big Ideas Learning, LCC .......................... 8
CPM Educational Program .......................... 4
The Math Learning Center ....................... 54, Back Cover
WeUseMath.org .................................. 66

NCTM Advertising

CONFERENCES

2020 Centennial Meeting ....................... Inside Front Cover
2020 Annual Meeting & Exposition .......... Inside Back Cover
2020–21 Regional Conferences ............... 60

PUBLICATIONS

MTLT Journal .................................. 56
New Books .................................. 35
## Speaker Index

<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith, Margaret (Peg)</td>
<td>79, 140</td>
</tr>
<tr>
<td>Sorto, M. Alejandra</td>
<td>99</td>
</tr>
<tr>
<td>Spence, Bonnie</td>
<td>48</td>
</tr>
<tr>
<td>Spencer, Orson</td>
<td>143</td>
</tr>
<tr>
<td>Sponenburgh, Lori</td>
<td>138</td>
</tr>
<tr>
<td>Starr, Steven</td>
<td>109</td>
</tr>
<tr>
<td>Steinhorst, Dana</td>
<td>88</td>
</tr>
<tr>
<td>Stillman, Siegrid</td>
<td>118</td>
</tr>
<tr>
<td>Stockstill, Jana</td>
<td>227</td>
</tr>
<tr>
<td>Strother, Sam</td>
<td>236</td>
</tr>
<tr>
<td>Sudkreth, Diana</td>
<td>77</td>
</tr>
<tr>
<td>Suderman, Zachary</td>
<td>112, 132</td>
</tr>
<tr>
<td>Sullivan, Patrick</td>
<td>86</td>
</tr>
<tr>
<td>Sussnan, Annie</td>
<td>5</td>
</tr>
<tr>
<td>Sutorius, Janet</td>
<td>35, 87, 162</td>
</tr>
<tr>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Tanner, Amy</td>
<td>201</td>
</tr>
<tr>
<td>Taylor, Sharon</td>
<td>55</td>
</tr>
<tr>
<td>Teuscher, Dawn</td>
<td>41</td>
</tr>
<tr>
<td>Thies, Anne</td>
<td>180</td>
</tr>
<tr>
<td>Thomas, Marie</td>
<td>51</td>
</tr>
<tr>
<td>Tienda, Monica</td>
<td>92</td>
</tr>
<tr>
<td>Titus, Jordan</td>
<td>29</td>
</tr>
<tr>
<td>Tolbert, Christie</td>
<td>230</td>
</tr>
<tr>
<td>Toncheff, Mona</td>
<td>122</td>
</tr>
<tr>
<td>Tondevold, Christina</td>
<td>3</td>
</tr>
<tr>
<td>U</td>
<td></td>
</tr>
<tr>
<td>Unker, Becky</td>
<td>137</td>
</tr>
<tr>
<td>Urbanek-Carney, Sara</td>
<td>47</td>
</tr>
<tr>
<td>V</td>
<td></td>
</tr>
<tr>
<td>van Opstall, Michael</td>
<td>68</td>
</tr>
<tr>
<td>Vennebush, Patrick</td>
<td>173</td>
</tr>
<tr>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Wakley, Sallianne</td>
<td>102</td>
</tr>
<tr>
<td>Walsh, Patricia</td>
<td>84</td>
</tr>
<tr>
<td>Ward, Debra</td>
<td>82</td>
</tr>
<tr>
<td>Weimar, Stephen</td>
<td>216</td>
</tr>
<tr>
<td>White, Jennifer</td>
<td>163</td>
</tr>
<tr>
<td>Wilkerson, Trena</td>
<td>65, 189</td>
</tr>
<tr>
<td>Wilson, Bryan</td>
<td>17, 130, 144</td>
</tr>
<tr>
<td>Wybomery, Steve</td>
<td>156.1</td>
</tr>
<tr>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Young, Terrell</td>
<td>70</td>
</tr>
<tr>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Zavala, Maria</td>
<td>39</td>
</tr>
<tr>
<td>Ziegler, Carrie</td>
<td>36, 114</td>
</tr>
</tbody>
</table>

---

**BYU Math**

We Use Math .org

Free resources for teachers with curious students.

Many students wonder, “When will I ever use math?” WeUseMath.org provides resources for teachers and students to learn about careers and real-world applications of mathematics. Come visit our booth for more information!
This certificate is presented to

in recognition of attendance and participation at the
NCTM 2019 Regional Conference & Exposition

Salt Lake City, Utah • October 16–18, 2019

Robert Q. Berry, III
President, NCTM
Name of Provider: National Council of Teachers of Mathematics

Educator’s Name: ________________________________________________________________

**Description of Professional Development Activity:** This is a three-day regional conference sponsored by the National Council of Teachers of Mathematics. Over 200 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>
<th>PD Time Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL Professional Development Hours Accrued:**

*I certify that the above-named educator accrued the indicated number of professional development hours.*

Ken Krehbiel  
Executive Director, NCTM

Robert Q. Berry, III  
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.*
What’s missing from the Annual Meeting & Exposition?

[you]

Save the date and meet us in St. Louis for NCTM’s signature math education event!

- Discover the latest classroom strategies and tools.
- Learn about best practices from recognized innovators.
- Connect with math education leaders and colleagues.

2020 ANNUAL MEETING & EXPOSITION
October 21–24, St. Louis

NCTM.org/Annual2020
#NCTMSTL20
Building Mathematical Thinkers

Bridges in Mathematics is a comprehensive PK–5 curriculum that equips teachers to fully implement the national standards in a manner that is rigorous, coherent, engaging, and accessible to all learners. Bridges blends direct instruction, structured investigation, and open exploration.

Join our session on **Arrays, Properties, and Practices** on Thursday, October 17, from 8 to 9 a.m. in Room 251 F or stop by booth 313 to learn more.

mathlearningcenter.org/bridges