

# NCTM Regional Conference & Exposition

2018

KANSAS CITY | NOVEMBER 1-3

PREMIER MATH EDUCATION EVENT

# Program Book



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

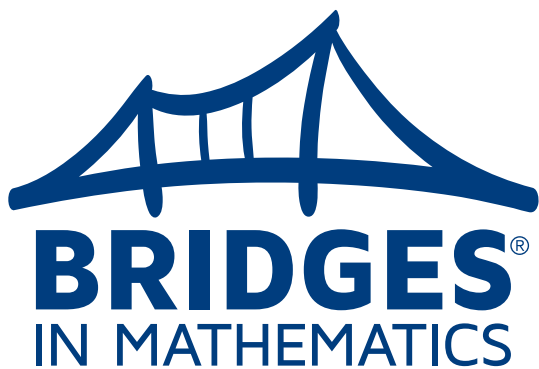
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#NCTMregionals





# 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.

**Visit booth 401 in the exhibit hall to learn more.**

[mathlearningcenter.org/bridges](https://mathlearningcenter.org/bridges)

# NCTM Regional Conference & Exposition 2018 KANSAS CITY | NOVEMBER 1-3

## HOSTS

Kansas City Area Teachers of Mathematics (KCATM)  
Missouri Council of Teachers of Mathematics (MCTM)

All Regional Conference presentations will be held at the Kansas City Convention Center. See pages 68–70 for floor plans.

## REGISTRATION

Thursday	3:00 p.m.	–	7:00 p.m.
Friday	7:00 a.m.	–	3:00 p.m.
Saturday	7:00 a.m.	–	12:00 p.m.

## EXHIBITS & NCTM CENTRAL

Thursday	4:00 p.m.	–	6:00 p.m.
Friday	9:00 a.m.	–	5:00 p.m.
Saturday	9:00 a.m.	–	2:00 p.m.



Advertisers Guide . . . . .	78
Affiliates . . . . .	64–65
Apps . . . . .	6
Certificate of Attendance . . . . .	79
Conference App . . . . .	6
Committees . . . . .	66
Exhibits . . . . .	5
Directory . . . . .	73–76
Exhibit Hall Floor Plan . . . . .	71
Exhibitor Workshops . . . . .	5
First Aid . . . . .	5
Floor Plans . . . . .	68–71
General Information . . . . .	5–6
Infinity Bar . . . . .	6
Information Booth . . . . .	5
NCTM Central . . . . .	6
Bookstore . . . . .	6
Classroom Resources . . . . .	6
Mathematics Education Trust (MET) . . . . .	6
Member Services . . . . .	6
Networking Lounge . . . . .	6
NCTM Officers . . . . .	66
Online Conference Planner . . . . .	6
Presentation Handouts . . . . .	5
Program Information . . . . .	3
Opening Session . . . . .	8
Friday Presentations . . . . .	9
Saturday Presentations . . . . .	41
New and Preservice Teachers Workshop . . . . .	3
Regional Conference Overview & Orientation . . . . .	3
Strands . . . . .	4
Types of Presentations . . . . .	3
Registration and Access to Presentations . . . . .	5
Speaker Index . . . . .	77–78
Sponsors . . . . .	63

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

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

Printed in the U.S.A.

# Welcome to Kansas City!



Welcome to the NCTM Regional Conference & Exposition in Kansas City, Missouri! An amazing team of volunteers has worked diligently to plan this conference for YOU. Whether you are a preservice teacher, new teacher, experienced teacher, administrator, instructional coach, teacher educator, researcher, or have some other creative connection to NCTM, you will find sessions, workshops and bursts selected to inspire you and help you hone your craft!

Each presentation aligns with one of eight strands. Along with the presentation description, use these strands to help guide your choices. Seven of the strands align to the Guiding Principles as described in NCTM's *Principles to Actions*. You will find that the Access and Equity Principle is organized into two strands, one for Specializing Education, and one for Celebrating Differences to give due credit to each aspect. The eighth strand gives attendees a chance to learn about ways to implement project- or problem-based learning and other similar innovations.

Are you new to NCTM? Experienced teachers are excited to share their classroom-tested and approved strategies and insights with you. Are you a veteran NCTM attendee? Isn't it amazing how you can always glean a new insight and walk away with renewed energy from each and every NCTM conference? That's why you're back, right?

While you are here in Kansas City, be sure to explore! These three things are at the heart of Kansas City: fountains, barbeque, and jazz. Kansas City is also home to the National World War I Museum and Memorial, Hallmark, and the Country Club Plaza, a shopping district modeled after Seville, Spain. Kansas City has something for everyone.

Finally, and most importantly, thank you for being here. Thank you to the conference volunteers and staff for devoting your time and talents in order to provide quality professional development for the mathematics education community. We are doing important work at an important time in our country's history. We hope you leave this conference with renewed energy for developing critical thinking, problem-solving skills, and numeracy for students, our nation's future leaders.



**Jennifer Wall**  
Program Committee Chair  
Northwest Missouri State  
University, Maryville



**Brenda Colwell**  
Volunteer Committee Chair  
Blue Valley North High School,  
Overland Park, Kansas



**Michael Koehler**  
Volunteer Committee Chair  
Blue Valley North High School  
(Retired), Overland Park, Kansas

The NCTM 2018 Regional Conference & Exposition officially begins on Thursday with the Opening Session at 5:30 p.m. Presentations on Friday and Saturday 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.

**Friday and Saturday**  
9:45 a.m.–12:00 p.m.  
Room: 3501 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.

**Friday and Saturday**  
7:15 a.m.–7:45 a.m.  
Room: 2503


## 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

## TEACHING & LEARNING: ENGAGING STUDENTS IN MEANINGFUL LEARNING **T&L**

Engagement in mathematics can move beyond just having students engaged for the sake of having fun in the classroom to a place where they are actively engaged with rigorous mathematics. Presentations in this strand focus on either individual engagement with rigorous mathematics or students engaging collaboratively to make sense of mathematics together.

## CELEBRATING DIFFERENCES: ACCESS, EQUITY, AND EMPOWERMENT **DIFFER**

Historically, some groups have been purposefully left out of the vision of who can succeed in mathematics. NCTM has long valued explicitly supporting each and every student and teacher in developing identity and agency as people who can do mathematics, and celebrating the diverse perspectives brought by different social identities. Presentations in this strand focus on mathematics for social justice, including addressing our own biases, as well as empowering diverse students to consider careers in mathematics and other STEM fields.

## SPECIALIZING EDUCATION: ACCESS, EQUITY, AND EMPOWERMENT **SPECIAL**

Each and every student deserves access and opportunity to engage with rich, rigorous, and relevant instruction that cultivates mathematical abilities and supports learning and understanding. Presentations in this strand share practices, strategies, and methods to support students who experience mathematical difficulties and/or students who are English language learners.

## CURRICULUM: MAKING CONNECTIONS **CURRIC**

Curriculum should reflect inherent connections in mathematics and engage students in meaningful experiences to explore mathematical interconnectedness. Presentations in this strand prioritize teaching mathematics for sense-making and developing greater understanding. Purposeful connections are highlighted and explicitly demonstrated in ways that mathematical concepts are discussed and explored in further depth within and across grade bands.

## TOOLS AND TECHNOLOGY **TOOLS**

Every new innovation in technology and teaching and learning tools can serve to reinforce the status quo or to create meaningful change. Presentations in this strand will emphasize ways in which tools and technology can provide purposeful affordances in engaging students in creating, comparing, conjecturing, and constructing mathematical arguments. The use of tools and technology—if and when appropriate—can support the vision of students making sense of their own and others' ideas.

## ASSESSMENT **ASSESS**

The word “assessment” comes from the Latin word meaning “to sit by,” giving us the image of educators sitting beside their students listening to their ideas. Presentations in this strand focus on various types and uses of effective assessment—formative and summative, and those that assess individual students as well as the whole class. Presentations explore types of assessment results that are most useful for eliciting and using evidence of student thinking. Most importantly, the presentations will support the capacity to use assessment results to inform future instruction.

## PROFESSIONALISM: COLLABORATING AND GROWING TOGETHER **COLLAB**

While we might be the only teacher in our classroom at times, we do not have to take this journey alone. Presentations in this strand highlight effective ways of partnering with other classroom teachers, special educators, mathematics coaches, English language teachers, specialists, and/or administrators. Presentations emphasize collaborations that challenge us and hold us accountable to one another and to professional growth, as well as collaborations that support lifelong learning.

## INNOVATIONS IN INTEGRATED LEARNING **IILR**

Empowering students through exploration and authentic mathematics experiences can be transformative for teaching and learning. Presentations in this strand highlight effective implementation of experiential, integrated learning, which may include design thinking, project-based learning, problem-based learning, and engineering design.

Visit **NCTM Central**—connect with peers in the **Networking Lounge**, renew your membership, and shop the latest titles at the **Bookstore**.



## 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

- Get available speaker handouts at [nctm.org/planKC](http://nctm.org/planKC).
- 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/KC18](http://my.nctm.org/KC18).
- 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 Kansas City Convention Center. Staff can answer your questions about KC 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 Kansas City Convention Center Security.

## First-Aid Station

There will be a first-aid station at the Kansas City Convention Center during the conference. If you need medical services while in KC, 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.

## 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 1:30 p.m. on Friday and Saturday. Check out the map of the Exhibit Hall on page 71 and the list of exhibitors on pages 73–76.

## 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 Friday and Saturday 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

Start planning early and stay connected throughout the event with the NCTM mobile app. 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
- **Local Weather**—Get the forecast and current weather for the event city
- **Maps**—View floor plans and maps
- **Twitter**—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/planKC](http://nctm.org/planKC) to check it out.

## Wi-Fi

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

Username: NCTM

Password: NCTM2018

## Bookstore

Browse the **NCTM Bookstore** and save **25% off the list price** on all purchases! View firsthand all the publications that NCTM has to offer. You will also find a variety of specialty products that you can use as gifts, prizes, and incentives to spread the word about the importance of mathematics. Start your wish list today by previewing NCTM's wealth of resources at [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 an Missouri 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. To qualify, you must pay with a purchase order, check, or credit card from the school to which the Missouri exemption certificate is issued. NCTM cannot accept personal checks, personal credit cards, or cash in conjunction with tax exemption certificates. Tax exemption certificates for states other than Missouri 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.

Thursday	4:00 p.m.–6:00 p.m.
Friday	9:00 a.m.–5:00 p.m.
Saturday	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.

## 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.





## HIGHLIGHTS

Opening Session: Dreaming and Standing on Their Shoulders, 1

## GET SOCIAL

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



**Conference App**  
[nctm.org/confapp](http://nctm.org/confapp)



**Twitter**  
[@NCTM](https://twitter.com/NCTM)



**Instagram**  
[@NCTM.math](https://www.instagram.com/NCTM.math)



**Facebook**  
[facebook.com/TeachersofMathematics](https://facebook.com/TeachersofMathematics)

## REGISTRATION HOURS

3:00 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.



**1**  
**Opening Session:**  
**Dreaming and Standing On Their Shoulders**

**General Interest Session**

From cutting open a “talking doll” at age five to see what made her talk, to helping her dad with their car as a child, Darden will tell how these experiences led to her interest in the physical sciences and ultimately to her love for plane geometry in high school. She loved how the content of the geometry class related to physical situations, and she loved how the material was presented! Even though that geometry class was her highest level of high school mathematics, she was able to graduate college with a degree in mathematics education. This ultimately led her to positions as a “human computer” and an aerospace engineer at NASA, where she worked for forty years, including twenty-five years as a researcher in sonic boom minimization and finally in senior leadership.

**Dr. Christine Darden**  
 National Aeronautics and Space Administration (NASA), Retired

**2501, Kansas City Convention Center**

Thursday

# BIG IDEAS MATH<sup>®</sup>

**BY RON LARSON AND LAURIE BOSWELL**

***Big Ideas Math: Modeling Real Life***  
**incorporates the latest in educational research!**

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- Spaced Practice
- In-Class Problem Solving

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## HIGHLIGHTS

Regional Conference Overview & Orientation, 2  
Six Strategies for Developing both Conceptual Understanding and Procedural Fluency in Algebra, 7  
Teaching Geometry to Young Children: Parts and Properties, 9  
Teaching with Intention: Focusing on What Matters, 10  
5 Fundamentals of Addition Fact Fluency, 13  
New and Preservice Teachers Workshop, 39  
President's Address: Catalyzing Change: Identity, Agency, Positionality, and Equitable Instructional Practices, 50  
Taking Action: Implementing Effective Mathematics Teaching Practices in Grades 9–12, 71  
Formative Assessment: Using Hinge Questions, Providing Feedback, Informing Instruction, 79  
Mathematics for Human Flourishing, 90  
Casting a Wider Net: The Hows and Whys of Being a Connected Educator, 108

## GET SOCIAL

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



**Conference App**  
[nctm.org/confapp](http://nctm.org/confapp)



**Twitter**  
[@NCTM](https://twitter.com/NCTM)



**Instagram**  
[@NCTM.math](https://www.instagram.com/NCTM.math)



**Facebook**  
[facebook.com/TeachersofMathematics](https://facebook.com/TeachersofMathematics)

## REGISTRATION HOURS

7:00 a.m.–3:00 p.m.

## EXHIBIT & NCTM CENTRAL HOURS

9:00 a.m.–5:00 p.m.

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7:15 A.M.–7:45 A.M.

**2** **COLLAB**

**Regional Conference Overview & Orientation**

**General Interest Session**

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

**Linda Davenport**

Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Boston Public Schools, Massachusetts

**Dave Ebert**

Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Oregon High School, Wisconsin

**2503, Kansas City Convention Center**

**4** **DIFFER**

**Complex Conceptions of Fractions: Negotiating Meaning in the Small Environment**

**3–5 Session**

We share developmental trajectories of two students with exceptionalities through the lens of learner complexity. Each student's concepts of unit fraction as usable numbers across varied learning situations is illustrated, along with teacher's responses to student's goals for their own learning across six tutoring sessions.

**Jessica Hunt**

North Carolina State University, Raleigh

**Andrea Kunze**

North Carolina State University, Raleigh

**Heather West**

North Carolina State University, Raleigh

**2102 A, Kansas City Convention Center**

**5** **COLLAB**

**Creating Shared Values around Student Problem Solving within the Instructional Core**

**Coaches/Leaders/Teacher Educators Session**

Engage in an instructional rounds protocol to analyze student problem solving and adapt the method to implement at your site. Understand why rounds help teachers develop a common understanding of the Math Practices, examine student evidence, and make instructional decisions that support increasing the positive mathematical identify for all students.

**Kathy Clemmer**

Loyola Marymount University, Los Angeles, California

**Katie Laskasky**

Loyola Marymount University, Los Angeles, California

**Cyndia Acker-Ramirez**

Culver City Unified School District, California

**3501 F, Kansas City Convention Center**

8:00 A.M.–9:00 A.M.

**3** **T&L**

**Advanced Algebra with Financial Applications: A Perfect 3rd/4th Year Math Course**

**10–12 Session**

Advanced Algebra With Financial Applications is a substantive modeling course for all students that teaches and uses advanced algebra in the content areas of discretionary spending, banking, credit, auto and home ownership, employment, taxes, investments, entrepreneurship, retirement, and budgeting. Sample materials will be distributed and explored.

**Richard Sgroi**

Bedford Central Schools (Retired), Rhinebeck, New York

**2103 B, Kansas City Convention Center**

Friday

Hear what's new from exhibitors—attend an **exhibitor workshop**. Look for the **ew** symbol throughout the program book.



**6 TOOLS****Exploring the Connection between Recursive Sequences and Composition of Functions****10–12 Session**

We will examine multiple representations of recursive sequences through iterative techniques. Various learning styles will be addressed through modeling of real-world situations. See how handheld technology promotes algebraic thinking and a deeper understanding of sequences, functions, and limits to help students move from algebra to calculus.

**David Kapolka**

Twitter: dkapolka  
Consultant, Alto, Michigan

**2502 B, Kansas City Convention Center**

**7 CURRIC****Six Strategies for Developing both Conceptual Understanding and Procedural Fluency in Algebra****8–10 Session**

Too often students can “do” in the moment but later cannot recall which procedure to use. Developing robust concept images and analyzing the advantages and disadvantages of different ways of thinking about the mathematics can facilitate both flexible procedural knowledge and deep understanding of ideas such as linearity or solving an equation.

**Gail Burrill**

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

**2504, Kansas City Convention Center**

**8 SPECIAL****SMPs + IEPs = Success!****6–8 Session**

Focusing on singular math concepts rarely pushes students to see the big picture, so why write individualized education program (IEP) goals around one specific skill? In this session designed to be beneficial for both general and special education teachers, participants will challenge current beliefs by using the Standards for Mathematical Practice (SMPs) to promote thinking and independence for all students who struggle.

**Emily McCaffrey**

Evanston/Skokie School District 65, Illinois

**2215 C, Kansas City Convention Center**

**9 T&L****Teaching Geometry to Young Children: Parts and Properties****Pre-K–2 Session**

Our research highlights the need for students to learn appropriate mathematical attributes to support later geometry success. We will engage participants in collaborative activities with research-based materials, which provide practitioners the tools to learn appropriate mathematical language and to incorporate the language in activities.

**Douglas Clements**

Twitter: DHClements  
University of Denver, Colorado

**Julie Sarama**

University of Denver, Colorado

**2103 A, Kansas City Convention Center**

**10 T&L****Teaching with Intention: Focusing on What Matters****General Interest Session**

Curriculum standards provide the “bones” of what we teach, but teachers add the “meat.” Deciding what meat to add requires teacher reflection on what ideas should emerge when focusing on a particular standard. Then the teacher can choose meaningful and engaging activities that will lead to those ideas and ask questions to ensure they emerge.

**Marian Small**

Twitter: marian\_small  
University of New Brunswick, Fredericton, Canada

**2215 AB, Kansas City Convention Center**

8:00 A.M.–9:00 A.M.

**11 TOOLS****Technology to Talk About****General Interest Session**

Technology is coming into our classrooms at a record pace—whether invited by us or in spite of us. Which interactives and tools should we choose, and how should we use them? We will discuss examples in Desmos, GeoGebra, and various games and applets with an eye toward the conversations they create for learners and the ways they enable teachers to create constructive discourse.

**John Golden**

Twitter: mathhombre

Grand Valley State University, Allendale, Michigan

**2502 A, Kansas City Convention Center****12 ASSESS****Using Writing to Frame, Support, and Consolidate Student Mathematical Understanding****3–5 Session**

Writing is often used as a strategy to support student reading comprehension. Why aren't we doing this in mathematics? There are advantages to integrating writing into mathematics. Attendees will be provided a variety of writing strategies that can be used for instruction and assessment, and for students to frame, support, and consolidate their thinking.

**David Costello**

Twitter: @dr\_costello

Public Schools Branch, Coleman, Prince Edward Island, Canada

**2103 C, Kansas City Convention Center**

Membership questions?  
We've got answers! Visit  
Member Services in NCTM Central.



8:00 A.M.–9:15 A.M.

**13 T&L****5 Fundamentals of Addition Fact Fluency****Pre-K–2 Workshop**

We need a fluency approach to mastering the basic facts! Using 5 fundamentals as a framework, we will explore strategies, games, and assessment tools that help teachers monitor and support students' fluency (and number sense) development.

**Jennifer Bay-Williams**

Twitter: @JBayWilliams

University of Louisville, Kentucky

**3501 H, Kansas City Convention Center****14 T&L****Beyond Literature Connections: Storytelling in Math****Pre-K–2 Workshop**

There is a plethora of children's books that address all areas of the math 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 reading and writing? What if they became the authors?

**Teresita Cuesta**

Sidwell Friends School, Washington, D.C.

**3501 C, Kansas City Convention Center****15 T&L****Creating Collaborative Classrooms: Engaging Students in Meaningful Learning of Mathematics****8–10 Workshop**

Learn strategies to promote mathematical discourse in your math classes by experiencing the excitement of engaging in worthwhile mathematical tasks with others. Teachers will learn how to adjust their lessons to maximize student engagement and math discourse in their math classes.

**Lisa Jasumback**

Twitter: lisa@ljasumback

CPM Educational Program, Elk Grove, California

**2505 A, Kansas City Convention Center**

**16 TOOLS****Developing Deeper Conceptual Understanding to Better Prepare Students for the Redesigned ACT and SAT****10–12 Workshop**

Students who only excel at procedural fluency (memorizing steps and formulas) will have a difficult time on the math section of the ACT and SAT. We will provide innovative activities that promote conceptual understanding and connect these to actual test questions, while providing creative ways to integrate technology. Many resources will be provided.

**Tom Reardon**

Twitter: @tomreardon3

Fitch High School / Youngstown State University, Poland, Ohio

**2105, Kansas City Convention Center**

**17 T&L****Engaging All Students in Rigorous Mathematics with Problem Strings and Talks****8–10 Workshop**

Problem strings and talks are powerful lesson formats where all students learn, have access to the problems, and are challenged. Their success hinges on the order, the discussion, and the teacher's modeling of student strategies to build connections. Come experience powerful teaching routines that promote sense making, strategizing, and mathematizing.

**Pamela Harris**

Twitter: @pwharris

Texas State University, San Marcos

**2102 B, Kansas City Convention Center**

**18 T&L****Engaging Students Using Rich Mathematical Tasks by Altering Their Beliefs as Learners of Mathematics****6–8 Workshop**

This workshop provides participants with instructional strategies, student tasks, and new ideas for engaging students in mathematics. Teachers create mathematical mindsets through a new kind of teaching that is about growth, innovation, creativity, and the fulfillment of mathematics potential in all students.

**Holly McCarty**

Twitter: @bvmathematics

Blue Valley School District, Overland Park, Kansas

**2505 B, Kansas City Convention Center**

**19 SPECIAL****Fraction Success for Every Child: Conceptual Understanding, Fluency, and Real-Life Problem Solving****3–5 Workshop**

The speaker will actively engage workshop participants with strategies and tools to develop deep understanding of fractions, with a focus on fractions as numbers, equivalent fractions, operations with fractions, and decimal equivalence. She will engage attendees with real-world fraction problem solving and effective questioning strategies.

**Donna Knoell**

Consultant, Shawnee Mission, Kansas

**2503, Kansas City Convention Center**

**20 T&L****FUN with Inverse FUNctions****10–12 Workshop**

Come explore inverse functions. Develop the concept of inverses using hands-on activities with GeoGebra and the Desmos Activity Builder. Teachers will actively participate in lessons on inverse functions while focusing on using the Standards for Mathematical Practice. Experience inquiry-based, learner-centered, collaborative activities.

**Christine Larson**

Twitter: CLLarson2718

South Dakota State University, Brookings

**Sharon Vestal**

South Dakota State University, Brookings

**3501 D, Kansas City Convention Center**

8:00 A.M.–9:15 A.M.

**21** **T&L****Making Middle School Math Come Alive with Games and Activities****6–8 Workshop**

Participants will be actively engaged in working through games and activities around middle school math topics. Integer tiles and games will be used to introduce and practice integer operations. Rethink order of operations without using PEMDAS, and explore activities around graphing and tables, including an algebra walk. We'll finish with a scavenger hunt.

**Sharon Rendon**

Twitter: @srendon2

CPM Educational Program, Summerset, South Dakota

**2104 A, Kansas City Convention Center****22** **T&L****Passing Notes in Math Class: Using Dialogue Journals to Engage Children in Rich Mathematical Tasks****3–5 Workshop**

Dialogue journals are a highly engaging way to get students thinking, writing, and talking with each other like young mathematicians. In this interactive workshop, you will collaborate to solve rich problems by engaging in the dialogue journal process—and then learn how to implement DJs to create and support a discourse-rich math classroom.

**Jill Perry**

Rowan University, Glassboro, New Jersey

**3501 G, Kansas City Convention Center****23** **COLLAB****We Are Not Alone: Perspectives of the Mentoring Experiences****Coaches/Leaders/Teacher Educators Workshop**

We will showcase how early career teachers use mentoring to empower themselves. Mentoring can greatly improve the resources available, help teachers learn or adapt new methods, and provide a partner in crime while teaching. The challenge lies in how to find, create, and maintain these mentoring relationships. Come see how to develop this relationship in a unique way!

**Amanda Meiners**

University of Iowa, Iowa City

**Alana Tholen**

University of Iowa, Iowa City

**2104 B, Kansas City Convention Center**

9:30 A.M.–10:30 A.M.

**24** **DIFFER****Adjusting Instruction for a Culturally Responsible Classroom****3–5 Session**

This session will demonstrate how elementary mathematics teachers can adjust instructional practices to have a more culturally responsible classroom. Using both research and experience, the presenter will provide participants with proven techniques that help ensure student success in mathematics.

**Eugene T. Glover, Jr.**

Twitter: @EugeneTGloverJr

University of Alabama, Tuscaloosa

**2502 A, Kansas City Convention Center**

Gain more from your conference experience—continue the conversation in the NCTM app! Learn more at [nctm.org/confapp](http://nctm.org/confapp).





# Are you ready to create positive change in high school math?

Influencers and educators play a vital role in how high school students experience, understand, and relate to mathematics. Now, more than ever, students face a future where mathematical comprehension, confidence, and skill are vital to their student success.

NCTM has published *Catalyzing Change in High School Mathematics: Initiating Critical Conversations*. This book will help leaders, administrators, counselors, teachers, and other stakeholders in student success to do the following:

- Examine the purpose of teaching math beyond college and career readiness
- Identify barriers to high school student learning
- Define equitable teaching practices that equip students with the confidence and comprehension that is needed for the future

**Catalyzing Change**  
in High School Mathematics  
Initiating Critical Conversations



**“A must-read for anyone with a stake in students’ high school mathematics”**

*Catalyzing Change in High School Mathematics: Initiating Critical Conversations* is available now through NCTM’s online bookstore. Order your copy today at [nctm.org/catalyzing!](https://nctm.org/catalyzing!)

**Professional Development Your Way!** NCTM also provides customizable professional development related to *Catalyzing Change* for leaders, schools, and districts.



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

## 25 **T&L** Count on Us!

### Pre-K–2 Session

Cognitively guided instruction (CGI) engages students in meaningful problem-solving strategies that encourage problem solving beyond addition and subtraction in kindergarten. CGI develops the fundamentals of algebra and deep mathematical understanding in the minds of our youngest students. The sky's the limit for future CGI mathematicians!

**Laura Steele**

Okaloosa County Schools, Fort Walton Beach, Florida

**Christine Sadler**

Okaloosa County Schools, Fort Walton Beach, Florida

2103 B, Kansas City Convention Center

## 26 **CURRIC** Creating “Inciting Incidents” for Your Mathematics Lessons

### 8–10 Session

Students often ask why they should care about the mathematics they are learning. In this session, we will draw on strategies from literature and film to learn how to create inciting incidents for each of our lessons. Participants will learn about and engage in the process of creating motivation for their lessons in this interactive session.

**Zandra de Araujo**

Twitter: @zdearaujo

University of Missouri, Columbia

**Samuel Otten**

University of Missouri, Columbia

**Jaepil Han**

University of Missouri, Columbia

2103 C, Kansas City Convention Center

## 27 **TOOLS**

## Desmos for Calculus: Animating All the Greatest Hits!

### 10–12 Session

Augment your calculus teaching by using Desmos to animate its greatest hits! We will share ready-made examples, plus lift the hood to show how to dynamically visualize such classics as secants approaching tangents, derivative sketching, related rates, Riemann sums, the fundamental theorem of calculus, Taylor polynomials, and polar curves.

**Dave Cesa**

Twitter: @davecesa

Charlotte Latin School, North Carolina

2502 B, Kansas City Convention Center

## 28 **SPECIAL**

## Evidence-Based Practices for Middle School Students Who Demonstrate Mathematics Difficulties

### 6–8 Session

This presentation will provide participants with information about the difficulties middle school students exhibit with algebra-readiness concepts and skills through an examination of student work. Evidence-based recommendations for addressing student errors will be provided such as lesson design, mathematics models, and progress monitoring.

**Diane Bryant**

University of Texas at Austin

**Brian Bryant**

University of Texas at Austin

2103 A, Kansas City Convention Center

## 29 **T&L**

## How Do You Engage Your Reluctant Learners with Mathematical Modeling

### 10–12 Session

Dive into high-interest modeling lessons. Unlike “real-world problems,” reality-based mathematical modeling lessons present students with conceptual modeling. Get support with mathematics standards that require students to identify variables, formulate a model, perform skills, and interpret and validate results.

**Deborah McGinley**

Pearson Education, Kissimmee, Florida

2504, Kansas City Convention Center

**30** **DIFFER****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

**2215 C, Kansas City Convention Center**

**31** **ASSESS****Writing in the Math Classroom: How to Make It Essential, Not Extra****Higher Education Session**

Writing in math classes can be a powerful tool for both students and teachers. Over several semesters, we have infused different writing tasks into beginning college-level courses. Join a discussion about our tasks, successes, and lessons learned. Collect some practical ideas to incorporate writing into your already full curriculum.

**Ingrid Peterson**

University of Kansas, Lawrence

**Susan Gay**

University of Kansas, Lawrence

**2102 A, Kansas City Convention Center**

**31.1** **EW** **CURRIC****Embracing *Principles to Actions*****8–10 Exhibitor Workshop**

Wondering how to incorporate *Principles to Actions* in your school? Let CPM show you! Our nonprofit provides rich mathematics curricula that is student-centered & 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**

Elk Grove, California

**3501 A, Kansas City Convention Center**

**31.2** **EW** **T&L****When Adaptive Learning Meets Interactive Storytelling, Students Conquer FRACTIONS****3–5 Exhibitor Workshop**

See how to finally close the fractions gap with Amplify Fractions! Quirky stories provide instruction with purpose AND humor, adapting to individual student need via a patented digital tutor. With unlimited practice, teachers confirm it: Amplify Fractions keeps students "super-engaged" and takes their fractions understanding to the next level!

**Amplify Education**

Brooklyn, New York

**3501 B, Kansas City Convention Center**

**31.3** **EW****BYOD: Mathspace—Why You'll Never Grade Math Assignments Again. Seriously.****General Interest Exhibitor Workshop**

You've seen it all, right? Adaptive learning? Yep. Handwriting Recognition? Hmm. Every math question graded line-by-line? Whoa, that's new! Students can finally show their work, and get feedback at every step—all auto-graded for you. Goodbye, multiple choice! Bring your own device to try the award-winning Mathspace live, and ask about a free trial.

**Mathspace**

New York, New York

**3501 E, Kansas City Convention Center**

**32** **SPECIAL**

**Algebraic Notation in Support of English Language Learners and Students with Learning Disabilities**

**3–5 Workshop**

Understanding and using algebraic notation is a core mathematical skill that can be developed early. Presenters will show ways to introduce and use algebraic notation in an elementary math classroom, and they will focus on the benefits of algebraic notation for English language learners and students with various speaking, reading, and writing deficiencies.

**Nina Dubinsky**

Russian School of Mathematics, Newton, Massachusetts

**Maryna Yeroshkina**

Russian School of Mathematics, Newton, Massachusetts

**Juliat Turchaninova**

Russian School of Mathematics, Newton, Massachusetts

**2105, Kansas City Convention Center**

**33** **ASSESS**

**Assessment and Feedback: Connecting the Two in a Practical Way**

**8–10 Workshop**

Research is clear that when teachers engage in formative assessment, students’ learning is increased, but what are practical ways to make that happen? Come experience a process where you will look at tasks in a collaborative setting to examine students’ thinking and make decisions about how to best provide feedback to the learner in order to move them forward.

**Sharon Rendon**

Twitter: @srendon2

CPM Educational Program, Summerset, South Dakota

**Lisa Jasumback**

CPM Educational Program, Elk Grove, California

**2104 A, Kansas City Convention Center**

**34** **T&L**

**Build Conceptual Understanding through Engaging Games**

**Pre-K–2 Workshop**

Does your math center need new games? Experience class activities and games that help students develop understanding of some big concepts in K–2 math. Activities will focus on subitizing, counting, addition and subtraction strategies, and developing fact fluency. Activities and website materials will be available.

**Laurie Boswell**

Big Ideas Math, Franconia, New Hampshire

**2505 A, Kansas City Convention Center**

**35** **TOOLS**

**Coding Mathematics: A Computer Programming Exploration**

**3–5 Workshop**

Through the integration of mathematics and technology, join us in learning about engaging your students in the mathematics of angle measurement, geometric properties, units of measure, multiplication, line symmetry, and patterns that needed to successfully complete four Frozen-themed programming challenges!

**Megan Nickels**

Twitter: @megannickels

University of Central Florida, Orlando

**Sarah Bush**

University of Central Florida, Orlando

**Karen Karp**

Johns Hopkins University, Baltimore, Maryland

**2104 B, Kansas City Convention Center**

Stop by NCTM Central to ask questions and learn about the new NCTM journal!



**36** **COLLAB**

**Collaboration and Instructional Feedback Teams: Transfer from Workshop to Classroom Implementation**

**Coaches/Leaders/Teacher Educators Session**

One-and-done professional development is an ineffective structure for supporting teachers and shifting instructional practices. This session will outline a system to foster collaboration and hands-on learning for teachers through observation and feedback in cohort teams. Participants will leave with tools and sample schedules that can be modified in their own districts using CIFTs.

**Connie Hamilton**

Twitter: [conniehamilton](#)  
Saranac Community Schools, Michigan

**Stephanie Smith**

Saranac Community Schools, Michigan

**2503, Kansas City Convention Center**

**37** **SPECIAL**

**Engaging Students with Special Needs in Rich Tasks and Mathematically Productive Struggle**

**6–8 Workshop**

The routines and activities we will engage in in this workshop provide access for all students to engage in challenging mathematics and productive struggle. They enable teachers to monitor student progress so that they can respond to student needs through modifications, accommodations, remediation, challenges, and extensions.

**Jill Perry**

Rowan University, Glassboro, New Jersey

**2102 B, Kansas City Convention Center**

**38** **TOOLS**

**Facilitating Productive Classroom Conversations with Desmos Activities**

**10–12 Workshop**

Teachers can use Desmos activities to facilitate mathematical conversations between students. These conversations can help guide learning, clarify, and deepen understanding, and also increase student engagement. In this session, the Desmos teacher dashboard and classroom conversation toolkit will be modeled and discussed. All Desmos activities are free.

**Mark Kreie**

Twitter: [@kreiem](#)  
Brookings High School, South Dakota / Desmos Fellow

**Jessica Breur**

Mounds View Public Schools, Shoreview, Minnesota / Desmos Fellow

**3501 C, Kansas City Convention Center**

**39** **COLLAB**

**New and Preservice Teachers 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

**3501 D, Kansas City Convention Center**

**40** **CURRIC**

**The Importance of the WOW Factor: Introducing “Advanced” Topics in Early Grades**

**Pre-K–2 Workshop**

Children, like adults, have different strengths and are excited by different things. We need to show young students the breadth of math topics, giving each student an opportunity to shine and to have a “WOW” moment. This session will focus on how to introduce a variety of “advanced” concepts in K–grade 2 to accomplish this.

**Sasha Fradkin**

Twitter: [@aofradkin](#)  
Main Line Classical Academy, Bryn Mawr, Pennsylvania

**3501 H, Kansas City Convention Center**

9:45 A.M.–11:00 A.M.

**41** **SPECIAL****The Power of Two: Developing the Mathematician in ALL Students**

8–10 Workshop

Do you believe all students have the ability to be active participants in a mathematics classroom? We do! Join us as we discuss our collaborative teaching process, strategies to engage all students in powerful learning, opportunities for students to show their understanding, and conversations focused on how ALL students can be mathematicians!

**Alexis Covarrubias**

Chicago Public Schools, Illinois

**Nicole Flores**

Chicago Public Schools, Illinois

2505 B, Kansas City Convention Center

**42** **CURRIC****Travel through Time at Constant Speed**

6–8 Workshop

Join us as we travel through grades 6–8 and share activities that model the progression of ratios and proportional reasoning. Your trek will include stops to explore double-number-lines, watch a tortoise and hare race, and witness time travel. Gain a clearer understanding of your students' past and future proportional reasoning.

**Emily Combs**

Twitter: @ecombsmathjoy

Clinton School District, Missouri

**Crystal Roskop**

Clinton School District, Missouri

**Jami Smith**

Archie R-V School District, Missouri

3501 G, Kansas City Convention Center

11:00 A.M.–12:00 P.M.

**43** **T&L****“Who Wants to Be a Millionaire”: A Contestant’s Mathematical Perspective**

8–10 Session

How does knowledge of expected value affect a game show contestant’s “best choice”? How have differing prize values and rules changed the game over the years? Come use various dynamic technologies to explore, play, and simulate with a recent “Millionaire” contestant.

**Mike Reiners**

Twitter: @TheTaskMathster

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

2103 B, Kansas City Convention Center

**44** **CURRIC****Arrays—Access to Complex Properties of Multiplication and Division**

3–5 Session

We will experience how students develop and understand the meaning of multiplication and division through the array. We will explore the progression of the array to the area model and analyze how the model supports understanding of the distributive property.

**Lori Sponenburgh**

Great Minds, Washington, D.C.

**Tracy Gautreau**

Great Minds, Washington, D.C.

2103 C, Kansas City Convention Center

**45** **ASSESS****End of High School Placement Exams: Fostering Middle and High School Collaborative Partnerships**

Coaches/Leaders/Teacher Educators Session

This session shares the development and growth of our middle school and high school mathematics teacher partnerships. We will share how collaboration within our professional learning community has helped develop an articulated curriculum (scope and sequence), facilitate sharing of instructional strategies, and support co-construction of common assessment.

**Darshan Jain**

Twitter: @djain2718

Adlai E. Stevenson High School, Lincolnshire, Illinois

**Sue Ellen Vozza**

Adlai E. Stevenson High School, Lincolnshire, Illinois

3501 F, Kansas City Convention Center

**46** CURRIC**Functions—What Makes Them So Difficult?**

## 10–12 Session

Students struggle with functions in almost all contexts. How can we restructure our approach so students understand how to connect different representations of functions, think about functions in general terms, and develop the functional thinking they will need in calculus?

**Gail Burrill**

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

2504, Kansas City Convention Center

**47** T&L**Hands Down, Speak Out: A Different Way of Talking in Math Class**

## General Interest Session

Hands-Down Conversations are a structure for mathematical dialogue in which students take the lead, building agency as mathematicians and developing content understanding, as they notice, wonder, and reason about math and the world around them.

**Kassia Omohundro Wedekind**

Twitter: @kassiaowedekind  
Consultant, Arlington, Virginia

2215 C, Kansas City Convention Center

**48** CURRIC**Motivating Primary Peeps to Love Math! Practice with Early Number Sense through Songs and Stories!**

## Pre-K–2 Session

This session will model how to create an environment for early K–2 number sense activities without using a pencil! Participants will enjoy games and activities that highlight subitizing, composing, and decomposing numbers. We will sing and move and use every moment to empower all students to love math!

**Kim Sutton**

Twitter: @Creative\_Math  
Consultant, Arcata, California

2502 B, Kansas City Convention Center

**49** ASSESS**No More One-Size-Fits-All Assessments: Explore Student-Designed Assessments in Secondary Math**

## 10–12 Session

Student-designed assessments incorporate choice and creativity while eliciting evidence of student thinking and depth of knowledge by engaging their interests and strengths. We'll cover effective formats, free tech tools, and see student work. Learn how to assess for depth of knowledge without being distracted by the “wow factor” of the format.

**Becky Archibald**

Twitter: @BeckyAArchibald  
Edmond Public Schools, Oklahoma

2102 A, Kansas City Convention Center

**50****Catalyzing Change: Identity, Agency, Positionality, and Equitable Instructional Practices**

## General Interest Session

This session makes connections between equitable instructional practices and identity, agency, and positionality. Specifically, the session uses a vignette to examine how high cognitively demanding tasks provide opportunities to engage learners in meaning discourse positioning learners as mathematically competent. The session uses mathematical discourse community as a framework for connecting mathematics norms of discourse to identity and agency. While this session highlights *Catalyzing Change in High School Mathematics*, the discussions of teaching practices that cultivate identity, agency, and positionality is appropriate for all educators.

**Robert Q. Berry, III**

President, National Council of Teachers of Mathematics, Reston, Virginia; University of Virginia, Charlottesville

2215 AB, Kansas City Convention Center

**51 TOOLS**

**TechEd’s Best Kept Secrets: Personalizing Student Learning and Feedback through Technology**

8–10 Session

During this session, we will introduce participants to tools they will be able to integrate into their classroom the next day! These tools include Quizizz Live, GoFormative, and Desmos. The focus of this session is to find new and engaging ways to provide students with individualized learning.

**Katy Mahoney**

Twitter: @katymahoney  
Bettendorf High School, Iowa

**Rachel Medina**

Bettendorf High School, Iowa

**Marty Beck**

Bettendorf High School, Iowa

2502 A, Kansas City Convention Center

**52 IILR**

**Using Math as a Springboard for Discovering Cultural Identity**

6–8 Session

How are the djembe, maple syrup can, or wooden shoes connected to math? I will share how a team of teachers led students on a path to discovering their heritage by examining a culturally significant artifact through a mathematical lens. Student work will be showcased.

**Kristina Barnaby**

Twitter: @kmbarn  
Fairfield Country Day School, Connecticut

2103 A, Kansas City Convention Center

**Download Speaker Handouts!**

View sessions in the mobile app or visit [nctm.org/plankc](http://nctm.org/plankc) to access available presentation handouts.



**52.1 EW T&L**

**How Does the Japanese Method of Teaching Math Through Problem Solving Fit in with CCSS?**

Pre-K–2 Exhibitor Workshop

Japan is consistently one of the top 5 countries in the TIMMS Report, while the U.S. lags behind. Why does teaching less topics lead to a deeper understanding of core math concepts and create more engaged mathematicians? Find out in this workshop, presented by Dr. Akihiko Takahashi, Associate Professor of Elementary Education at DePaul University.

**Japan Math**

Chicago, Illinois

3501 B, Kansas City Convention Center

**52.2 EW T&L**

**Improve Fluency with Math Talks and Number Strings (Grades K–5)**

General Interest Exhibitor Workshop

Timed tests don’t teach fluency, but what does? Learn to use number strings to improve student efficiency, accuracy, and flexibility and math talks to improve student math language and sharing of ideas. Teach additive and multiplicative strategies to help students gain confidence in math. Every student can be a math expert!

**ETA hand2mind**

Vernon Hills, Illinois

3501 E. Kansas City Convention Center

**52.3 EW T&L**

**The 5 W’s of Meaningful Discourse**

3–5 Exhibitor Workshop

NCTM has recognized that having students engage in discourse is a teaching practice that supports deeper understanding of concepts. How do we build meaningful discourse into our daily instruction and formative assessment? Let’s look at some practical suggestions for K–5 teachers, coaches, and leaders.

**McGraw Hill**

Columbus, Ohio

3501 A, Kansas City Convention Center



**53 CURRIC****Basketball Math: Connecting Student Passion and Real-World Data Analysis****3–5 Burst**

Numbers are everywhere in basketball—jerseys, scoreboards, free-throw percentages (. . . salaries!). We took student interest in basketball and developed a several-day unit on data analysis, graphing, and percentages. You'd be amazed at how many questions and correlations kids can come up with when they interpret a box score.

**Blair Amberly**

Free Union Country School, Virginia

**2505 B, Kansas City Convention Center**

**54 TOOLS****Cold, Warmer, HOT: A Dynamic Digital Lesson Strategy for Precalculus and Calculus****10–12 Burst**

Graphs programmed with adaptive “Cold, Warmer, HOT” hints allow students to play hide-and-seek in precalculus and calculus. These dynamic interactive graphs, created with Desmos, purposefully guide students as they explore concepts, make conjectures, and build intuition. Many graphs will be shared. Stop in to check it out—you're getting warmer!

**Dave Cesa**

Twitter: @davecesa

Charlotte Latin School, North Carolina

**3501 G, Kansas City Convention Center**

**55 COLLAB****Developing and Supporting Professional Learning Teams (PLTs)****8–10 Burst**

In PLTs, teachers collaborate around complex issues of teaching and learning and have opportunities to experiment and grow, yet PLTs are challenging to develop and support. Come learn about our research-based model for PLTs, developed with Master Teachers at Math for America, and see how this work can be successfully used in your school and district.

**Courtney Allison**

Math for America, New York, New York

**2503, Kansas City Convention Center**

**56 SPECIAL****Increasing Access to Advanced Mathematics with Accelerated, Non-Remedial “Summer of Algebra Love”****Burst**

Too many students do not have access to high-quality algebra instruction and curricula in eighth grade, especially in urban districts. Learn how teachers and district specialists in Chicago addressed this issue by starting and expanding an algebra course for incoming ninth-grade students who want to access high level (AP) classes before graduation.

**Martha Mulligan**

Twitter: @marthamulligan

Northside College Prep High School, Chicago Public Schools, Illinois

**Christopher Nho**

Chicago Public Schools, Illinois

**3501 D, Kansas City Convention Center**

**57 T&L****Math and Wood Shop: The Makerspaces You Already Have****General Interest Burst**

We talk often about 3D printers, coding, and laser cutters when we discuss makerspaces, but many of these tools are out of reach for many of our students. Most schools, however, have a wood shop! Come and discuss how we can utilize the resources we have to make math real, concrete, fun, and beautiful for all students!

**Justin Aion**

Twitter: @JustinAion

Leechburg Area School District, Pennsylvania

**3501 C, Kansas City Convention Center**

**58 IILR****Teaching Mathematics with Cartoon/Comic Strip****6–8 Burst**

Cartoon problems have no standard solution method and often have high cognitive demand, which can increase student engagement. We will discuss different types of cartoons and try some cartoon problems.

**Hoyun Cho**

Capital University, Columbus, Ohio

**2102 B, Kansas City Convention Center**

11:30 A.M.–12:00 P.M.

**59 DIFFER****The Dual Role of a Classroom Puzzle: Building Material and Community in Diverse Preschool Classrooms****Pre-K–2 Burst**

Puzzles are ubiquitous in the American preschool classroom. Some curricula go so far as to suggest an interest center devoted to puzzles. This presentation demonstrates how one teacher used the concept of the puzzle to create a new classroom material and simultaneously created curriculum from the children's funds of identity.

**Emily McHenry**  
Twitter: OneSmllStep  
Kent State University, Ohio

**2505 A, Kansas City Convention Center****60 COLLAB****We Are Not Alone: Perspectives of Mentoring Experiences****General Interest Burst**

We will showcase how early career teachers use mentoring to empower themselves. Mentoring can greatly improve the resources available, help teachers to learn or adapt new methods, and provide a partner in crime while teaching, but the challenge lies in how to find, create, and maintain these mentoring relationships. Come see how to develop this relationship in a unique way!

**Amanda Meiners**  
University of Iowa, Iowa City  
**Alana Tholen**  
University of Iowa, Iowa City

**2104 A, Kansas City Convention Center****61 ASSESS****What Was I Thinking? Deeper Understanding through Error Analysis****Higher Education Burst**

We will provide different types of writing tasks used in beginning college-level classes and with preservice teachers that encourage our students' thinking about their own prior knowledge and the thinking done by others on mathematical tasks. Some of our students' work will be shared along with insight gained that affected our curriculum.

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

**2104 B, Kansas City Convention Center****62 DIFFER****You Math Like a GIRL!****General Interest Burst**

We know the statistics are bleak when we look at the number of female engineering degree earners who actually go into the field of engineering (or any of the STEM fields), but how can we change it? This brief presentation will go over some easy-to-implement ideas for immediate use in the classroom.

**Stephanie Diehl**  
Twitter: @MathDiehls  
Upper Perkiomen School District, Hereford, Pennsylvania  
**3501 H, Kansas City Convention Center**

**63 T&L****"Which One Does Not Belong?": Uncovering the Full Mathematical Potential****Pre-K–2 Burst**

The "Which One Does Not Belong" puzzles have been used in math teaching and assessment for decades. This presentation will focus on revealing their hidden potential in an elementary math classroom for engaging the full spectrum of learners in problem solving, reasoning, and communicating math.

**Nina Dubinsky**  
Russian School of Mathematics, Newton, Massachusetts  
**Maryna Yeroshkina**  
Russian School of Mathematics, Newton, Massachusetts

**2105, Kansas City Convention Center**

**64** CURRIC

**A Third-Year Math Class for the Unmotivated Learner**

10–12 Session

How do you get the unmotivated learner to like math? You create a class based around what they want (and need) to learn! Our high school created a third-year math class that addresses essential math skills while being taught through topics students want to learn about, such as sports, zombies, and farming. Come see what we've created.

**Blu Beckers**

Warrensburg High School, Missouri

**2102 A, Kansas City Convention Center**

**65** DIFFER

**Diagnostic Interviews: Formative Assessment to Guide Mathematical Interventions for At-Risk Students**

3–5 Session

Students with disabilities often struggle in mathematical achievement. Teachers often are not aware of interventions to address students' deficit areas. This session will discuss implementation of diagnostic interviews and identify mathematical interventions. Participants will apply content to video-based case studies.

**Amy Lingo**

University of Louisville, Kentucky

**Karen Karp**

Johns Hopkins University, Baltimore, Maryland

**2504, Kansas City Convention Center**

# CPM EDUCATIONAL PROGRAM

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## MORE MATH FOR MORE PEOPLE

CPM EDUCATIONAL PROGRAM



**66** **SPECIAL****Ensure ALL Students Think like Mathematicians by Routinely Integrating 5 Crucial Supports****3–5 Session**

Engaging ALL learners in conceptual understanding of operations is complex, yet critical. We need lesson designs that integrate research-based supports for struggling learners, including English learners and students with learning disabilities. Learn five crucial supports and how to make them routine for students and teachers!

**Amy Lucenta**

Twitter: @amylucenta

Fostering Math Practices, Natick, Massachusetts

**Grace Kelemanik**

Fostering Math Practices, Natick, Massachusetts

**3501 F, Kansas City Convention Center**

**67** **TOOLS****Lesson Planning for a 1:1 Classroom: How Do We Integrate Technology in a Meaningful Way?****8–10 Session**

Your students have devices—now what? We will engage in a discussion on lesson planning and work together to reimagine a lesson to incorporate technology that will allow students to develop conceptual understanding of a topic. Devices have added a new complexity to math classrooms, and questions on when and how to use them must be considered.

**Joshua Males**

Twitter: @josh\_males

Lincoln Public Schools, Nebraska

**2502 B, Kansas City Convention Center**

**68** **T&L****Listen for Learning: Ramping Up Student Talk by Focusing on Listening Skills****General Interest Session**

Student dialogue includes both talking and listening. This session will focus on protocols that help students move beyond sharing how they got an answer and move to critiquing the reasoning of others through high levels of listening. Be prepared to interact and learn through doing—what you learn today can be used in your classroom tomorrow.

**Connie Hamilton**

Twitter: conniehamilton

Saranac Community Schools, Michigan

**Sue Chipman**

Saranac Community Schools, Michigan

**2103 B, Kansas City Convention Center**

**69** **TOOLS****LT-Squared: Learning and Teaching with Learning Trajectories Tool—Support for Professional Learning****Pre-K–2 Session**

LT<sup>2</sup>, the Learning and Teaching with Learning Trajectories tool, is a research-based scalable professional development resource for trainers and teachers in diverse settings. Teachers delve deeply into understanding their children's thinking with sequences of videos along the trajectories and use videos and PDFs of effective activities.

**Douglas Clements**

Twitter: DHClements

University of Denver, Colorado

**Julie Sarama**

University of Denver, Colorado

**2215 C, Kansas City Convention Center**

**70 ASSES**

**Responsive Teaching: The Best Lesson Plan Is the Student Sitting in Front of You!**

**3–5 Session**

Are you ready to respond to the individual needs of your students? Are you ready to see your students as more than a test score? In this session, you will discover different assessment tools that can be combined with observations to guide your instruction.

**Carrie Tomc**

Twitter: @rsdk5math  
Rockwood School District, Eureka, Missouri

**Lauren Harr**

Rockwood School District, Eureka, Missouri

**Stephanie Reeder**

Rockwood School District, Eureka, Missouri

**2103 C, Kansas City Convention Center**

**71 T&L**

**Taking Action: Implementing Effective Mathematics Teaching Practices in Grades 9–12**

**General Interest Session**

The session will engage teachers in activities that support the development of the eight Effective Mathematics Teaching Practices in high school. These activities will include engaging in rich mathematical tasks, discussing cases of teaching, and analyzing classroom artifacts including student work. Activities are drawn from NCTM’s Taking Action series.

**Melissa Boston**

Duquesne University, Pittsburgh, Pennsylvania

**Frederick Dillon**

Ideastream, Strongsville, Ohio

**2215 AB, Kansas City Convention Center**

**72 TOOLS**

**Top Ten Math Apps for Kids!**

**6–8 Session**

Learn about FREE apps for middle school math classes that are teacher-tested and student-approved! Utilizing technology in a math class allows teachers to effectively differentiate, quickly assess their students, and engage learners of all backgrounds. You will walk away anxious to try them in your own class! Please bring your own device.

**Cassidy Urie**

Columbia Public Schools, Missouri

**2103 A, Kansas City Convention Center**

**73 COLLAB**

**Turning Walls into Windows: How Teacher Collaboration Can Support New Math Teachers**

**Coaches/Leaders/Teacher Educators Session**

According to the National Education Association, 20 percent of all new teachers leave the profession within the first three years. At this session, we will share ideas about effective induction programs that focus on teacher collaboration. The belief is that the collaboration that will assist new teachers will then carry over into a positive environment in which collaboration is the norm.

**Darla Berks**

Lincoln Public Schools, Nebraska

**Amber Vlasnik**

Lincoln Public Schools, Nebraska

**2502 A, Kansas City Convention Center**

**73.1 EW TOOLS**

**Rate-of-Change: From Algebra to Calculus**

**10–12 Exhibitor Workshop**

Slope is much more than a formula learned in algebra. In this session we will see how experiencing slope as a rate of change in algebra can be foundational for understanding the definition of a derivative in calculus. Slope activities will be explored from algebra to calculus with discussion strategies that develop the concept for all students.

**Texas Instruments**

Dallas, Texas

**3501 A, Kansas City Convention Center**

1:30 P.M.–2:30 P.M.

**73.2** EW T&L**Talking Math! Creating Understanding through Student-Led Conversation****3–5 Exhibitor Workshop**

Ready Classroom Mathematics is a discourse-driven core program that creates equitable math opportunities ensuring success for all students. Come and experience how routine-driven instruction enables intentional, focused conversations in the math classroom.

**Curriculum Associates**  
North Billerica, Massachusetts

**3501 B, Kansas City Convention Center**

1:30 P.M.–2:45 P.M.

**74** SPECIAL**A Student-Centered Approach to Intervention****Pre-K–2 Workshop**

Let's explore the essential elements of math intervention, so that students build a rich understanding of math as well as a growth mindset. Through a constructivist lens we will focus on experiences that honor a child's math development. We will share many of our tools such as Number Talks, problem solving, games, and materials.

**Judith Campbell**  
Twitter: MsMathHW  
Winnetka Public Schools, Illinois  
**Tanya Tabic**  
Winnetka Public Schools, Illinois  
**Chi Quach**  
Winnetka Public Schools, Illinois

**2104 A, Kansas City Convention Center**

Shop and save at the  
**NCTM Bookstore in NCTM Central!**

**75** ASSESS**But What Are They Thinking? Sharpen Your Analysis of Student Thinking with Rich Tasks and Video****8–10 Workshop**

Using rich tasks helps showcase the mathematical practices alongside important mathematical content, but the variety of student responses can be challenging and can raise a number of questions: “What are students thinking? What questions should I ask? Should we talk about this as a class?” We’ll use video to infer student thinking and create strategies for pushing the class forward.

**Carl Oliver**  
Twitter: carloliwiter  
City-As-School, New York, New York

**3501 H, Kansas City Convention Center****76** CURRIC**Connecting Middle School Statistics Standards to the Rest of Your Curriculum****6–8 Workshop**

What if we didn't have to save our middle school statistics unit until the end of the year “if there's time”? What if it was possible to embed statistical fluency throughout the curriculum in support of the other standards? Come participate in some engaging activities that use stats to support learning throughout the middle school curriculum.

**Joel Bezaire**  
Twitter: @joelbezaire  
University School of Nashville, Tennessee

**3501 C, Kansas City Convention Center****77** DIFFER**Discrete Math—An Option for All Seniors****10–12 Workshop**

Are you looking for an elective math class for seniors? Discrete math is perfect! Although we originally developed this course as an alternative for seniors who may not have felt successful in previous math classes, in the end we found that it was beneficial to these students as well as to those more interested in and successful in STEAM fields.

**Nicole Flores**  
Twitter: @msnflores  
Chicago Public Schools, Illinois  
**Beth Runkel**  
Chicago Public Schools, Illinois

**2505 B, Kansas City Convention Center**

**78** **IILR**

**Eco-Math: Calculations for People and the Planet**

**6–8 Workshop**

Engage in memorable, hands-on activities that integrate math with age-appropriate geography and ecology to learn more about our human footprint on the Earth and its resources. Build students’ skills in working with fractions, ratios, large numbers, growth patterns, measurement, and graphing representing using real-world data.

**Clare Bell**  
University of Missouri–Kansas City  
**2104 B, Kansas City Convention Center**

**79** **ASSESS**

**Formative Assessment: Using Hinge Questions, Providing Feedback, Informing Instruction**

**Coaches/Leaders/Teacher Educators Workshop**

Teacher and mathematics coach/leader participants will be engaged in activities that consider the hinge question as a formative assessment technique and that demonstrate the importance of feedback to students as hinge point and hinge questions are used. Connections will be made relative to the analysis of hinge question responses and planning and teaching.

**Francis (Skip) Fennell**  
Twitter: @SkipFennell  
Past President, National Council of Teachers of Mathematics, Reston, Virginia; McDaniel College, Westminster, Maryland  
**Beth Kobett**  
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Stevenson University, Maryland  
**Jon Wray**  
Howard County Public School System, Ellicott City, Maryland  
**3501 G, Kansas City Convention Center**

**80** **CURRIC**

**Place Value Progression in K–5: The ABCs of NBT**

**3–5 Workshop**

Experience hands-on activities that will help you understand the K–5 progression of place value in the NBT (Number and Operations in Base Ten) standards from counting objects to working with decimals. Make connections to the Standards for Mathematical Practice and leave with ideas and free online tools to use tomorrow!

**Lori Bluemel**  
Math Learning Center, Chandler, Arizona  
**Jennifer Ranum**  
The Math Learning Center, Windsor, Colorado  
**2505 A, Kansas City Convention Center**

**81** **CURRIC**

**Strategies, Models, and Games That Promote Fact Fluency in Multiplication and Division**

**3–5 Workshop**

Students will gain greater understanding of basic multiplication facts when they conceptualize them using real-world examples and visual models (arrays) and connecting them through practice and games. Participants will use these strategies and powerful visual models coupled with effective games to promote fluency of multiplication and division facts.

**Craig Willmore**  
ORIGO Education, Orem, Utah  
**Melinda Schwartz**  
ORIGO Education, St. Charles, Missouri  
**2105, Kansas City Convention Center**

**82** **T&L**

**Word Problems? No Problem!**

**Pre-K–2 Workshop**

The importance of using underlying structures, rather than key words or story-related actions to solve word problems, has found expression in CCSSM. Using visual models and graphic organizers, we will experience ways to create success for our students in working with change problems, group problems, and compare problems in K–grade 2.

**Paula Muehler**  
Math Learning Center, Salem, Oregon  
**2102 B, Kansas City Convention Center**

1:30 P.M.—2:45 P.M.

**83** **SPECIAL****X To Why: Supporting Students Who Struggle in Algebra****6–8 Workshop**

This hands-on session will integrate ways to enhance instruction to create more opportunities for students who struggle to understand the mathematics at both conceptual and skill levels. We will explore how to change a mathematical task to allow access for these students, without changing the rigor or grade level of the task.

**Barbara Dougherty**

Twitter: @DoughertyBarb  
University of Hawaii, Honolulu

**2503, Kansas City Convention Center****84** **CURRIC****Yikes, They Still Can't Add, Subtract, Multiply, or Divide Integers!****8–10 Workshop**

Experience integer tiles in order to see how they can be used to develop conceptual understanding for the computation of integers. Participants will have a chance to explore integer tiles and learn how they can be used to add, subtract, multiply, and divide integers.

**Cheryl Krafka**

CPM Educational Program, Union, Nebraska

**3501 D, Kansas City Convention Center**

3:00 P.M.—4:00 P.M.

**85** **COLLAB****A Mathematical Coaching Adventure: Collaborating, Reflecting, Growing, and Learning****3–5 Session**

Reflection is a key factor of both growth and improvement of instruction. *Principles to Actions* remind us that teachers need to devote more time to intentional and structured reflection. In this session, perspectives of a coach and teacher will be discussed. Participants will be provided strategies that will support a coaching-teacher partnership.

**Stephanie Fowler**

Lincoln Public Schools, Nebraska

**Brandi Weymuth**

Lincoln Public Schools, Nebraska

**2102 A, Kansas City Convention Center****86** **T&L****Applying and Extending Students' Prior Understanding: New Approach to Fraction Division****6–8 Session**

Fraction division problems can be solved perfectly without conceptual understanding. But is it OK? This session investigates what understanding the students can bring to a classroom and how much they have potential to solve fraction division story problems. We will show a conceptual approach to solve fraction division based on prior understanding.

**Sheunghyun Yeo**

University of Missouri, Columbia

**Christina Sheffel**

University of Missouri, Columbia

**2502 B, Kansas City Convention Center****87** **COLLAB****Everything You've Ever Wanted to Know about MET Grants and Scholarships but Were Afraid to Ask****General Interest Session**

This session will inform participants about what grants and scholarships are available from the Mathematics Education Trust (MET) and how to apply. It will also provide some tips for choosing the most appropriate award for you and for enhancing your chances of getting it. MET supports teachers with funds for materials, lesson development, conferences, coursework, professional development, technology in-service, and action research.

**Ralph Connelly**

Trustee, MET Board of Trustees

**3501 F, Kansas City Convention Center**





# NCTM ANNUAL MEETING & EXPOSITION 2019

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- **Creating Inclusive Classrooms:** Meeting the Needs of Each and Every Student
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**88** **COLLAB****Growing Professionally through Collaboration in a Virtual Network of Innovation****8–10 Session**

Learn how 34 prealgebra and algebra teachers from 18 rural Virginia school districts collaborate professionally in a virtual network. A lead teacher and two network facilitators will share first-year experiences in creating, videotaping, and sharing lesson plans with strategies for increasing student self-efficacy and growth mindset toward math.

**Sandy Wilborn**

Virginia Advanced Study Strategies (VASS), South Boston

**Jennifer Stevens**

Virginia Advanced Study Strategies (VASS), South Boston

**Janet Mullins**

Grayson County Public Schools, Independence, Virginia

**2103 B, Kansas City Convention Center****89** **T&L****Math Tasks and Manipulatives: A Winning Combination****General Interest Session**

Rich mathematical tasks that engage students in solving and discussing are a vital part of a mathematics classroom. Manipulatives can be utilized as a tool to help students with such tasks by providing entry points for each and every student. Come explore some rich tasks utilizing a variety of manipulatives.

**Kevin Dykema**

Twitter: @kdykema

Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Mattawan Consolidated Schools, Michigan

**2215 C, Kansas City Convention Center****90** **DIFFER****Mathematics for Human Flourishing****General Interest Session**

As teachers, we can teach mathematics more effectively by connecting math to basic human desires, and showing how the practice of mathematics builds virtues that will serve our students well no matter what profession they enter. These deeply human themes—including play, beauty, truth, and justice—will inspire students to study mathematics.

**Francis Su**

Twitter: @mathyawp

Harvey Mudd College, Claremont, California

**2504, Kansas City Convention Center****91** **SPECIAL****Morning Meeting: Connecting Your Classroom Family through Math****Pre-K–2 Session**

Revitalize the purpose of your morning meeting. Foster your classroom family environment by incorporating “playful” math activities to maintain and scaffold skills while building a common background. Come learn quick, easy math activities to increase the impact of your morning meeting.

**Elizabeth Ging**

Edmond Public Schools, Oklahoma

**2103 A, Kansas City Convention Center****92** **T&L****Social Emotional Learning in the Math Classroom: San Francisco’s Commitment to Authentic Learning****Coaches/Leaders/Teacher Educators Session**

Many of our own childhood math experiences felt like high risk environments that valued speed over thinking. How do we promote something deeper? In San Francisco, our math curriculum emphasizes persistence by developing mindsets that encourage students to make and learn from mistakes. Come hear what we have learned and the questions we still have.

**Lizzy Hull Barnes**

Twitter: @sfusdmath

San Francisco Unified School District, California

**2502 A, Kansas City Convention Center**

3:00 P.M.–4:00 P.M.

**93** **T&L**

## Solving Word Problems Using Schemas and Equations

3–5 Session

Want to help students understand math word problems? In this session, we'll focus on effective word-problem practices, including teaching about word-problem structures and using equations to represent word-problem structures. We'll also discuss ineffective practices: using key words and defining word problems by operation.

**Sarah Powell**

Twitter: sarahpowellphd  
University of Texas at Austin

2103 C, Kansas City Convention Center

**94** **T&L**

## You've Lost Those Boring Problems

10–12 Session

Learn three effective techniques to adapt tasks in order to increase access for all students and to enable students to acquire and demonstrate conceptual understanding. Practice using reversibility, flexibility, and generalization on our tasks, and then use them in rewriting a task of your own.

**Frederick Dillon**

Twitter: fdizzle1955  
Consultant, Strongsville, Ohio

**Kyle Eller**

Wheaton Warrenville South High School, Illinois

2215 AB, Kansas City Convention Center

**94.1** **EW** **T&L**

## Building Rigor in K–5 Mathematics Instruction

3–5 Exhibitor Workshop

Rigor calls for developing conceptual understanding, building procedural skills, and using applications. An important aspect of building rigor is how we connect these levels of understanding. Let's look at some key topics from K–5 and examine how a lesson might make these important connections.

**McGraw Hill**

Columbus, Ohio

3501 A, Kansas City Convention Center

**94.2** **EW** **CURRIC**

## Selecting & Sequencing Student Work to Develop and Empower All Learners in the Mathematics Classroom

CLTE Exhibitor Workshop

This session develops teacher habits for orchestrating a discourse-driven classroom by exploring effective ways of “selecting and sequencing” student solutions. Participants will have an opportunity to analyze student work, practice selecting and sequencing students' solutions—including English Learners and discuss their decisions with their peers.

Curriculum Associates

North Billerica, Massachusetts

3501 B, Kansas City Convention Center

3:15 P.M.–4:30 P.M.

**95** **COLLAB**

## #Mathematics Moments That Matter

Pre-K–2 Workshop

Often primary classrooms depict a “show and tell” time, falling short of accomplishing intended learning goals. This workshop will promote the purposeful decisions made before, during, and after a lesson. We will discuss how to collaborate with colleagues to guide students toward richer discourse and deeper mathematical understanding.

**Susan Katt**

Lincoln Public Schools, Nebraska

2503, Kansas City Convention Center

Friday

96 **T&L**

## Accelerating Student Success in Your Math Classroom: Making Meaningful and Joyful Learning Happen!

8–10 Workshop

How do we help students understand critical mathematics content more quickly and in a way that it is retained? Activities and strategies will be shared that address the four key principles of accelerated learning in mathematics (powerful mental images, connected understandings, strong language and meanings, and accurate reflection).

Patrick Sullivan

Twitter: @sullymathrocks

Missouri State University, Springfield

Molly Strickland

The Summit Preparatory School, Springfield, Missouri

Kurt Killion

Missouri State University, Springfield

2102 B, Kansas City Convention Center

97 **CURRIC**

## Developing Computational Fluency in the Primary Grades

Pre-K–2 Workshop

What does computational fluency look like in the primary grades? How do students develop accuracy, flexibility, and efficiency with addition and subtraction? We will use student work samples and video to look at fluency across K–2, and to consider how teacher practice can support the development of such fluency.

Karen Economopoulos

TERC, Cambridge, Massachusetts

3501 D, Kansas City Convention Center

98 **SPECIAL**

## Empowering Critical Thinking for All: Exploring Routines That Engage Every Student

6–8 Workshop

Involving students in routines that promote risk taking, growth mindset, and critical thinking is paramount. In my class, students are eagerly engaged in sharing strategies, ideas, and understanding when investigating our standards-based daily routines. Come experience these powerful bellringer routines that have transformed my direct instruction class.

Melynee Naegele

Twitter: @MNmMath

Will Rogers Junior High, Claremore, Oklahoma

Jessyca Naegele

Oklahoma State University, Stillwater

Adrienne Sanogo

Oklahoma State University, Stillwater

3501 C, Kansas City Convention Center

99 **CURRIC**

## Extending Curiosity and Wonder with “What if” Questions

6–8 Workshop

Fostering student curiosity and wonder leads to student engagement with math content. Extending this builds an appreciation for and a value of the subject. Participants will investigate math problems that foster curiosity and use question stems such as “What if . . .” to build student agency, extend curiosity, and foster creativity in math class.

Michael Wiernicki

Twitter: @mikewiernicki

Henry County Schools, McDonough, Georgia

2505 B, Kansas City Convention Center

Get social! Stay informed and get connected with attendees by following #NCTMregionals on social media.



**100** **IILR**

### Financial Literacy at the Elementary Level: What Does THAT Look Like?

#### 3–5 Workshop

The term “financial literacy” is being used more often in an integrated mathematics curriculum. But what does that look like at the elementary level? This workshop provides participants with hands-on activities and ideas to easily integrate financial literacy into an already established mathematics classroom.

**Lindsay Gold**

Twitter: @lindsayangold  
University of Dayton, Ohio

**Michael Houston**

Riverside Beaver County School District, Ellwood City, Pennsylvania

**John Ashurst**

T3 National Instructor, Harlan, Kentucky

**3501 G, Kansas City Convention Center**

**101** **T&L**

### Fix Your Word-Problem Problem: A Mathematical Modeling Framework

#### 10–12 Workshop

Feeling frustrated by the overabundance of contrived word problems? This workshop will engage attendees in a modeling activity about exponential functions. Attendees will then compare modeling tasks with conventional word problems and also explore how modeling can support mathematical instruction.

**Wenmin Zhao**

University of Missouri, Columbia

**Samuel Otten**

University of Missouri, Columbia

**2105, Kansas City Convention Center**

**102** **T&L**

### Lesson Launch and Lesson Closure: More Than Just a Beginning and an End . . .

#### 3–5 Workshop

Your lesson launch and closure are two of the most critical components of your instructional math time! Come explore powerful lesson launches and closures that will fully engage your learners to collaborate with others, think deeply about the mathematics they are learning, and make meaningful mathematics connections.

**Beth Kobett**

Twitter: @bkobett

Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Stevenson University, Maryland

**3501 H, Kansas City Convention Center**

**103** **T&L**

### Math Games as the Way to Learn

#### 6–8 Workshop

A game in a math classroom allows students of different backgrounds and levels to feel excitement while learning math. There are math classroom games suitable for different topics and goals of the lesson, and for various teaching styles and class levels. During this workshop, participants will learn to choose and adjust games for their purposes and tastes.

**Maryna Yeroshkina**

Russian School of Mathematics, Newton, Massachusetts

**Nina Dubinsky**

Russian School of Mathematics, Newton, Massachusetts

**Juliät Turchaninova**

Russian School of Mathematics, Newton, Massachusetts

**2505 A, Kansas City Convention Center**

3:15 P.M.–4:30 P.M.

**104** CURRIC**Sequences through Investigation: Understanding and Discovering Patterns from Photos of a Pyramid****8–10 Workshop**

Based on photos, we will investigate patterns to find three sequences to determine the number of blocks in the photo of a pyramid located on the National Mall. This low-floor, high-ceiling problem gives students an opportunity for meaningful mathematical discourse on a non-routine problem. This problem is suitable for middle school to precalculus.

**Mike Koehler**

Blue Valley North High School (Retired), Kansas City, Missouri

**2104 A, Kansas City Convention Center****105** IILR**Using Visual Thinking Strategies to Foster Communication of Mathematical Reasoning****Coaches/Leaders/Teacher Educators Workshop**

Engage with works of visual art to explore how analyses of visual representations can support problem solving and communication skills in mathematics. Visual representations will include mathematical quilts and works of art from the collection of the Nelson-Atkins Museum of Art.

**Clare Bell**

University of Missouri–Kansas City

**Christie Makar**

Nelson-Atkins Museum of Art, Kansas City, Missouri

**2104 B, Kansas City Convention Center**

4:30 P.M.–5:30 P.M.

**106** SPECIAL**Analyzing & Modifying Tasks to Support All Learners****8–10 Session**

Engaging students in rich, meaningful tasks will support their conceptual understanding of concepts in algebra. However, it is important that each task is accessible and equitable to ensure success for all students. This session will provide participants with ideas for differentiating tasks with focus on NCTM's Effective Mathematics Teaching Practices.

**Tashana Howse**

Twitter: @thowse\_math

Georgia Gwinnett College, Lawrenceville

**Kristopher Childs**

Houghton Mifflin Harcourt, Austin, Texas

**Vernita Glenn-White**

Stetson University, DeLand, Florida

**2215 C, Kansas City Convention Center****107** IILR**Applying the Basics/Principles of Geomery through Zaghrif (Islamic Art)****General Interest Session**

Zaghrif is the Arabic name for Islamic geometry. This form of art is created using two simple tools: a compass and a ruler. This presentation will cover the basics of designing Zaghrif and the purpose of getting students to create this form of art as part of project-based learning in the math/geometry class.

**Fazila Patel**

University of Missouri–Kansas City

**2102 A, Kansas City Convention Center**

**108** **COLLAB****Casting a Wider Net: The Hows and Whys of Being a Connected Educator****General Interest Session**

I will share my experience about becoming a connected educator as well as how both my learners and I have benefited from it. In addition, we will do some mathematics I use with my classes that I became aware of by making connections with other educators. You will leave with some next steps in becoming a connected educator and with some resources you can use.

**Lisa Henry**

Twitter: lmhenry9  
Brookfield Local Schools, Ohio

**2215 AB, Kansas City Convention Center**

**109** **ASSESS****Implementing Error Analysis and an Action Plan to Teach Students Self-Regulation****10–12 Session**

Understand how students can take ownership of their learning and actions, set goals, strategically plan, and evaluate goals and learning strategies to master mathematics. Connect these best-learning practices to self-regulation, a self-directive process by which students transform their mental abilities into academic and problem-solving skills.

**Kathy Clemmer**

Loyola Marymount University, Los Angeles, California

**Katie Laskasky**

Loyola Marymount University, Los Angeles, California

**Cyndia Acker-Ramirez**

Culver City Unified School District, California

**2103 A, Kansas City Convention Center**

**110** **CURRIC****Making the Most of Meaningful Models****3–5 Session**

Versatile models and tools support the coherent progression of content as they are used across many elementary grades. This session will examine the models of whole number, fractions, and decimals that are used to develop deep conceptual understanding.

**James Burnett**

Twitter: @jamesburnett69  
ORIGO Education, Brendale, Queensland, Australia

**2504, Kansas City Convention Center**

**111** **COLLAB****PhysiCalc: An Integrated, Team-Taught Approach to Calculus and Physics****10–12 Session**

We will present our experience in co-teaching AP Physics and Calculus, providing a framework for integrating science and math in a team-taught environment. We will share the results, benefits, and challenges of the course. Finally, we will provide practical advice for implementing a team-taught course.

**Tom Morey**

Bishop Hendricken High School, Warwick, Rhode Island

**Margarita Kelly**

Dexter Southfield School, Brookline, Massachusetts

**2502 A, Kansas City Convention Center**

**112** **CURRIC****Teaching Fraction Multiplication with Visual Models: How to Do It Badly, and How to Do It Well!****6–8 Session**

Do your students gripe about visual models? Do you? It may be because we don't always choose the right tool for the job. The wrong model feels like a chore, but the right model clarifies the math and helps us understand. Learn what to look for in the context of the problem to select models that make fraction operations make sense.

**Megan Snow**

Twitter: @MeganMSnow  
Tri-County Regional School Board, Hebron, Nova Scotia

**2103 B, Kansas City Convention Center**

**113** **SPECIAL****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**

Teach 4 Mastery, Fallbrook, California

**Joseph Sencibaugh**

Webster University, Saint Louis, Missouri

**Jennifer Bond**

Ferguson Florissant School District, Saint Louis, Missouri

**2103 C, Kansas City Convention Center**

4:30 P.M.–5:30 P.M.

**114** **T&L****Using Problems of the Week to Challenge and Enrich ALL Students****General Interest Session**

How can teachers develop students' interest in problem solving to the point where they are begging for more? This session will explore how rich tasks can be used as opportunities for students to engage in math in a variety of motivating ways. We will share how using Problems of the Week, along with student choice, is empowering for ALL learners.

**Eileen Goodspeed**

Twitter: @eileenhogan62  
Winnetka Public Schools, Illinois

**Shannon Anderson**

Winnetka Public Schools, Illinois

**Marla Goldberg**

Winnetka Public Schools, Illinois

**2502 B, Kansas City Convention Center**

5:00 P.M.–5:30 P.M.

**115** **IILR****Empowering the Little People: Teaching the Engineer Design Process in K-2****Pre-K–2 Burst**

In this session, I will share the process I used to teach the Engineer Design Process to my first- and second-grade Innovation classes.

**Kory Graham**

Twitter: @korytellers  
Byron Public Schools, Minnesota

**3501 H, Kansas City Convention Center****116** **T&L****Engaging Students in Class by Flipping Things Around****Higher Education Burst**

Flipping classes has become more common in secondary education. But what about at universities? Together we will explore the benefits and drawbacks encountered as a college class is flipped. Data will be presented to compare results of a traditional class to the flipped class, and conclusions will be drawn.

**Krista Hands**

Oklahoma Baptist University, Shawnee

**3501 D, Kansas City Convention Center****117** **CURRIC****Let's Have Fun Using Hands-On Activities to Generate Linear Functions****8–10 Burst**

Participants will do a “water dripping” experiment using a graduated cylinder and foam cup with a hole in the bottom. Time is the independent variable and volume is the dependent. The second activity to be demonstrated 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

**2503, Kansas City Convention Center****118** **COLLAB****Math Camp for Teachers: How to Put on Beneficial Professional Development for K-12 Teachers****Burst**

Learn how teachers from an urban, Title 1 school district planned and implemented a Math Camp within their district. Come away with ideas for two to three days of professional development full of learning, with activities and planning that focus on developing math mindsets, conceptual understanding, number sense, and guided math.

**Mandy Harvell**

Twitter: @MandyH\_79  
Ritenour Middle School, St. Louis, Missouri

**Melissa Crowley**

Ritenour School District, St. Louis, Missouri

**3501 C, Kansas City Convention Center**



**119** **COLLAB**

### **Our Students Have Spoken! What Works in Math Classrooms: Challenges and Opportunities for Change**

**10–12 Burst**

Curious about the resources and instructional strategies U.S. and international students are using in high school mathematics classrooms? Let's be inspired by feedback from 800 college freshmen about their experiences with textbooks, print and online resources, flipped classrooms, and what they think helps them learn mathematics.

**Katrina Rothrock**  
University of Kansas, Lawrence  
**Susan Gay**  
University of Kansas, Lawrence  
**Ingrid Peterson**  
University of Kansas, Lawrence

**2505 B, Kansas City Convention Center**

**120** **T&L**

### **Rich Tasks That Promote Critical Thinking, Coherent Discourse, and Classroom Community**

**6–8 Burst**

Participants will receive a packet of challenging problems that have proven effective at winning student interest, developing critical thinking, and encouraging student discourse. Participants will learn from the experiences of one school how to introduce and use these problems with students. One student group will share their work and experience.

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

**2105, Kansas City Convention Center**

**121** **CURRIC**

### **Stuck in a Curriculum Cycle: Negotiating a Tension between Standardization and Responsiveness**

**Burst**

We will describe a recurring cycle of curricular program adoption, implementation, adaptation, and abandonment; invite participants to consider whether and where their own districts are currently on such a cycle; and explore productive ways to confront an inherent tension between curriculum coherence and responsiveness to student need and interest.

**Charles Munter**  
University of Missouri, Columbia  
**Cara Haines**  
University of Missouri, Columbia  
**Rebecca Bruton**  
University of Missouri, Columbia

**2104 B, Kansas City Convention Center**

**122** **ASSESS**

### **The Unintended Consequences of Completion Grading and How to Avoid Them**

**General Interest Burst**

Most of us have used completion grading because grading hundreds of papers every day for accuracy would be logistically impossible. This session discusses the inherent pitfalls and offers a statistics-based alternative that concurrently supports the Standards for Mathematical Practice.

**Lane Walker**  
Twitter: @LaneWalker2  
Francis Howell School District, Saint Charles, Missouri

**2505 A, Kansas City Convention Center**

**123** **CURRIC**

### **Use Math to Survive: Panther Hunt!**

**3–5 Burst**

Come learn how to engage your students with a fun simulation activity! When you implement this activity in your classroom, students will gain an understanding of carrying capacity when they act as predatory animals in a finite area and attempt to accumulate enough food to stay alive.

**Liza Cope Bondurant**  
Twitter: @lizacope1234  
Delta State University, Cleveland, Mississippi

**2104 A, Kansas City Convention Center**

5:00 P.M.—5:30 P.M.

124 **T&L**

### What's in Your Review Toolkit?

6–8 Burst

It's easy to be overwhelmed when it comes time to take an assessment. These fun and easy activities are applicable at any grade level. Participants will engage in classroom-ready strategies that are interactive for students and teachers.

**Camille Mattson**

Jackson Middle School, Anoka Hennepin School District #11,  
Champlin, Minnesota

3501 G, Kansas City Convention Center

125 **ASSESS**

### When You Stand Alone: SBG in a Traditional Grade Setting

General Interest Burst

“This is how it's always been done.” “This is what colleges are looking for.” “But what's my GRADE?” Convincing parents, students, and administrators of the benefits of a standards-based approach can be a Sisyphean task, especially when you're the only teacher in your district. Come discuss failures, successes, and what I've learned so far.

**Justin Aion**

Twitter: @JustinAion

Leechburg Area School District, Pennsylvania

2102 B, Kansas City Convention Center

Friday

# IMAGINE!

**Imagine** a journal where you can click a link to take a virtual step into a classroom and watch as a student solves a math problem or listen in as a teacher adjusts and scaffolds an instructional plan on the basis of student dialogue.

**Imagine** a journal article that includes a link to a podcast interview with authors in which they share how they use formative assessment techniques to guide where the next lesson should begin.

**Imagine** related interactive white board files, mobile apps, and other digital resources in an article, making it easy for you to implement the mathematical learning opportunity you just read about in your own classroom.

NCTM is imagining all of this and more in its newest journal, *Mathematics Teacher: Learning and Teaching Pre-K–12 (MTLT)*, scheduled to debut in January 2020. The *MTLT* Editorial Board is ready to receive your manuscript submissions that are enhanced through the use of digital content. We will consider traditional articles but will give priority to articles with multimedia components that support the exemplary mathematics teaching and learning for each and every learner from preschool through grade 12.

#### WRITE FOR MTLT

Access <https://mco4.manuscriptcentral.com/mtltpk12> to submit manuscripts. Limit your paper to 2500 words, excluding references and figures. You may include such digital components as a video clip, audio file, Livescribe™ file, SMART Board™ file, or other form of multimedia to enhance the article.

**Imagine** a journal that goes beyond the printed word.



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

**TOOLS** Tools and  
Technology

**DIFFER** Celebrating  
Differences

**EW** Exhibitor  
Workshop

**ASSESS** Assessment

**CURRIC** Curriculum:  
Making Connections



## HIGHLIGHTS

Regional Conference Overview & Orientation, 126

Tier 1 and Tier 2 Mathematics Instruction: Supporting Students Who Struggle, 135

Developing Number Sense and Reasoning One Day at a Time in Grades 3-8, 139

New and Preservice Teachers Workshop, 161

Goals, Tasks, and Conceptual Understanding: Taking Action to Enhance Learning Opportunities, 172

The Homework Inequality: 1 Great Problem > 39 Repetitive Exercises, 195

Lost in Space: Bone Density, 221

## GET SOCIAL

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



**Conference App**  
[nctm.org/confapp](http://nctm.org/confapp)



**Twitter**  
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[@NCTM.math](https://www.instagram.com/NCTM.math)



**Facebook**  
[facebook.com/TeachersofMathematics](https://facebook.com/TeachersofMathematics)

## REGISTRATION HOURS

7:00 a.m.–12:00 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.

**126** **COLLAB**

## Regional Conference Overview & Orientation

General Interest Session

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

**Linda Davenport**

Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Boston Public Schools, Massachusetts

**Dave Ebert**

Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Oregon High School, Wisconsin

2503, Kansas City Convention Center

8:00 A.M.–9:00 A.M.

**127** **T&L**

## "Got Milk?" Learn the Math behind Perfect Tasting Milk

10–12 Session

Anyone can be a dairy farmer, right?? Learn how dairy farmers use math everyday, from simple calculations to complex math equations, all to bring the consumer the perfect glass of milk at a low cost. Teachers will also learn about mixtures to create the perfect glass of chocolate milk. This session will be fun and interactive.

**Tracey Zak-Johnson**

Twitter: @traceylovesmath

Consultant, Aledo, Texas

**Denise Young**

Blue Valley School District, Stilwell, Kansas

2215 C, Kansas City Convention Center

**128** **CURRIC**

## A Non-Standard Introduction to Quadratic Functions: Sorting and Symmetry

8–10 Session

The introduction to quadratic functions does not have to begin with the standard form. This session explores ways to introduce quadratic functions by having students sort a variety of examples and non-examples. The symmetry of quadratics can also help students make meaningful connections between their prior knowledge and larger algebraic ideas.

**Wenmin Zhao**

University of Missouri, Columbia

**Samuel Otten**

University of Missouri, Columbia

**Zandra de Araujo**

University of Missouri, Columbia

2502 B, Kansas City Convention Center

**129** **T&L**

## Building Thinking Classrooms

6–8 Session

In this session, I look at a series of practices, emerging from research, that can help to build an environment conducive to problem-based learning. I will unpack the research that has demonstrated that with these practices a problem-based culture and learning environment can quickly be established, even in classrooms where students resist change.

**Peter Liljedahl**

Twitter: @pjliljedahl

Simon Fraser University, Burnaby, British Columbia, Canada

2504, Kansas City Convention Center

**130** **T&L**

## Eliciting Students' Thinking and Reasoning: Strategies and Types of Evidence

6–8 Session

How do you elicit student thinking and use the evidence to promote learning? This session will highlight the value of this mathematical teaching practice and share strategies used in upper elementary-middle level classrooms. Several strategies will be modeled, and a handout of the strategies will be provided.

**Jane Wilburne**

Twitter: @JaneMWilburne

Penn State Harrisburg

2103 C, Kansas City Convention Center

**131** IILR**Empowering Students as Problem Solvers: 6th-4th Grade Mentoring Project Collaboration****General Interest Session**

What happens when a small group of sixth-grade students with an interest in solving non-routine problems and desire to be part of a mathematical community become problem-solving mentors to a class of fourth graders? This session will share the experience and empowerment that evolved through this unique collaboration.

**Eileen Goodspeed**

Twitter: @eileenhogan62  
Winnetka Public Schools, Illinois

**Juli Ross**

Winnetka Public Schools, Illinois

**2102 A, Kansas City Convention Center****132** SPECIAL**Framing the Conversation: Talk Moves That Support Mathematical Discourse****10–12 Session**

Sentence frames are a powerful way to support students in communicating their mathematical ideas. Learn to use them for many purposes including to build perseverance, reinforce vocabulary, improve partner talk, extend class discussions, and make connections. This is a teaching strategy that will take your task-based instruction to the next level.

**Barbara Kuehl**

Mathematics Vision Project, Salt Lake City, Utah

**2103 A, Kansas City Convention Center****133** CURRIC**More Than the Standard Algorithm: How to Assess Strategies Based on Place Value****Pre-K–2 Session**

Common Core has many standards that ask students to solve using strategies based on place value; however, many students have already seen the standard algorithm. This session will provide teachers with ideas on how to formatively and summatively assess students and provide supplemental instruction to increase knowledge and number sense.

**Jeremiah McGraw**

Grant Wood Area Education Agency, Cedar Rapids, Iowa

**Dana Merfeld**

Grant Wood Area Education Agency, Cedar Rapids, Iowa

**Amy Schemmel Keller**

Grant Wood Area Education Agency, Cedar Rapids, Iowa

**2502 A, Kansas City Convention Center****134** IILR**The Great Mathematical Bake-Off!****3–5 Session**

Cupcakes, brownies, cookies—which treat is the most profitable? Just one question elementary students asked as they planned a bake sale for hurricane relief. Come learn about the intentional planning that led to mathematical freedom, authentic connections, a business partnership, and an unforgettable experience.

**Jeanine Haistings**

William Jewell College, Kansas City, Missouri

**Kelly Bonebrake**

North Kansas City Schools, Missouri

**2103 B, Kansas City Convention Center****135** SPECIAL**Tier 1 and Tier 2 Mathematics Instruction: Supporting Students Who Struggle****3–5 Session**

When focusing on Multi-tiered Systems of Support (MTSS), a goal is to present highly engaging and effective Tier 1 instruction and Tier 2 interventions—particularly for students with disabilities. This session considers interventions and assessments using multiple strategies for learning number, operations, and algebraic thinking.

**Karen Karp**

Johns Hopkins University, Baltimore, Maryland

**2215 AB, Kansas City Convention Center**

8:00 A.M.–9:00 A.M.

**136 TOOLS**

**Un-Sandboxing Our Technology: Unifying the Mathematics Education Experience**

**Coaches/Leaders/Teacher Educators Session**

As math education technology has improved, we find ourselves using several different software packages that don't play very nicely together. Is there a way to reduce the number of learning curves we have to ride each year, and possibly unify some of our efforts to our students' benefit? Come discuss and consider!

**Mike Reiners**

Twitter: @TheTaskMathster  
Christ's Household of Faith School, Saint Paul, Minnesota

**3501 F, Kansas City Convention Center**

**138 CURRIC**

**Developing Fact Fluency Using Models, Language Supports, and Relational Thinking**

**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 multi-digit operations and algebraic thinking will also be addressed.

**Sam Strother**

Developing Mathematical Thinking Institute, Boise State University, Idaho

**Jonathan Brendefur**

Developing Mathematical Thinking Institute, Boise State University, Idaho

**Jana Estes**

Boise State University, Idaho

**2505 A, Kansas City Convention Center**

8:00 A.M.–9:15 A.M.

**137 TOOLS**

**Calculus Activities and Ideas That Provide Lasting Understandings**

**10–12 Workshop**

Engage in opportunities to derive derivative rules using graphing calculators, model derivatives and slope fields with Wikki Stix, produce dynamic graphs with an online grapher using sliders to analyze "movement," and acquire handouts with activities to take home! Projects to incorporate topics into real problems will be shared.

**Deedee Henderson**

Twitter: deedeehenderso7  
Oxford High School, Alabama

**2104 B, Kansas City Convention Center**

**139 CURRIC**

**Developing Number Sense and Reasoning One Day at a Time in Grades 3-8**

**6–8 Workshop**

Developing reasoning and number sense is essential to our students' long-term success. But we can develop these daily. This session spotlights brief, rich, and engaging activities that develop mental mathematics and reasoning. This session will provide a collection of practical, ready-to-implement routines that can be modified for grades 3-8.

**John SanGiovanni**

Twitter: @JohnSanGiovanni  
Howard County Public School System, Ellicott City, Maryland

**2503, Kansas City Convention Center**

Need funding for professional development? Check out grant opportunities from the **Mathematics Education Trust**. The next deadline to apply is Nov 2. Visit the MET area in NCTM Central to learn more.



**140 ASSESS****Developing Standards and Targets to Support Flexible Standards-Based Grading Implementation****Coaches/Leaders/Teacher Educators Workshop**

What does a “B” or 87.6% convey? How can feedback be provided more effectively to support students’ continued persistence in learning and adoption of a growth mindset in learning mathematics? This “how-to” workshop shares our journey in developing SBG practices communicate students’ true proficiencies in learning with proper feedback and grade.

**Darshan Jain**

Twitter: @djain2718

Adlai E. Stevenson High School, Lincolnshire, Illinois

**3501 G, Kansas City Convention Center**

**141 TOOLS****Exploring Mathematics with Scratch****6–8 Workshop**

Scratch an easy-to-use block programming language helps students learn strategies for solving problems and communicating ideas. Computational ideas are part of the Scratch experience, such as number sense, angles, direction, variables, coordinates, and also core concepts of iteration, parallelism, and conditionals. Bring a laptop for a hands-on intro.

**Janice Kowalczyk**

Twitter: @JaniceKowal

Copernicus STEAM Learning Lab, Middletown, Rhode Island

**3501 C, Kansas City Convention Center**

**142 TOOLS****Hands-On Activities + Technology = Mathematical Understanding through Authentic Modeling****8–10 Workshop**

Inquiry-based learning coupled with handheld technology empowers students to apply linear, quadratic, and exponential functions to real-world situations. Participants are provided with classroom-ready lessons that connect multiple mathematical representations and synthesize the Statistics, Functions, and Modeling strands of CCSSM.

**Thomas Beatini**

Union City Board of Education, New Jersey

**3501 D, Kansas City Convention Center**

**143 T&L****I Do (They Zone), We Do (They Groan), You Do (Not So Much)****8–10 Workshop**

Engaging 100 percent of a classroom of students for more than a few minutes is difficult to achieve with direct instruction of any type. Learn how to modify lessons to ignite and build upon students’ natural curiosity based on brain science.

**Lane Walker**

Twitter: @LaneWalker2

Francis Howell School District, Saint Charles, Missouri

**2505 B, Kansas City Convention Center**

**144 T&L****Low-Floor, High-Ceiling, and Multi-Grade Problems That Literally Start on the Floor****8–10 Workshop**

We’ll examine problems that grades 7-12 students can enter into by using the floor space in classrooms. We’ll create physical models to help students understand the problems, and we’ll discuss how students can access and solve the problems according to their own background knowledge and learn alongside their peers with different strengths.

**Ron Lancaster**

University of Toronto, Ontario, Canada

**2105, Kansas City Convention Center**

**145 SPECIAL****Promoting Equity & Access in Mathematics through Discourse****3–5 Workshop**

Effective use of discourse leads to significant gains in mathematics learning for students. Thoughtful discourse around engaging tasks provides access to meaningful mathematics for students from a wide range of backgrounds. Learn strategies to use discourse to support agency, learning, and understanding. See the best of every student!

**Sara Delano Moore**

Twitter: @saradelanomoore

ORIGO Education, Kent, Ohio

**3501 H, Kansas City Convention Center**

8:00 A.M.–9:15 A.M.

**146** **CURRIC**

### Teaching Addition and Subtraction Fact Fluency—But with Understanding Rather Than Gimmicks!

**Pre-K–2 Workshop**

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

**James Burnett**

Twitter: @jamesburnett69

ORIGO Education, Brendale, Queensland, Australia

**2104 A, Kansas City Convention Center**

**147** **ASSESS**

### Using Formative Assessment to Cognitively Guide Facts Fluency Instruction

**Pre-K–2 Workshop**

In this session, we will learn about a formative assessment tool used to determine students’ facts fluency needs. We will learn how to effectively analyze student data from this assessment to plan next steps for cognitively-guided fact instruction. We will share our journey using this data to productively engage students in a small-group learning.

**Cheryl Scott**

Twitter: @cheryl\_scott30

Rogers Public Schools, Arkansas

**Myka Frederking**

Rogers Public Schools, Arkansas

**2102 B, Kansas City Convention Center**

9:30 A.M.–10:30 A.M.

**148** **CURRIC**

### “My Kids Don’t Get It!”: A Hands-On Journey through Early Number Sense and Place Value

**Pre-K–2 Session**

Pre-K through grade 2 number concepts are the foundation for EVERYTHING in mathematics. Participants will unpack and understand number sense and place value standards, and participate in hands-on activities for these standards that can be taken back to the classroom and used right away! Instructional strategies and materials will be provided.

**Marissa Walsh**

Twitter: @MarissaWalsh20

Blue Springs School District, Missouri

**Ashley Leiker**

Blue Springs School District, Missouri

**2103 C, Kansas City Convention Center**

**149** **SPECIAL**

### “Try-Again” Meetings: A Tool for Engaging All Students in Meaningful Mathematical Reasoning

**8–10 Session**

Do you struggle to find the right balance between holding students accountable for learning and giving multiple opportunities to demonstrate understanding? Come to this session to learn how “try-again” meetings can facilitate meaningful engagement with mathematics, promote student responsibility, and ease the burden of excessive reassessment.

**Mark Russo**

Twitter: @RussoMarkF

Pascack Valley Regional High School District, Montvale, New Jersey

**2215 C, Kansas City Convention Center**

Saturday



**150** **COLLAB****Adventures in Math 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 math coaching. This session provides examples of how a K-12 math coach has leveraged NBCT thinking and theories of action to efficiently get started with teachers and iteratively make more impact.

**Aaron Rumack**

Twitter: sngndnc

White River School District, Buckley, Washington

**3501 F, Kansas City Convention Center**

**151** **TOOLS****Calculus Animations with GeoGebra****Higher Education Session**

GeoGebra is a free, web-based software that does dynamic geometry and graphing. The dynamic feature of the software allows for animations that can illustrate many topics in calculus. This talk will show some of the animations the speaker has used but also feature some instruction on how to create animations that are suggested by the audience.

**Kevin Hopkins**

Southwest Baptist University, Bolivar, Missouri

**2102 A, Kansas City Convention Center**

**152** **COLLAB****Love to Teach Math? Be an Elementary Math Specialist!****Coaches/Leaders/Teacher Educators Session**

Do you love to teach elementary math? Do you like working with other teachers? If so, becoming an elementary math specialist is a good option for you! This session will provide information about the role and work of elementary math specialists and about a program leading to Missouri teaching certification as an elementary math specialist.

**Ann McCoy**

Twitter: mccoymathmom

University of Central Missouri, Clinton

**Marilyn Cannon**

Raytown Schools, Missouri

**Margaret Bangert**

Northwest Missouri State University, Maryville

**2103 A, Kansas City Convention Center**

**153** **T&L****Meaningful Math Discussions Do Not Happen by Chance****General Interest Session**

We will discuss ways in which the practice and facilitation of meaningful mathematical discourse is made possible and much richer when the teacher poses purposeful questions and expects students to use and discuss representations. Four strategies for focusing discussions on mathematical idea will be introduced and applied in the session.

**Victoria Bill**

Twitter: VictoryaBill@BillVictorya

Institute for Learning, Learning Research and Development Center, University of Pittsburgh, Pennsylvania

**2215 AB, Kansas City Convention Center**

**154** **T&L****Using Algebra Tiles from Polynomials to Factoring****10–12 Session**

Learn how to make factoring into a concrete visual experience for your students. Teachers will have a chance to explore algebra tiles and learn how to use them to show both algebraic multiplication and factoring.

**Lisa Jasumback**

Twitter: lisa@ljasumback

CPM Educational Program, Elk Grove, California

**3501 F, Kansas City Convention Center**

**155** **T&L****Using Number Talks in the Elementary Classroom to Improve Number Sense and Computation****3–5 Session**

Number talks in the elementary classroom provide an avenue for teachers to help students develop number sense and mental computation. Join us to examine the benefits and implementation of number talks in the classroom, and the development of number strings. Resources and idea for classroom implementation will be provided.

**Wendy Courter**

Twitter: osterholz88

Harrisonville Cass R-IX School District, Missouri

**Kim Spencer**

Harrisonville Cass R-IX School District, Missouri

**2502 A, Kansas City Convention Center**

9:30 A.M.–10:30 A.M.

**155.1** EW CURRIC

## Bridges Intervention, Delivering Clear and Systematic Instruction

### General Interest Exhibitor Workshop

Searching for an effective K–5 intervention resource with built-in assessments and frequent progress monitoring? Discover how Bridges Intervention uses the power of visual models to reach struggling students. Organized by content rather than grade, each session includes warm-ups, lessons, and practice pages focused on key standards.

The Math Learning Center  
Salem, Oregon

3501 B, Kansas City Convention Center

**155.2** EW TOOLS

## Converting Students, Curiosity and Creativity into Understanding

### 10–12 Exhibitor Workshop

Come see some teacher and student created STEM experiences that develop students' abilities to collaborate, think creatively and solve problems using the TI-Innovator Rover. Beginner to advanced student activities for algebra through calculus will be explored including Newton's Method and Euler's Method in this hands-on session.

Texas Instruments  
Dallas, Texas

3501 A, Kansas City Convention Center

**155.3** T&L

## Visualization— The Key To Understanding

### General Interest Session

A picture is worth a thousand words. In math, they are worth even more! Join us as we explore non-negotiable, must-use visuals at every grade level. We will make sense of operations, word problems, and algebraic equations. You will be surprised—maybe even shocked—when you see how much easier math can be.

Greg Tang  
Gregtangmath.com, Belmont, Massachusetts

2103 B, Kansas City Convention Center

9:45 A.M.–11:00 A.M.

**156** T&L

## A Winning Combination: Engagement, Rigor, and Functions

### 8–10 Workshop

A deep understanding of functions both prepares students for success in future mathematics courses and lays the foundation for students to make connections to other disciplines. Attendees will work through and discuss tasks designed to engage beginning algebra students in rigorous mathematics across a variety of function families.

Alicia Davis  
Lincoln Public Schools, Nebraska

Anne Schmidt  
Lincoln Public Schools, Nebraska

3501 C, Kansas City Convention Center

**157** CURRIC

## Building an Early Numeracy Toolkit

### Pre-K–2 Workshop

Research highlights the importance of building a firm early numeracy foundation. Let's explore how beginning processes of early numeracy lay the cornerstone for mathematical understanding. Participants will engage in different strategies to use daily in the classroom to help build a firm foundation, and leave with a toolkit filled with activities.

Melissa Walton  
University of Alabama, Tuscaloosa

2104 B, Kansas City Convention Center

**158** CURRIC

## Conics: Bringing the Topic Back into Focus

### 10–12 Workshop

Do you dread teaching conics to your algebra 2 classes? Do you skip them entirely because they don't seem that important? Come rediscover conics in this interactive workshop that uses paperfolding, simulations, and graphing calculator technology to engage even the most reluctant of learners and to help students make connections to the topic.

Denise Young  
Blue Valley School District, Stilwell, Kansas

Tracey Zak-Johnson  
Consultant, Aledo, Texas

2503, Kansas City Convention Center

**159** **DIFFER**

### Intentional Use of Children’s Literature to Promote Equity and Access

3–5 Workshop

This session identifies the necessity for equity and access, connects literature to the essential mathematics standards, and provides sample lesson plans. Highlighting multicultural main characters, characters with exceptionalities, and female protagonists provides students the rich opportunity to connect with both the context and the mathematics.

**Stefanie Livers**  
Missouri State University, Springfield  
2105, Kansas City Convention Center

**160** **COLLAB**

### Mathematics Teachers’ Circles: Folding Fractions as a Springboard for Problem Posing

6–8 Workshop

This session will demonstrate how Mathematics Teachers’ Circles (MTC) can serve as a professional development opportunity to expand your content knowledge and the problem-solving culture of your classroom. We will engage in a fraction-folding task and use this MTC activity to problem pose in order to create new mathematical explorations.

**Chris Bolognese**  
Twitter: @eulersnephew  
The Columbus Academy, Gahanna, Ohio  
2505 A, Kansas City Convention Center

**161** **COLLAB**

### New and Preservice Teachers 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  
3501 D, Kansas City Convention Center

**162** **ASSESS**

### Practical Formative Assessment Strategies to Use with High School Students

10–12 Workshop

Formative assessment is a powerful tool that can be used daily to ascertain students’ knowledge and to adjust teachers’ instruction accordingly. In this workshop, we will learn about and practice some formative assessment strategies, based on recommendations from *Catalyzing Change*, that can be implemented immediately in your classroom.

**David Ebert**  
Twitter: @MrDaveEbert  
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Oregon High School, Wisconsin  
2102 B, Kansas City Convention Center

**163** **CURRIC**

### Purposeful Questioning to Help Students Develop Deeper Thinking in Multiplication

3–5 Workshop

Help students overcome multiplication struggles by focusing on visual representations and meaning. The use of purposeful questioning gives students the opportunity to make powerful connections. Leave this workshop with visual prompts, questions, and strategies to help students build efficiency, flexibility, and accuracy in their thinking.

**Natalie Moon**  
Twitter: @themathgirl  
Ozark School District, Missouri  
**Tracey Roussel**  
Ozark School District, Missouri  
3501 G, Kansas City Convention Center

9:45 A.M.–11:00 A.M.

**164** **IILR**

## STEM Connections with CCSS Modeling Standards

10–12 Workshop

While learning and deepening algebra skills and concepts through rich tasks, students can relate their thinking processes to those used to solve problems in 21st-century careers. These activities motivate students to master and retain algebra as they see and sense relevance through explorations, modeling activities, and free apps.

Lane Walker

Twitter: @LaneWalker2

Francis Howell School District, Saint Charles, Missouri

2505 B, Kansas City Convention Center

**165** **IILR**

## Teaching Middle School Mathematics through Engineering Design Tasks

6–8 Workshop

This learner-driven workshop explores engineering design tasks as highly engaging avenues for teaching mathematics. Participants will gain hands-on experience with engineering design tasks and become familiar with the pedagogy necessary for successful classroom implementation. Come join in on the fun and leave with a large collection of resources!

Megan Nickels

Twitter: @megannickels

University of Central Florida, Orlando

2104 A, Kansas City Convention Center

**166** **COLLAB**

## Using Shifts in Classroom Practice to Support Procedural Fluency (and Conceptual Understanding)

General Interest Workshop

In this workshop, we will first explore eight continua based on the NCTM Effective Mathematics Teaching Practices, and how these shifts can support self-reflection and growth in effective teaching. We will then connect the shifts to tools and strategies for supporting both teachers' and students' deeper understanding and fluency with mathematics content.

Jennifer Bay-Williams

Twitter: @JBayWilliams

University of Louisville, Kentucky

Maggie McGatha

M<sup>2</sup> Consulting, Louisville, Kentucky

3501 H, Kansas City Convention Center

11:00 A.M.–12:00 P.M.

**167** **COLLAB**

## A Journey of Change in Elementary Classrooms: Will You Lead the Way to Developing Deep Thinking?

3–5 Session

Are you transforming elementary mathematics classrooms into environments that foster critical thinking? Join the journey that utilizes research-based strategies applicable to all students while exploring how administrators and coaches become change agents in implementing CCSSM through the use of the 8 Teaching and Learning Practices.

Jeremiah McGraw

Grant Wood Area Education Agency, Cedar Rapids, Iowa

Dana Merfeld

Grant Wood Area Education Agency, Cedar Rapids, Iowa

Amy Schemmel Keller

Grant Wood Area Education Agency, Cedar Rapids, Iowa

2502 A, Kansas City Convention Center

Mingle, explore, and learn in the Exhibit Hall and NCTM Central!



Saturday

**TOOLS** Tools and Technology

**DIFFER** Celebrating Differences

**ew** Exhibitor Workshop

**ASSESS** Assessment

**CURRIC** Curriculum: Making Connections

**168** **TOOLS****Bringing ALL Students into the Desmos Conversation****General Interest Session**

ALL students are academic language learners, but English language learners face the challenge of being both at the same time. Bring a tablet or laptop to experience a Desmos activity through the lens of an English learner, and learn how to create and modify Desmos activities to address the needs of not only high-needs students, but of all students.

**Heather Kohn**

Twitter: @heather\_kohn  
Marlborough Public Schools, Massachusetts / Desmos Fellow  
**3501 F, Kansas City Convention Center**

**169** **T&L****Developing Multiplication and Division with Manipulatives****3–5 Session**

How can I help my students better understand multiplication and division, rather than trying to memorize a series of steps? See how using manipulatives can help your students better understand these important concepts. Discover why manipulatives are a powerful tool in developing conceptual understanding, which leads to procedural fluency.

**Kevin Dykema**

Twitter: @kdykema  
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Mattawan Consolidated Schools, Michigan  
**2215 AB, Kansas City Convention Center**

**170** **DIFFER****Easing Math Anxiety—Developing Mathematical Fluidity****10–12 Session**

Ease your students' math anxiety and enable them to uncover their mathematical potential. Students of color need to believe they have the potential to be great mathematicians. Consider how to get ALL of your students to embrace a growth mindset. Students can play, explore, and use mathematical discourse to improve comprehension.

**Nina Otterson**

Twitter: @nseaotter  
The Hotchkiss School, Lakeville, Connecticut  
**2103 C, Kansas City Convention Center**

**171** **CURRIC****Exploring Connections among Representations in Algebra****8–10 Session**

Algebraic, tabular, and graphical representations of functions can be difficult for students in algebra to navigate. We will share some of the curricular resources we have used with algebra students over the course of several years to help them see connections among these representations and come to a deeper understanding of functions.

**Amy Dwiggin**

Macon High School, Missouri

**Kim Gann**

Macon High School, Missouri

**2502 B, Kansas City Convention Center**

**172** **T&L****Goals, Tasks, and Conceptual Understanding: Taking Action to Enhance Learning Opportunities****6–8 Session**

The tasks we choose, the goals we have for those tasks, and the sequences in which we enact them with students frame their opportunities to learn. We will explore three of the *Principles to Actions* Effective Mathematics Teaching Practices (tasks, goals, and conceptual understanding) to develop a road map for high-quality middle school teaching.

**Mike Steele**

Twitter: @mdsteele47  
University of Wisconsin–Milwaukee  
**2504, Kansas City Convention Center**

**173** **CURRIC****It's All About That Base (with Logs)****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.

**Kyle Eller**

Wheaton Warrenville Schools, Illinois

**Frederick Dillon**

Consultant, Strongsville, Ohio

**2215 C, Kansas City Convention Center**

11:00 A.M.–12:00 P.M.

174 **T&L**

## Numbers Are NOT Letters! Narrowing the Math Achievement Gap before It Starts

Pre-K–2 Session

As with reading, if students do not master key foundational skills and concepts in mathematics by the end of grade 3, they will be at risk in subsequent grades. But how we learn math is not the same as how we learn to read. This presentation will focus on the critical components and effective best practices for K–3 math education.

Jan Scott

Houghton Mifflin Harcourt, Boston, Massachusetts

2103 B, Kansas City Convention Center

175 **CURRIC**

## Polygon Chains: Using a Rich Problem to Connect Mathematical Ideas

Coaches/Leaders/Teacher Educators Session

Given a chain of identical regular polygons, what perimeters are possible? I will share a set of related tasks that I have used with students in grades 4–8 and with prospective elementary teachers. These tasks are full of patterns, and they are designed to encourage persistence in problem solving, mathematical communication, and reasoning and proof.

Dusty Jones

Sam Houston State University, Huntsville, Texas

2102 A, Kansas City Convention Center

11:30 A.M.–12:00 P.M.

176 **DIFFER**

## “I’m Just Not a Math Person!”: Practices That Strengthen Students’ Identification with Mathematics

8–10 Burst

Educators will leave with immediately actionable and research-based practices that make mathematics more academically and socially accessible to all students. We will focus on complex instruction, discovery learning, and authentic problem-solving as means to helping students see and value themselves as the “math people” they are.

Jaclyn Woodruff

Northside College Prep, Chicago, Illinois

3501 H, Kansas City Convention Center

177 **COLLAB**

## Coaching for Change: The Role of Math Coaches and Teacher Leaders

Burst

As coaches or teacher leaders, we have an opportunity to encourage and foster a culture of collaboration and change in schools. Find out ways to build community among teachers, gather rich data on improvement, and develop meaningful professional learning experiences for teachers. Also, connect with other coaches to help build your own coaching PLN!

Annie Forest

Twitter: @mrsforest

Berwyn South District 100, Illinois

3501 D, Kansas City Convention Center

Saturday

**TOOLS** Tools and Technology

**DIFFER** Celebrating Differences

**ew** Exhibitor Workshop

**ASSESS** Assessment

**CURRIC** Curriculum: Making Connections

**178** **T&L**

**Collaborating to Develop and Teach Meaningful Mathematics Lessons in an Urban High School**

**8–10 Burst**

Interested in engaging your students with inquiry-based teaching? This session will explore mathematics lessons taught in urban high school classrooms, where students explore meaningful mathematics through group collaboration. Participants will have the opportunity to take part in lesson activities related to Pascal’s triangle and conic sections.

**Carrie Lavoy**  
University of Kansas, Lawrence  
**Sarah Dolence**  
University of Kansas, Lawrence

**3501 G, Kansas City Convention Center**

**179** **T&L**

**From Inexperienced to Experienced Problem Solvers in Grades 3-5: The Proof Is in the Practices!**

**3–5 Burst**

Our classrooms are full of problem solvers, both inexperienced and experienced. During this session, we’ll take a look at effective practices that foster productive effort and elicit mathematical thinking, both of which enhance opportunities for ALL students to become experienced problem solvers!

**Cynthia (Cindy) Bryant**  
Greater Ozarks Cooperating School Districts

**2104 A, Kansas City Convention Center**

**180** **COLLAB**

**Helping Students Develop Their Mathematical Identity by Helping Their Teachers Develop Theirs**

**10–12 Burst**

What can we do to help each and every student flourish in our math classrooms? Teachers can create environments that inspire a sense of social mathematical belonging, but they, too, need support to do this effectively. Mentors can provide the support teachers need in order to encourage a positive mathematical identity in their students.

**Edith Eskilson**  
University of Kansas, Lawrence  
**Katrina Rothrock**  
University of Kansas, Lawrence  
**Carrie Lavoy**  
University of Kansas, Lawrence

**2505 B, Kansas City Convention Center**

**181** **T&L**

**Infusing Projects into Middle School Math Curriculum**

**6–8 Burst**

This session explores projects that have already been implemented in sixth- and seventh-grade classrooms. Participants will experience the planning process of creating projects, discuss the benefits of project based learning, and learn how to implement similar and new projects in to their own curricula.

**Michael Hart**  
Lincoln Public Schools, Nebraska  
**Mark Holland**  
Lincoln Public Schools, Nebraska  
**Mike Masin**  
Lincoln Public Schools, Nebraska

**2102 B, Kansas City Convention Center**

**Join us at the NCTM 2019 Regional Conferences & Expositions:**

Boston, Massachusetts | September 25–27  
Nashville, Tennessee | October 2–4  
Salt Lake City, Utah | October 16–18



**182** **SPECIAL****Math Intervention That Works!****General Interest Burst**

Are you a math interventionist at your school? This session will discuss ways to make RTI sessions more productive and increase students' understanding of math. Topics will include using data to target students, improving number sense with struggling students, and how to increase engagement with reluctant learners.

**Debra Wehr**

Twitter: @debwehr

St. Joseph School District, Missouri

**Amy Weiser**

St. Joseph School District, Missouri

**2105, Kansas City Convention Center**

**183** **T&L****Open-Ended Problems: Unlocking Potential in Middle School Students****6–8 Burst**

In this session, we will examine the difference between traditional middle school homework sets and open-ended problems, focusing on how to change a mundane task into a higher-level learning opportunity. I will share problems used with a sixth-grade class that led to students begging for more math homework.

**Natalia Bailey**

Twitter: njbailey17

University of Central Missouri, Warrensburg

**2104 B, Kansas City Convention Center**

**184** **ASSESS****Reflecting on District Leaders' Rationalizations for the Standardized Testing of Children****General Interest Burst**

What do students stand to gain from standardized testing? In this session, we reflect on how district leaders, who oversee testing policy implementation, responded to this question. Results are intended to help teachers reflect on their own rationales for testing students and interpret testing expectations communicated by their district officials.

**Cara Haines**

University of Missouri, Columbia

**Charles Munter**

University of Missouri, Columbia

**2505 A, Kansas City Convention Center**

**185** **DIFFER****Research on Social and Cognitive Influences That Impact Teacher Candidates' Choice to Pursue Math Ed****Research Burst**

There is a teacher shortage due to a lack of students pursuing math education. The results from a survey collected across the State of Missouri on the factors that influence a student's choice to pursue math education will be shared. We will specifically compare teacher, parent, and peer influence; self-efficacy; growth mindset; and outcome expectations.

**Rebecca Callaway**

North Kansas City School District, Missouri

**3501 C, Kansas City Convention Center**

**186** **CURRIC****STEM—Incorporating the “S,” “T,” and “E” Into Your Classroom: Reflections from a Former Engineer****10–12 Burst**

I am a relative new math teacher, having recently changed careers. I previously worked as an engineer and as an attorney and have worked to incorporate aspects of my prior work experience into my math classroom in order to make math more relevant and tangible for students. In this session, I'll share aspects of what I have found.

**Eric George**

Northside College Prep High School, Chicago, Illinois

**2503, Kansas City Convention Center**



**187 ASSESS****A to Z: Our Journey to Implementing Standards (Skills) Based Grading****8–10 Session**

We will discuss the trials and tribulations on our pathway to implementing SBG at the high school level, including the ways that formative and summative assessments shaped our courses. The evolution of our common assessments and current grading practices will be shared along with instructional strategies to foster a growth mindset.

**Jennifer Love**

Twitter: @olymath

Olympia CUSD 16, Stanford, Illinois

**Angie Davis**

Olympia CUSD 16, Stanford, Illinois

**2502 B, Kansas City Convention Center**

**188 ASSESS****Addressing Learning Gaps with White Board Exchanges****6–8 Session**

Join us as we explore White Board Exchanges and how they can be used to assess student understanding, deepen number sense, and address learning gaps. These engaging, adrenaline-rich exchanges are one of the coherent instructional tools utilized throughout the OER Eureka Math/Engage NY. In this session, we will make them come to life!

**Penny Gennuso**

Twitter: @Pennygennuso

Great Minds, Washington, D.C.

**Miko McDaniel**

Great Minds, Washington, D.C.

**2103 A, Kansas City Convention Center**

Looking for lessons, activities, and teacher resources? Check out [nctm.org/crcc](http://nctm.org/crcc).

**189 COLLAB****Coaching toward the Principles to Actions Effective Mathematics Teaching Practices****Coaches/Leaders/Teacher Educators Session**

NCTM's *Principles to Actions* describes eight effective teaching practices. This session will explore a collection of tools and strategies that coaches can use to support teachers in making connections between effective teaching practices and students' opportunities to demonstrate the Standards for Mathematical Practice.

**Maggie McGatha**

Twitter: @mcgatha

University of Louisville, Kentucky

**2215 AB, Kansas City Convention Center**

**190 CURRIC****Empowering Diverse Learners to Learn Algebra through the Implementation of the CRA Approach****8–10 Session**

Participants attending this session will learn how to teach introductory algebra to struggling students by implementing the concrete-representational-abstract technique through using specific hands-on activities and manipulatives. The topics covered include algebraic expressions and solving equations at the concrete and pictorial level.

**Brooke Callan**

Webster University, St. Louis, Missouri

**Joseph Sencibaugh**

Webster University, St. Louis, Missouri

**3501 F, Kansas City Convention Center**

**191 TOOLS****Integrating Educational Technology in the Elementary Mathematics Classroom****3–5 Session**

This session will address how to use digital tools, such as Pear Deck and Seesaw, in the mathematics classroom to engage students in developing an understanding of a mathematical problem, to create digital representations of the problem, to share these representations with others, and to critique the validity of these responses.

**Christine Droba**

Twitter: @ORFastTrack

North Palos School District 117, Palos Hills, Illinois

**2102 A, Kansas City Convention Center**

**192** CURRIC

**Polynomial Long Division: Why Do We Care?**

10–12 Session

Polynomial long division is a topic often taught in isolation with little connection to other areas of mathematics. Explore how polynomial long division is related to calculus, and how the polynomial long division we teach in algebra 2 and precalculus can easily be extended to an introduction to calculus and rules for derivatives.

**Joseph Obrycki**  
Niles Township District 219, Skokie, Illinois  
**2215 C, Kansas City Convention Center**

**193** COLLAB

**Spreading the Math Bug—Infecting Educators with Mathematical Passion!**

Coaches/Leaders/Teacher Educators Session

Transform the culture of your school by supporting teachers through productive struggle and facilitating mathematical discourse among teams. By modeling effective mathematical teaching practices such as purposeful questioning, we have found success in engaging and motivating math educators to explore powerful mathematics instruction.

**Natalie Moon**  
Twitter: @thematgirl  
Ozark School District, Missouri  
**Amanda Schweissguth**  
Washington School District, Missouri  
**2502 A, Kansas City Convention Center**

**194** ASSESS

**Standards-Based Grading Using Formative Assessment and Differentiated Homework**

10–12 Session

Outcome-based grading enhances learning and can be translated to a traditional grade. Come see how this has been done successfully with students. Formative assessment is critical and must be a planned part of every lesson. This session will discuss continuing learning with increased student responsibility using differentiated homework and student reflections.

**Connie Schrock**  
Twitter: @cfryschrock  
Emporia State University/ NCSM President, Kansas  
**2103 B, Kansas City Convention Center**

**195** T&L

**The Homework Inequality: 1 Great Problem > 39 Repetitive Exercises**

6–8 Session

Don't you hate when students can't solve problems in March that they could solve in November? Interleaved practice and open-middle problems are two ways to promote long-term retention, because they force students to choose—not just use—a strategy. Come learn how to mix great problems with basic exercises to create more effective assignments.

**Patrick Vennebush**  
Twitter: @pvennebush  
Discovery Education, Silver Spring, Maryland  
**2504, Kansas City Convention Center**

**The NCTM Annual Meeting & Exposition is coming up!**  
San Diego, CA | April 3–6, 2019



1:30 P.M.—2:30 P.M.

196 **SPECIAL**

## What about Math Instruction? How to Differentiate for English Language Learners

### General Interest Session

Many teachers find ways to differentiate literacy instruction. Differentiating mathematics seems more demanding or challenging. Participants will explore ways to meet the growing diversity of learning needs; focus on strategies for making tasks accessible, challenging, and interesting; and look at specific management skills.

**Amy Schemmel Keller**

Twitter: @amyknowsmath

Grant Wood Area Education Agency, Cedar Rapids, Iowa

**Jeremiah McGraw**

Grant Wood Area Education Agency, Cedar Rapids, Iowa

**Emily Logan**

Grant Wood Area Education Agency, Cedar Rapids, Iowa

2103 C, Kansas City Convention Center

1:30 P.M.—2:45 P.M.

197 **COLLAB**

## Coaching toward Common Ground: Creating a Shared Vision and Growing Professionally as a Team

### Coaches/Leaders/Teacher Educators Workshop

A supportive community is a powerful component of teachers' professional growth. This session will explore how teams of teachers, coaches, and administrators can collaboratively develop a shared vision for mathematics teaching and learning. With that foundation, teams can support and hold one another accountable as they work toward a common goal.

**Delise Andrews**

Twitter: @deliseandrews

Lincoln Public Schools, Nebraska

2505 B, Kansas City Convention Center

198 **CURRIC**

## Empower Diverse Learners Using Accessible, Yet Rigorous, Tasks

### 3–5 Workshop

Learning experiences must address mathematical goals, provide accessibility, and encourage engagement. Experience a few tasks and analyze the characteristics that make them powerful. All tasks have been implemented with diverse learners, including emergent bilinguals, students with special needs, and others who have been traditionally marginalized.

**Nora Ramirez**

TODOS: Mathematics for ALL, Tempe, Arizona

3501 H, Kansas City Convention Center

199 **T&L**

## Engaging Children with Number Sense, Geometry, and Real-Life Problem Solving

### Pre-K–2 Workshop

The speaker will offer strategies to develop number sense, geometry, and problem-solving skills. She will actively engage attendees with hands-on activities and application of concepts to real-life problems. She will include effective use of manipulatives, mathematical discourse, and development of critical thinking and mathematics vocabulary. Handouts will be provided.

**Donna Knoell**

Consultant, Shawnee Mission, Kansas

2503, Kansas City Convention Center

200 **T&L**

## How Do You Engage Your Reluctant Learners with Mathematical Modeling?

### 6–8 Workshop

Dive into high-interest modeling lessons. Unlike “real-world problems,” reality-based mathematical modeling lessons present students with conceptual modeling. Get support with mathematics standards that require students to identify variables, formulate a model, perform skills, and interpret and validate results.

**Deborah McGinley**

Pearson Education, Kissimmee, Florida

2104 A, Kansas City Convention Center

Saturday

**T&L** Teaching & Learning

**IILR** Innovations in Integrated Learning

**COLLAB** Professionalism: Collaborating

**SPECIAL** Specializing Education

**201 TOOLS****Modeling Important Social Issues with Real-World Data: Opioid Overdose Deaths in the United States****10–12 Workshop**

Have your students mathematically model this shocking real data. Create functions to model the data for interpolation/extrapolation and calculate and interpret percent change. Use any graphing technologies you would like to. Discover how this activity for grade 8 through college was created, and obtain all related materials—data, student sheets, teacher notes, and a step-by-step blog.

**Tom Reardon**

Twitter: @tomreardon3  
Fitch High School / Youngstown State University, Poland, Ohio  
**2105, Kansas City Convention Center**

**202 SPECIAL****Stand Up, Sit Down, Learn, Learn, Learn****8–10 Workshop**

The math classroom should be engaging and promote conversation about math for all students. To help them engage in the class and conversation, various activities will be shared to get students to stand up and sit down to learn and participate in the classroom. Specific examples will be shared that can be used with many content topics.

**Constance Hallemeier**

Twitter: @challemeier  
Wentzville Liberty High School, Lake St. Louis, Missouri  
**3501 G, Kansas City Convention Center**

**203 CURRIC****Strategies + Understanding = Fluency****Pre-K–2 Workshop**

Through activities and discussion, participants will explore strategies for addition and subtraction that build number sense and computational fluency. A strategies-based approach prepares students for success beyond the basic fact range. The strategies and resources in this session will empower teachers with interactive activities for students.

**Melinda Schwartz**

ORIGO Education, St. Charles, Missouri  
**2505 A, Kansas City Convention Center**

**204 CURRIC****Tasks That Connect Progressions and Practices****8–10 Workshop**

*Principles to Actions* outlines eight teaching practices that promote quality mathematics instruction. These teaching practices facilitate the realization of the CCSS Standards for Mathematical Practice. Come participate in a learning progression of tasks that connects both the teaching practices and the mathematical practice standards. All tasks are free!

**Travis Lemon**

Twitter: @TravisLemon  
Mathematics Vision Project (MVP), Lehi, Utah  
**2104 B, Kansas City Convention Center**

**205 TOOLS****Using Desmos in Calculus Class****10–12 Workshop**

There are so many calculus topics to discover through graphs! Learn how to use both the Desmos grapher and the Activity Builder to help students understand important calculus concepts. I'll share how I have used Desmos to increase student agency, enhance discourse, and see how cool calculus is. Bring a large screen device so you can play, too!

**Martha Mulligan**

Twitter: @marthamulligan  
Northside College Prep High School, Chicago Public Schools, Illinois  
**3501 D, Kansas City Convention Center**

**206 CURRIC****What? Multiplying Can Make a Number Smaller!?****3–5 Workshop**

This session will focus on iterating and partitioning units to view multiplication as scaling. We will investigate foundational ideas with whole numbers and then progress to applying those ideas to multiplying fractions. Attention will be given to making connections across grade levels by highlighting consistent language and representations.

**Jacquelyn Ismail**

Boise State University, Idaho

**Keith Krone**

Boise State University, Idaho

**Amber VanVooren**

Boise State University, Idaho

**3501 C, Kansas City Convention Center**

**207 ASSESS**

### Assessing Student Understanding: A Framework for Testing and Teaching

General Interest Session

This session will elaborate on an assessment framework recently described in an article published in *Teaching Children Mathematics*. This framework supports teachers’ instructional strategies, assessment-driven decisions, and intervention plans for struggling students. Connections to standardized achievement tests will also be shared with attendees.

**Jonathan Brendefur**  
Boise State University, Idaho

**Sam Strother**  
Developing Mathematical Thinking Institute, Boise, Idaho

**Jana Estes**  
Boise State University, Idaho

3501 F, Kansas City Convention Center

**208 T&L**

### Creating Continuous and Dynamic Learning for All Students

10–12 Session

How do we create a learning habitat for all students? Your apathetic students may actually be isolated! Come explore a variety of daily practices that help every student win. Discuss proven, inquiry-based, active thinking strategies that eliminate isolation, foster risk-taking, and encourage dialog while raising accountability.

**Peggy Hartwig**  
Twitter: mthartwig

Discovery Education, Silver Spring, Maryland

2103 C, Kansas City Convention Center

A big thank you to our exhibitors, sponsors, volunteers, and speakers!



**209 ASSESS**

### Developing a Student-Centered, Data-Informed Environment

3–5 Session

In this session, participants will learn how to develop an effective data-informed environment that is student centered. The presenters will interactively explore with participants how to effectively assess student learning, how to provide meaningful feedback, and how to use data to inform instructional decisions.

**Kristopher Childs**  
Twitter: DrKChilds  
Houghton Mifflin Harcourt, Austin, Texas

**Vernita Glenn-White**  
Stetson University, DeLand, Florida

**Tashana Howse**  
Georgia Gwinnett College, Lilburn

2504, Kansas City Convention Center

**210 T&L**

### Enhancing Inquiry-Based Instruction

General Interest Session

Are you committed to the idea of inquiry-based math learning, but feeling stuck on how to begin, or how to improve your practice? In this session, we will identify several critical domains of an inquiry-based math classroom and provide concrete strategies for improving each domain.

**Allyson Rohrbach**  
Twitter: MathSenseLLC  
MathSense Consulting, LLC, Brooklyn, New York

**Amy Hand**  
MathSense Consulting, LLC, Brooklyn, New York

2102 A, Kansas City Convention Center

**211 TOOLS**

### I Used Tech Tools to Elicit Student Work! Now What?

General Interest Session

Using formative assessment technology tools (like Desmos, ClassKick, and GoFormative) allows us to see student thinking in real time. Learn about these tools and also explore what we should do with all that information. What are the next steps? How do we make instructional decisions, sometimes in the moment, to respond to student thinking?

**Annie Forest**  
Twitter: @mrsforest  
Berwyn South District 100, Illinois

2103 B, Kansas City Convention Center

3:00 P.M.–4:00 P.M.

**212** **T&L**

## The Productive Struggle Is Real

Coaches/Leaders/Teacher Educators Session

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**

Twitter: @TBokOSU12

Dover City Schools, New Philadelphia, Ohio

**Frederick Dillon**

Consultant, Strongsville, Ohio

**2215 C, Kansas City Convention Center**

**213** **SPECIAL**

## The Road to Internalization: Helping RTI Students Develop Number Concepts

Pre-K–2 Session

RTI carries a tension of backing up and filling gaps while simultaneously pushing forward to learn current grade-level content. What happens if you choose one and let the other go? In this session, we'll share our experiences of backing up to meet Tier II students where they are and the surprising results.

**Jennifer Bordic**

Twitter: jbordic

Round Rock ISD, Cedar Park, Texas

**Marlena McConnell**

Round Rock ISD, Austin, Texas

**2502 B, Kansas City Convention Center**

**214** **SPECIAL**

## Understanding the Teaching of Mathematics to English Learners

6–8 Session

This presentation will provide an overview of teachers' beliefs as they relate to the teaching and learning of math to English learners. Interview data will be used to illustrate the intersection between beliefs related to language and math. Finally, implications to classroom practice will be discussed.

**Anthony Fernandes**

UNC Charlotte, North Carolina

**2215 AB, Kansas City Convention Center**

**215** **TOOLS**

## Using Tools and Technology to Help Students Deepen Their Understanding of Geometry

8–10 Session

Geometry can be a difficult topic for students to understand. In this presentation, we will share activities using tools and technology that will help students develop a strong understanding of geometry. Technologies include GeoGebra and Desmos and patty paper and Exploragons are manipulatives we will use.

**Sharon Vestal**

Twitter: @SharonVestal

South Dakota State University, Brookings

**Christine Larson**

South Dakota State University, Brookings

**2103 A, Kansas City Convention Center**

**216** **CURRIC**

## Whole Numbers to Rational Numbers: Building Bridges to Reach Success with Fractions

3–5 Session

Engage students in meaningful learning experiences to extend understanding of whole numbers to rational numbers. Examine tasks that will capitalize on prior knowledge and allow for exploration of connections among all numbers. Creating powerful depth of fraction understanding will allow for a seamless transition into fraction operations.

**Amanda Schweissguth**

Twitter: @Scoothie\_Math

Washington School District, Missouri

**2502 A, Kansas City Convention Center**

3:15 P.M.–4:30 P.M.

**217** **T&L**

## A Center-Driven Classroom

Pre-K–2 Workshop

This workshop targets elementary students and their need for differentiation, activities, and engagement. It will present materials that can be altered to fit any mathematics classroom. Educators will feel more confident about creating and facilitating center activities to fit the needs of their students.

**Molly Hill**

University of Louisiana Monroe

**2104 A, Kansas City Convention Center**

**218** T&L**Developing Algebraic Thinking and Problem Solving without the “X’s”****Pre-K–2 Workshop**

Strategies to develop algebraic thinking—including use of the equal sign, other representations, patterns, and solving for unknowns—will be the focus for this hands-on workshop. Attendees will be actively engaged with manipulatives, effective questioning strategies, and the exploration of real-life problems that promote algebraic thinking.

**Donna Knoell**

Consultant, Shawnee Mission, Kansas

**2503, Kansas City Convention Center**

**219** TOOLS**How Technology Makes Accessing Math Possible****10–12 Workshop**

This session will examine recursion as an intuitive tool to investigate various real-world problems. We will investigate recursion problems related to medicine dosage, credit card charges, movement of populations, and more. Participants are provided with lesson plans and an answer key that can be used in the classroom on Monday morning.

**William Bowdish**

Consultant, Holmes Beach, Florida

**3501 C, Kansas City Convention Center**

**220** T&L**King Kong vs. Godzilla: Who Would Really Win? Using Ratios to Answer Life’s Most Important Questions****6–8 Workshop**

You don’t have to wait until the 2020 movie release of King Kong versus Godzilla to find out which monster will prevail. In this workshop, we will use ratios to resolve the arguments about this epic battle and save you from spending \$20 at the theater. We will also use ratios to compare other lighthearted, interesting situations.

**Joann Barnett**

Twitter: @Joannbarnett

Missouri State University, Springfield

**3501 H, Kansas City Convention Center**

**221** T&L**Lost in Space: Bone Density****8–10 Workshop**

This session will explore the problems of traveling in space, with regards to loss of bone density. Participants will use different types of regression to estimate how long an astronaut can safely stay in space without damaging their bones. The data used comes directly from NASA, and this exercise can be a fun way to introduce regression to your students.

**Tracey Zak-Johnson**

Twitter: @traceylovesmath

Consultant, Aledo, Texas

**Denise Young**

Blue Valley School District, Stilwell, Kansas

**2105, Kansas City Convention Center**

**222** ASSESS**Mathematics Learning Profiles: A Key to Understanding Students’ Learning and Performance****Coaches/Leaders/Teacher Educators Workshop**

When students have challenges in math, educators focus on remediating skills rather than the etiology of the problem. The diagnostic paradigm of a Mathematics Learning Profile (MLP) allows teachers to identify the source(s) of learning challenges and to design tailored interventions. Student work will illustrate the efficacy of the MLP framework.

**Melinda Eichhorn**

Gordon College, Wenham, Massachusetts

**Ellen Boisselle**

Boston Children’s Hospital, Massachusetts

**3501 G, Kansas City Convention Center**

**223** T&L**Modeling the Statistical Experience You Wish You’d Had****6–8 Workshop**

Did your personal experience in learning statistics impact your relationship with stats in a negative way? Let’s analyze evidence in court cases, create statistical models, and engage in simulations with high quality tasks—all while developing students’ deep understanding (and possibly your new love) of statistics.

**Shauna Hedgepeth**

Twitter: @approx\_normal

Purvis Middle School, Mississippi

**2104 B, Kansas City Convention Center**

3:15 P.M.–4:30 P.M.

**224** T&L

### Modeling: Teaching It Right!

8–10 Workshop

Modeling, taught correctly, is one of the most effective, meaningful tools in student learning. It requires creating problem “scenarios” begging to be solved and providing the proper amount of teacher guidance for student success. In this hands-on workshop, learn the “nuts-and-bolts” of creating, using, and teaching modeling.

**David Ewing**

University of Central Missouri, Warrensburg

3501 D, Kansas City Convention Center

**225** T&L

### Real-World Applications of Trigonometry-Outdoor Trigonometry

10–12 Workshop

We will go outside and learn how to use clinometers to measure angles and trundle wheels to measure distances. You will also learn how to make your own clinometer. We will learn common errors in measurement. Also, we will be using right triangle trigonometry and law of sines to calculate measurements on objects that we can and cannot touch.

**Joseph D’Agostino**

Freeport Public Schools, New York

**Kevin Harrison**

Freeport Public Schools, New York

2505 B, Kansas City Convention Center

**226** SPECIAL

### Supporting Struggling Learners’ Word-Problem Solving Using Schema Instruction

3–5 Workshop

Solving word problems is particularly challenging for students with mathematics difficulty. We present three word-problem types, or schemas, and how to implement instruction in the classroom in order to assist students with unpacking the analytical and linguistic complexity of word problems.

**Elizabeth Stevens**

University of Texas at Austin

**Sarah Powell**

University of Texas at Austin

2102 B, Kansas City Convention Center

**227** T&L

### Unpacking Fractions: Teaching and Learning Fractions with Understanding

3–5 Workshop

Fractions often mark the end of students’ love for math when sense making yields to senseless memorization. Fractions are hard to teach and learn: They usher in the multiplicative world. Drawing on 25 years of PD and other work, the speaker unpacks misconceptions, core math ideas, teaching insights, uncommon tasks, bridges to algebra, and seven apps.

**Monica Neagoy**

Twitter: @MonicaNeagoy

International Math Consultant, Paris, France

2505 A, Kansas City Convention Center

Interested in speaking at one of the 2019 Regional Conferences next year in Boston, Nashville, or Salt Lake City? Submit your proposal at [nctm.org/speak](http://nctm.org/speak) before December 1, 2018.





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# Affiliate Information

## Join an NCTM Affiliate Today

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

A list of Partner Affiliates in this conference's region and the Affiliates-at-Large appears on page 65. To join one of these organizations, email the Affiliate contact for membership information. NCTM has more than 200 Affiliates throughout the United States and Canada. For a list of all organizations affiliated with NCTM and information on how to join, visit the Affiliate Directory at [nctm.org/Affiliates/Directory](http://nctm.org/Affiliates/Directory).

## About the Host Organizations

KCATM (*Kansas City Area Teachers of Mathematics*) and MCTM (*Missouri Council of Teachers of Mathematics*) are excited to co-host the NCTM Regional Conference. As affiliates of NCTM, both organizations are dedicated to supporting and improving mathematics teaching and learning at all levels. Our organizations strive to connect the larger mathematics community, to provide access to and freely share high quality resources, to actively seek high quality professional learning and development, and to consider advocacy of mathematics education policy as our professional responsibility.



Meet Angela at NCTM Central  
on Thursday and Friday!

## NCTM Appoints New Editor-in-Chief for New Journal

### *Angela Barlow*

NCTM is pleased to announce the appointment of Angela Barlow as the inaugural editor-in-chief for *Mathematics Teacher: Learning and Teaching Pre-K-12*, which launches in January 2020.



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

## Affiliate Information

### Missouri

#### Kansas City Area Teachers of Mathematics (Missouri)

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#### Mathematics Educators of Greater Saint Louis (Missouri)

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#### Metropolitan Mathematics Club of Chicago

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### Ohio

#### Greater Cleveland Council of Teachers of Mathematics (Ohio)

Lynn Aring, Lynn.Aring@gmail.com

#### Ohio Council of Teachers of Mathematics

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### South Dakota

#### South Dakota Council of Teachers of Mathematics

Jay Berglund, jay.berglund@k12.sd.us

### Wisconsin

#### Wisconsin Mathematics Council, Inc.

Cathy Burge, burcat@holmen.k12.wi.us

## Affiliates-at-Large

#### Adult Numeracy Network

Pam Meader, mdr151@aol.com

#### Association of Mathematics Teacher Educators

Maggie McGatha, maggie.mcgatha@louisville.edu

#### Association of State Supervisors of Mathematics

Charles Watson, chaswatson@sbcglobal.net

#### Benjamin Banneker Association, Inc.

Shelly Jones, jonessem@ccsu.edu

#### Council for Technology in Mathematics Education

David Wees, davidwees@gmail.com

#### Council of Presidential Awardees in Mathematics

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#### National Council of Supervisors of Mathematics

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#### North American Study Group on Ethnomathematics

Tod Shockey, todshockey@gmail.com

#### Society of Elementary Presidential Awardees

Timothy Dalby, tdalby@wilmingtonfriends.org

#### TODOS: Mathematics for ALL

Susie Hakansson, shakans@g.ucla.edu

#### Women and Mathematics Education

Andria Disney, andriadisney@live.com

# Officers and Committees

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*Kay A. Wohlhuter*  
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NCTM wishes to thank our **2018 Kansas City Regional Conference Committees** for their generous support and dedication planning this Regional Conference.

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# Brings Professional Development to You

NCTM has designed a series of workshops to help you incorporate the best instructional practices into your mathematics teaching.

The workshops are based on extensive research about student learning outcomes. These workshops come to you and can be customized to address the needs of your school or district.



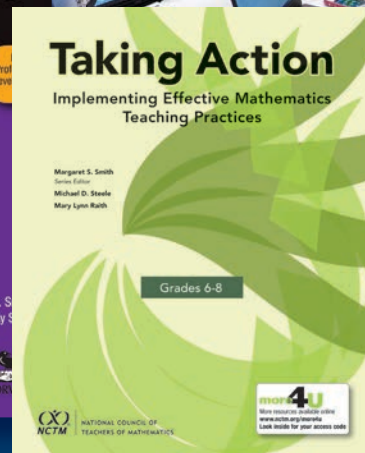
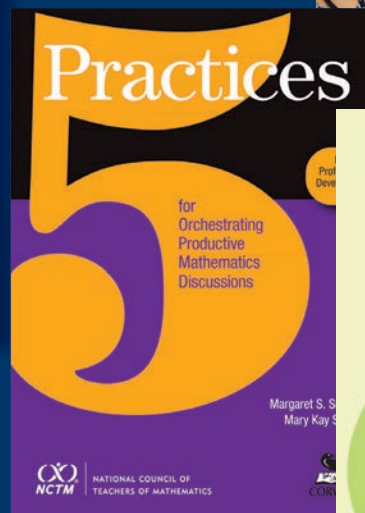
### Current Workshops:

- *Facilitating Meaningful Mathematical Discourse (Pre-K–Grade 12)*
- *Supporting Students’ Productive Struggle (Pre-K–Grade 12)*
- *Algebra Readiness for All Students (Grades 6–8)*
- *Making Mathematics Accessible (Grades 4–8)*

**Coming Soon:** Professional development around the publications *Catalyzing Change* and *5 Practices for Orchestrating Productive Mathematics Discussions*

### Optional Add-Ons:

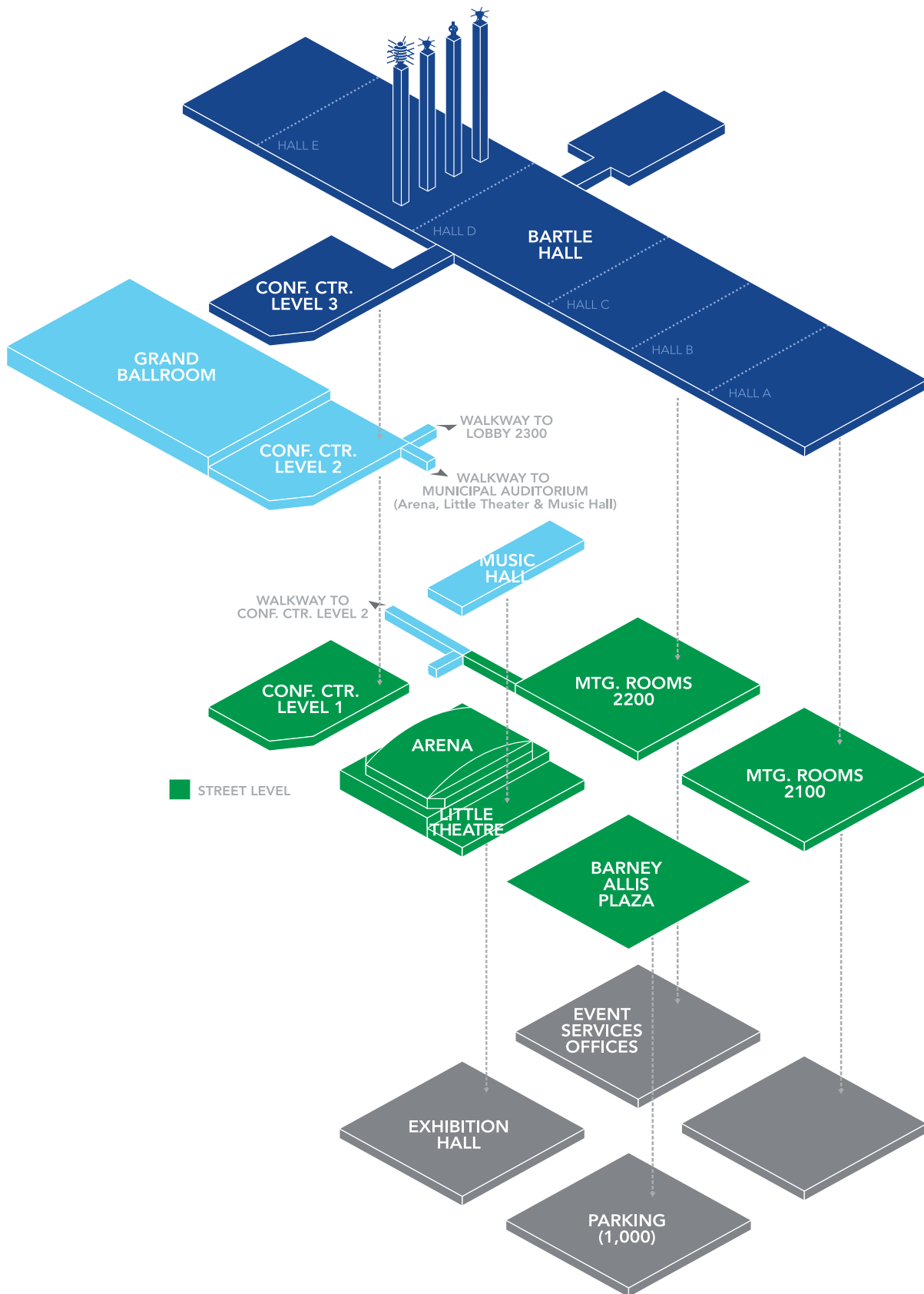
- Membership
- Customized webinars
- Bulk publications
- MyNCTM
- Book study



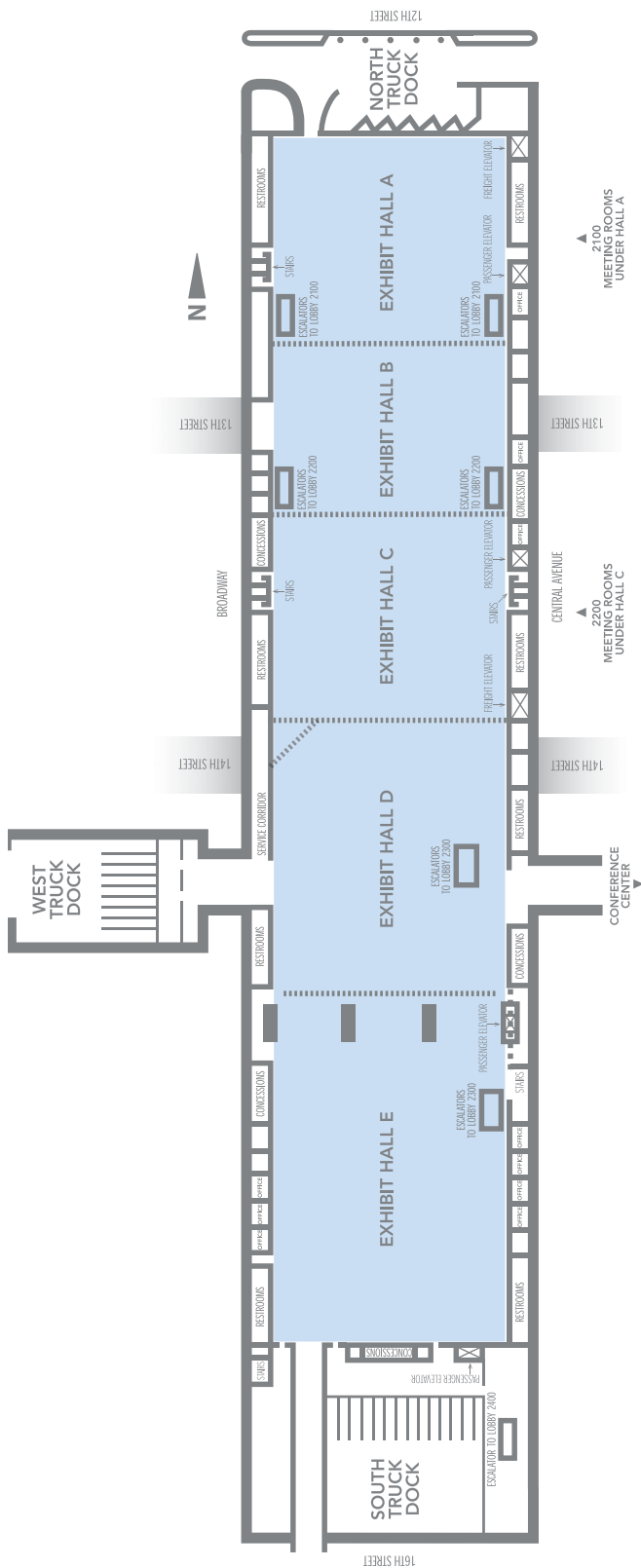
Visit [nctm.org/professionalservices](http://nctm.org/professionalservices) to start building your community of practice.

# Floor Plans

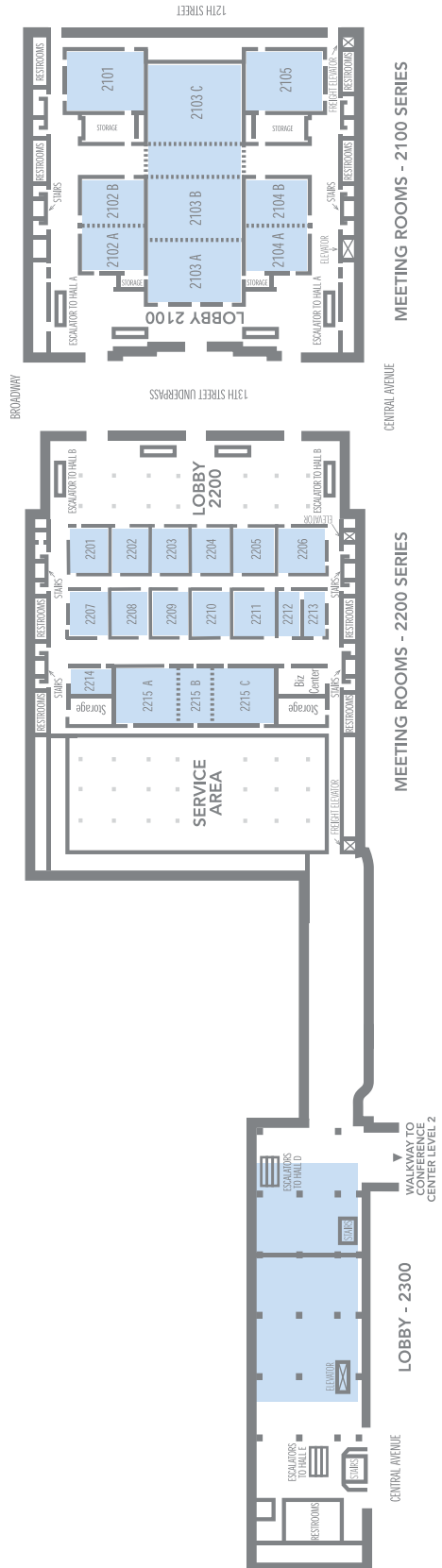
## Kansas City Convention Center Levels



## Kansas City Convention Center Bartle Hall Level 3

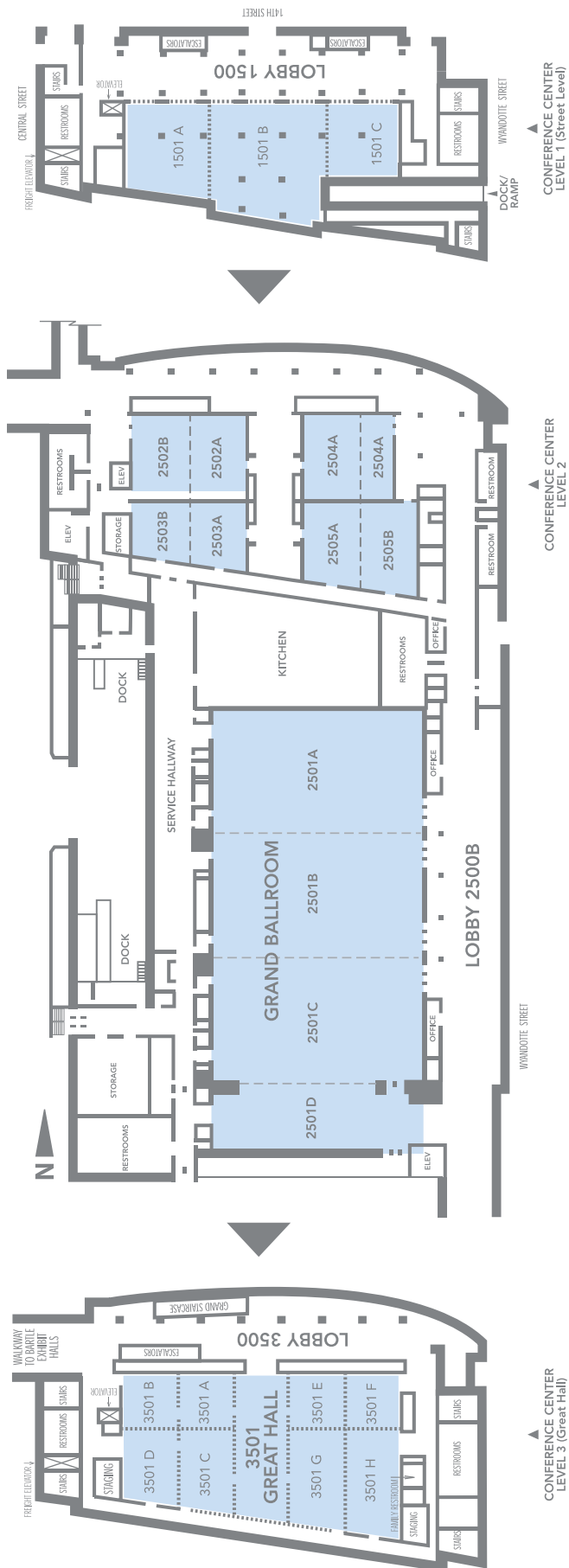


## Kansas City Convention Center Bartle Hall Level 2



# Floor Plans

## Kansas City Convention Center Conference Center and Grand Ballroom





# Exhibit Hall Floor Plan

126
124
122
120
118

127	226
	224
	222
	220
119	218

INFINITY BAR	
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327	426
	424
323	422
321	420
319	418

427
425
423
421
419

114
110

115	214
113	212
111	210
107	
105	204

NCTM Central	
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315	414
313	412
311	410

415
413
411

106
104
100

101
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	406
305	404
	402
301	400

407
405
401

# NCTM Regional Conferences & Expositions 2019

BOSTON | SEPTEMBER 25-27

NASHVILLE | OCTOBER 2-4

SALT LAKE CITY | OCTOBER 16-18

PREMIER MATH EDUCATION EVENTS



## Innovate. Collaborate. Learn.

NCTM Regional Conferences & Expositions are an opportunity to share knowledge and learn with leaders in the field of mathematics education. Gain new strategies to unleash the mathematical mind of every student when you take advantage of superior math resources right on your doorstep.

### What you'll get:

- Innovative ideas you can immediately put to use
- Updates on classroom best practices from recognized innovators
- In-depth discussion about the latest education resources
- Knowledge-sharing with like-minded peers
- Interaction with the latest tools and products in the robust exhibit hall

### Who should attend?

- Pre-K–Grade 12 classroom teachers
- Math coaches
- Administrators
- Math teacher educators
- Preservice teachers
- Math specialists

Join NCTM in Boston, Nashville, or Salt Lake City and discover the tools that will help you promote the mathematical habits of mind that will lead your students to college and career success.

**Save the Date!**

Learn more at  
[nctm.org/regionals](http://nctm.org/regionals)  
and follow us on



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#NCTMregionals



## A

### **Amplify Booth 313**

Brooklyn, New York  
[www.amplify.com](http://www.amplify.com)

Amplify is reimagining the way teachers teach and students learn. Amplify Fractions is our new digital math program that offers a new approach to learning fractions through a unique blend of adaptive learning and interactive storytelling. Through story-driven lessons, fractions are taught with real-world context, purpose, and humor. Along with personalized feedback and unlimited practice, Amplify Fractions truly engages students helping them master—and deeply understand—fractions.

### **Ascend Education**

#### **Booth 414**

Lake St. Louis, Missouri  
314-229-4493  
[ascendmath.com](http://ascendmath.com)

Ascend Math is intensive math intervention that: Provides a unique study path for each student beginning at each student's functional grade level • Delivers a unique study path through each student's individual skill gaps at every grade level • Provides a unique study path for each student reaching below grade level and continuing through skill gaps at each level • Provides an individual study plan for each student reaching below grade level with a unique path through skill gaps at each level.

## B

### **Bach Company Booth 111**

Palo Alto, California  
[www.BachCompany.com](http://www.BachCompany.com)

Founded in 1973, The Bach Company has over 40 years of experience in serving the education community and is one of the largest educational dealers in the United States. Our pricing and service cannot be beat! Product lines include Texas Instruments, Casio, HP, Sharp, Stokes Publishing, Top Rhino, Vernier, Duracell, Energizer, Sony, Kryptonite, and MasterLock. Send us your requests for bid pricing. We will not be undersold!

### **Big Ideas Learning, LLC**

#### **Booth 101**

Erie, Pennsylvania  
877-552-7766  
[www.bigideaslearning.com](http://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 comes with a complete and innovative technology package that includes additional resources, customizable online assessments, virtual tools and manipulatives, skills practice, and much more. Big Ideas Math truly gives you the power to reach every student in your classroom! Visit us at booth 101 to learn more!

### **Borenson and Associates, Inc.**

#### **Booth 405**

Allentown, Pennsylvania  
800-993-6284  
[www.borenson.com](http://www.borenson.com)

Borenson and Associates, Inc. seek to make algebra and fraction concepts visual and intuitive for elementary and middle school students. The popular Hands-On Equations® program for learning basic algebra has now been used by more than a million students. In addition, more than 50,000 teachers of grades 3–8 have attended the popular Making Algebra Child's Play® workshop. Visit our booth to see how we demystify the teaching of algebra and help teachers and students make sense of fractions.

### **Box Cars & One-Eyed Jacks Inc**

#### **Booth 321**

Edmonton, Alberta, Canada  
866-342-3386  
[boxcarsandoneeyedjacks.com](http://boxcarsandoneeyedjacks.com)

Box Cars and One-Eyed Jacks is the leader when it comes to math games. All of our award-winning K–10 resources are correlated to the Common Core standards and are used across the country. We are one of the leading suppliers of dice, cards, dominoes, and other math manipulatives. The Box Cars consulting team provides the best hands-on training in the country when it comes to games as a teaching strategy. We offer half, full, and intensive schoolwide trainings.

## C

### **Casio America, Inc.**

#### **Booth 104**

Dover, New Jersey  
973-361-5400  
[casio.com](http://casio.com)

CASIO® has a full line of calculators for every level of education. As a leading producer of graphing, scientific and basic calculators, CASIO calculators are easy-to-use and their time-saving operation makes it easier for students to learn. CASIO also provides calculator emulators, print materials and professional development for a total math solution. To see the full line of easy-to-use, cost-savings CASIO Calculators, visit: [www.casioeducation.com](http://www.casioeducation.com).

### **CPM Educational Program**

#### **Booth 400**

Elk Grove, California  
916-638-1145  
[www.cpm.org](http://www.cpm.org)

CPM offers grades 6–12 mathematics textbooks that use problem based learning in student centered classrooms and supports it with funded professional development. The Core Connections series © 2013–2015 is 100-percent aligned with CCSS content and practices. High school books offer both traditional and integrated pathways. Visit our booth and receive free access to the curriculum.

### **Curriculum Associates**

#### **Booth 110**

North Billerica, Massachusetts  
978-313-1269  
[www.CurriculumAssociates.com](http://www.CurriculumAssociates.com)

Founded in 1969, Curriculum Associates creates research-based print and online instructional materials, screens and assessments, and data management tools. The company's products and outstanding customer service provide teachers and administrators with the resources necessary for teaching diverse student populations and fostering learning for all students. Learn more at [www.curriculumassociates.com](http://www.curriculumassociates.com).

## D

### **Didax Inc**

#### **Booth 105**

Rowley, Massachusetts  
978-997-4385  
[www.didax.com](http://www.didax.com)

Didax creates innovative hands-on resources to improve the teaching of mathematics. Our materials include books, manipulatives, and more for pre-K–grade 12. In addition, we work with Great Minds, the creators of Eureka Math™, 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 online assessment system, Assessing Math Concepts™ and the instructional program Developing Number Concepts.

### **DreamBox Learning**

#### **Booth 319**

Bellevue, Washington  
877-451-7845 x509  
[www.dreambox.com](http://www.dreambox.com)

DreamBox® Learning provides a deeply personalized K–8 math learning experience with lessons that differentiate for the highest levels of student achievement. Driven by Intelligent Adaptive Learning™ technology, students benefit from a rigorous curriculum in English and Spanish and embedded formative assessments. The result is a game-like experience that students love, actionable data that supports teachers so they can be powerful coaches, and outcomes administrators are proud to share.

# Exhibitor Directory

## E

### **EAI Education**

#### **Booth 406**

Oakland, New Jersey  
800-770-8010

[www.eaieducation.com](http://www.eaieducation.com)

Your one-stop source for Math manipulatives, classroom resources, educational games, calculators, STEM products and teaching aides for pre-K–grade 12. Stop by our booth to see our NEW products for 2018, watch exciting product demonstrations, enter to win prizes, and browse a selection of our most popular games and resources available for purchase. Come learn how EAI Education can create custom manipulative kits to complement your curriculum and SAVE your district funding.

### **ETA hand2mind**

#### **Booth 418**

Vernon Hills, Illinois  
847-968-5204

[www.hand2mind.com](http://www.hand2mind.com)

Children learn best by doing! Visit our booth to learn more about ETA hand2mind's most-loved programs and manipulatives. Discover simple solutions to integrate hands-on learning into your classroom for daily math fluency, differentiated instruction, guided lessons, and more. Learn about fun, NEW ways to use the ETA hand2mind manipulatives you already have in your classroom and get a sneak peek at exciting new products, too.

### **Eureka Math by Great Minds**

#### **Booth 106**

Washington, D.C.  
202-223-1854

[www.eureka-math.org](http://www.eureka-math.org)

Eureka Math (EngageNY) was written by teachers and mathematicians who took great care to present math in a logical progression from pre-K through grade 12. Eureka works to establish conceptual understanding first, to reduce gaps in student learning and instill persistence in problem solving, preparing students to understand advanced math and apply it in the real world. Eureka Math is a full solution—a comprehensive curriculum, professional development, print materials, digital tools, and support.

### **ExploreLearning**

#### **Booth 214**

Charlottesville, Virginia  
866-882-4141

[www.explorelearning.com](http://www.explorelearning.com)

ExploreLearning develops online solutions to improve student learning in math and science. ExploreLearning Gizmos are the world's largest library of interactive, online simulations for math and science in grades 3–12. ExploreLearning Reflex is the most powerful solution available for math fact fluency. Gizmos and Reflex bring research-proven instructional strategies to classrooms around the world.

## G

### **Geyer Instructional Products**

#### **Booth 118**

Cincinnati, Ohio  
513-527-2462

[www.geyerinstructional.com](http://www.geyerinstructional.com)

We offer a complete line of math aids, math supplies, and math equipment for the middle and high school classroom. Many of our products are exclusively produced by Geyer! We specialize in graph paper, graphing and measurement tools, dry erase products, and posters. We also carry books, games, and general school supplies. Purchase Orders Accepted. Check Us out online at [www.geyerinstructional.com](http://www.geyerinstructional.com)

## H

### **Houghton Mifflin Harcourt/ Heinemann**

#### **Booth 100**

Austin, Texas  
212-343-6969

[www.hmhc.com](http://www.hmhc.com)

Houghton Mifflin Harcourt 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.

## I

### **Imagine Learning, Inc.**

#### **Booth 107**

Provo, Utah  
801-377-5071 x4434

[www.imaginelearning.com](http://www.imaginelearning.com)

Imagine Math is a rigorous and adaptive supplemental math curriculum that supports student-centered learning. IM offers live 1:1 differentiated instruction from certified math teachers. Students with limited success can develop the essential foundations and conceptual understanding needed to confidently move forward. Through our adaptiveness, students learn in their zone of proximal development. Learning is supported by meaningful practice and the application of knowledge at the conceptual level.

## J

### **Japan Math Corp**

#### **Booth 311**

Chicago, Illinois  
312-631-3750

[www.japan-math.com](http://www.japan-math.com)

We are the U.S. subsidiary of a leading provider of learning materials in Japan, founded in 1933. For over 80 years we have been supporting the advancement of Japanese public education. Our mission is to provide quality education to children in all kinds of environments. Education fosters our children and paves the way for our society's future. Here at Japan Math Corp., we provide high-quality education and learning materials for children to help them build a brighter future.

## M

### **Mathspace**

#### **Booth 218**

New York, New York  
718-510-2582

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## MOEMS

### Booth 402

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## MTBoS: Math Twitter Blogosphere

### Booth 424

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[Explore.MTBoS.wordpress.com](http://Explore.MTBoS.wordpress.com)

The MTBoS is an informal network of math teachers forming community online through Twitter and blogs. We've built resources, curricula, and websites; and we've co-authored books. We run workshops, problem-solving groups, a weekly "department meeting" via webinar, and Twitter Math Camp. We are passionate teachers who take pride in freely sharing our ideas. Come meet fellow teachers who use the Internet to grow professionally. Browse the resources we've made. Even start your own Twitter account or blog!

## N

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### Booth 422

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[www.mathleadership.org](http://www.mathleadership.org)

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## NCTM Equity Affiliates

### Booth 420

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310-422-9277

[www.todos-math.org](http://www.todos-math.org)

[www.bannekermath.org](http://www.bannekermath.org)

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## O

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[www.origoeducation.com](http://www.origoeducation.com)

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## University of Missouri

### Booth 224

Columbia, Missouri  
[online.missouri.edu/MathMED](http://online.missouri.edu/MathMED)

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## University of Notre Dame Center for STEM Education

### Booth 220

Notre Dame, Indiana  
574-631-1131

[www.stemeducation.nd.edu](http://www.stemeducation.nd.edu)

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- A**
- Acker-Ramirez, Cyndia . . . 5, 109  
 Aion, Justin . . . 57, 125  
 Allison, Courtney . . . 55  
 Amberly, Blair . . . 53  
 Amplify Education . . . 31.2  
 Anderson, Shannon . . . 114  
 Andrews, Delise . . . 197  
 Archibald, Becky . . . 49  
 Ashurst, John . . . 100
- B**
- Bailey, Natalia . . . 183  
 Bangerter, Margaret . . . 152  
 Barnaby, Kristina . . . 52  
 Barnes, David . . . 39, 161  
 Barnett, Joann . . . 220  
 Bay-Williams, Jennifer . . . 13, 166  
 Beatini, Thomas . . . 142  
 Beck, Marty . . . 51  
 Beckers, Blu . . . 64  
 Bell, Clare . . . 78, 105  
 Berks, Darla . . . 73  
 Berry III, Robert . . . 50  
 Bezaire, Joel . . . 76  
 Bill, Victoria . . . 153  
 Bluemel, Lori . . . 80  
 Boiselle, Ellen . . . 222  
 Bokar, Anthony . . . 212  
 Bolognese, Chris . . . 160  
 Bond, Jennifer . . . 113  
 Bonebrake, Kelly . . . 134  
 Bordic, Jennifer . . . 213  
 Boston, Melissa . . . 71  
 Boswell, Laurie . . . 34  
 Bowdish, William . . . 219  
 Brendefur, Jonathan . . . 138, 207  
 Breur, Jessica . . . 38  
 Bruton, Rebecca . . . 121  
 Bryant, Brian . . . 28  
 Bryant, Cynthia (Cindy) . . . 179  
 Bryant, Diane . . . 28  
 Burnett, James . . . 110, 146  
 Burrill, Gail . . . 7, 46  
 Bush, Sarah . . . 35
- C**
- Callan, Brooke . . . 190  
 Callaway, Rebecca . . . 185  
 Campbell, Judith . . . 74  
 Cannon, Marilyn . . . 152  
 Cesa, Dave . . . 27, 54  
 Childs, Kristopher . . . 106, 209  
 Chipman, Sue . . . 68  
 Cho, Hoyun . . . 58, 120  
 Clements, Douglas . . . 9, 69  
 Clemmer, Kathy . . . 5, 109  
 Combs, Emily . . . 42  
 Connelly, Ralph . . . 87  
 Cope Bondurant, Liza . . . 123  
 Costello, David . . . 12  
 Courter, Wendy . . . 155  
 Covarrubias, Alexis . . . 41  
 CPM Educational Program . . . 31.1  
 Crowley, Melissa . . . 118
- Cuesta, Teresita . . . 14  
 Curriculum Associates . . . 73.2, 94.2
- D**
- D'Agostino, Joseph . . . 225  
 Darden, Christine . . . 1  
 Davis, Alicia . . . 156  
 Davis, Angie . . . 187  
 de Araujo, Zandra . . . 26, 128  
 Delano Moore, Sara . . . 145  
 Diehl, Stephanie . . . 62  
 Dillon, Frederick . . . 71, 94, 173, 212  
 Dolence, Sarah . . . 178  
 Dougherty, Barbara . . . 83  
 Droba, Christine . . . 191  
 Dubinsky, Nina . . . 32, 63, 103  
 Dwiggin, Amy . . . 171  
 Dykema, Kevin . . . 89, 169
- E**
- Ebert, David . . . 162  
 Economopoulos, Karen . . . 97  
 Eichhorn, Melinda . . . 222  
 Eller, Kyle . . . 94, 173  
 Eskilson, Edith . . . 180  
 Estes, Jana . . . 138, 207  
 ETA hand2mind . . . 52.2  
 Ewing, David . . . 224
- F**
- Fennell, Francis (Skip) . . . 79  
 Fernandes, Anthony . . . 214  
 Flores, Nicole . . . 41, 77, 177  
 Forest, Annie . . . 211  
 Fowler, Stephanie . . . 85  
 Fradkin, Sasha . . . 40  
 Frederking, Myka . . . 147
- G**
- Gann, Kim . . . 171  
 Gautreau, Tracy . . . 44  
 Gay, Susan . . . 31, 61, 119  
 Gennuso, Penny . . . 188  
 George, Eric . . . 186  
 Ging, Elizabeth . . . 91  
 Glenn-White, Vernita . . . 106, 209  
 Glover Jr, Eugene T . . . 24  
 Gold, Lindsay . . . 100  
 Goldberg, Marla . . . 114  
 Golden, John . . . 11  
 Goodspeed, Eileen . . . 114, 131  
 Graham, Kory . . . 115
- H**
- Haines, Cara . . . 121, 184  
 Haistings, Jeanine . . . 134  
 Hallemeier, Constance . . . 202  
 Hamilton, Connie . . . 36, 68  
 Han, Jaepil . . . 26  
 Hand, Amy . . . 210  
 Hands, Krista . . . 116  
 Harr, Lauren . . . 70  
 Harris, Pamela . . . 17  
 Harrison, Kevin . . . 225
- Hart, Michael . . . 181  
 Hartwig, Peggy . . . 208  
 Harvell, Mandy . . . 118  
 Hedgepeth, Shauna . . . 223  
 Henderson, Deedee . . . 137  
 Henry, Lisa . . . 108  
 Hill, Molly . . . 217  
 Holland, Mark . . . 181  
 Hopkins, Kevin . . . 151  
 Houston, Michael . . . 100  
 Howse, Tashana . . . 106, 209  
 Hull Barnes, Lizzy . . . 92  
 Hunt, Jessica . . . 4
- I**
- Ismail, Jacquelyn . . . 206
- J**
- Jain, Darshan . . . 45, 140  
 Japan Math . . . 52.1  
 Jasumback, Lisa . . . 15, 33, 154  
 Jones, Dusty . . . 175
- K**
- Kapolka, David . . . 6  
 Karp, Karen . . . 35, 65, 135  
 Katt, Susan . . . 95  
 Kelemanik, Grace . . . 66  
 Kelly, Margarita . . . 111  
 Killion, Kurt . . . 96  
 Knoell, Donna . . . 19, 199, 218  
 Kobett, Beth . . . 79, 102  
 Koehler, Mike . . . 104  
 Kohn, Heather . . . 168  
 Kowalczyk, Janice . . . 141  
 Krafka, Cheryl . . . 84  
 Kreie, Mark . . . 38  
 Krone, Keith . . . 206  
 Kuehl, Barbara . . . 132  
 Kunze, Andrea . . . 4
- L**
- Lancaster, Ron . . . 144  
 Larson, Christine . . . 20, 215  
 Laskasky, Katie . . . 5, 109  
 Lavoy, Carrie . . . 178, 180  
 Lawrence, Gary . . . 120  
 Leiker, Ashley . . . 148  
 Lemon, Travis . . . 204  
 Liljedahl, Peter . . . 129  
 Lingo, Amy . . . 65  
 Livers, Stefanie . . . 159  
 Logan, Emily . . . 196  
 Love, Jennifer . . . 187  
 Loveless, Susan . . . 30  
 Lucenta, Amy . . . 66
- M**
- Mahoney, Katy . . . 51  
 Makar, Christie . . . 105  
 Males, Joshua . . . 67  
 Masin, Mike . . . 181  
 Mattson, Camille . . . 124  
 McCaffrey, Emily . . . 8  
 McCarty, Holly . . . 18  
 McConnell, Marlena . . . 213
- McCoy, Ann . . . 152  
 McDaniel, Miko . . . 188  
 McGatha, Maggie . . . 166, 189  
 McGinley, Deborah . . . 29, 200  
 McGraw, Jeremiah . . . 133, 167, 196  
 McHenry, Emily . . . 59  
 Medina, Rachel . . . 51  
 Meiners, Amanda . . . 23, 60  
 Merfeld, Dana . . . 133, 167  
 Mittag, Kathleen . . . 117  
 Moon, Natalie . . . 163, 193  
 Morey, Tom . . . 111  
 Muehler, Paula . . . 82  
 Mulligan, Martha . . . 56, 205  
 Mullins, Janet . . . 88  
 Munter, Charles . . . 121, 184
- N**
- Naegele, Jessyca . . . 98  
 Naegele, Melynee . . . 98  
 Neagoy, Monica . . . 227  
 Nho, Christopher . . . 56  
 Nickels, Megan . . . 35, 165
- O**
- Obrycki, Joseph . . . 192  
 Oliver, Carl . . . 75  
 Omohundro Wedekind, Kassia . . . 47  
 Otten, Samuel . . . 26, 101, 128  
 Otterson, Nina . . . 170
- P**
- Patel, Fazila . . . 107  
 Perry, Jill . . . 22, 37  
 Peterson, Ingrid . . . 31, 61, 119  
 Powell, Sarah . . . 93, 226
- Q**
- Quach, Chi . . . 74
- R**
- Ramirez, Nora . . . 198  
 Ranum, Jennifer . . . 80  
 Reardon, Tom . . . 16, 201  
 Reeder, Stephanie . . . 70  
 Reiners, Mike . . . 43, 136  
 Rendon, Sharon . . . 21, 33  
 Rohrbach, Allyson . . . 210  
 Roskop, Crystal . . . 42  
 Ross, Juli . . . 131  
 Rothrock, Katrina . . . 119, 180  
 Roussell, Tracey . . . 163  
 Rumack, Aaron . . . 150  
 Runkel, Beth . . . 77  
 Russo, Mark . . . 149
- S**
- Sadler, Christine . . . 25  
 SanGiovanni, John . . . 139  
 Sanogo, Adrienne . . . 98  
 Sarama, Julie . . . 9, 69  
 Schemmel Keller, Amy . . . 133, 167, 196  
 Schmidt, Anne . . . 156

# Speaker Index

Schrock, Connie . . . . .	194	Stevens, Jennifer . . . . .	88	<b>U</b>		Weymuth, Brandi . . . . .	85
Schwartz, Melinda . . . . .	81, 203	Strickland, Molly . . . . .	96	Urie, Cassidy . . . . .	72	Wilborn, Sandy . . . . .	88
Schweissguth, Amanda . . . . .	193, 216	Strother, Sam . . . . .	138, 207	<b>V</b>		Wilburne, Jane . . . . .	130
Scott, Cheryl . . . . .	147, 174	Su, Francis . . . . .	90	VanVooren, Amber . . . . .	206	Willmore, Craig . . . . .	81
Sencibaugh, Joseph . . . . .	113, 190	Sullivan, Patrick . . . . .	96	Vennebush, Patrick . . . . .	195	Woodruff, Jaclyn . . . . .	176
Sgroi, Richard . . . . .	3	Sutton, Kim . . . . .	48	Vestal, Sharon . . . . .	20, 215	Wray, Jon . . . . .	79
Sheffel, Cris . . . . .	86	<b>T</b>		Vlasnik, Amber . . . . .	73	<b>Y</b>	
Sinclair, Dan . . . . .	113	Tabic, Tanya . . . . .	74	Vozza, Sue Ellen . . . . .	45	Yeo, Sheunghyun . . . . .	86
Small, Marian . . . . .	10	Tang, Greg . . . . .	155.3	<b>W</b>		Yeroshkina, Maryna . . . . .	32, 63, 103
Smith, Jami . . . . .	42	Taylor, Sharon . . . . .	117	Walker, Lane . . . . .	122, 143, 164	Young, Denise . . . . .	127, 158, 221
Smith, Stephanie . . . . .	36	Texas Instruments . . . . .	73.1, 155.2	Walsh, Marissa . . . . .	148	<b>Z</b>	
Snow, Megan . . . . .	112	The Math Learning Center . . . . .	155.1	Walton, Melissa . . . . .	157	Zak-Johnson, Tracey . . . . .	
Spencer, Kim . . . . .	155	Tholen, Alana . . . . .	23, 60	Wehr, Debra . . . . .	182	. . . . .	127, 158, 221
Sponenburgh, Lori . . . . .	44	Tomc, Carrie . . . . .	70	Weiser, Amy . . . . .	182	Zhao, Wenmin . . . . .	101, 128
Steele, Laura . . . . .	25	Turchaninova, Juliat . . . . .	32, 103	West, Heather . . . . .	4		
Steele, Mike . . . . .	172						
Stevens, Elizabeth . . . . .	226						

## Program Advertisers (in alphabetical order)

Big Ideas Learning, LCC . . . . .	8
CPM Educational Program . . . . .	35
Houghton Mifflin Harcourt . . . . .	Back Cover
The Math Learning Center . . . . .	Inside Front Cover, Inside Back Cover

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2019 Annual Meeting & Exposition . . . . .	31
2019 Regional Conferences . . . . .	72

### PROFESSIONAL DEVELOPMENT

NCTM Workshops . . . . .	67
--------------------------	----

### PUBLICATIONS

<i>Catalyzing Change</i> . . . . .	15
Editor of New NCTM Journal . . . . .	64
<i>Mathematics Teacher: Learning and Teaching, Pre-K–12 (MTLT)</i> . . . . .	40





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