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.
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.

nctm.org/kansascity

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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; Web 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
TEACHING & LEARNING: ENGAGING STUDENTS IN MEANINGFUL LEARNING

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

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

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

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

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

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

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

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.
- 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.
- 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 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.
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
- Twitter: @NCTM
- Instagram: @NCTM.math
- Facebook: 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

5:30 P.M.–7:00 P.M.

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

BY RON LARSON AND LAURIE BOSWELL

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GET SOCIAL

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Facebook
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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

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

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 identity 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

Hear what’s new from exhibitors—attend an exhibitor workshop. Look for the symbol throughout the program book.
8:00 A.M.–9:00 A.M.

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
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

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

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

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**8:00 A.M.–9:15 A.M.**

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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

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.
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

“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!

Professional Development Your Way! NCTM also provides customizable professional development related to Catalyzing Change for leaders, schools, and districts.
9:30 A.M.–10:30 A.M.

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: @zdearaugo
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
9:30 A.M.–10:30 A.M.

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 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 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 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 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
9:45 A.M.–11:00 A.M.

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**  
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

2103 B, 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
11:00 A.M.–12:00 P.M.

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 CURRIC 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
11:00 A.M.–12:00 P.M.

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

52.1 CW 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 CW 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 CW 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

Download Speaker Handouts!

View sessions in the mobile app or visit nctm.org/plankc to access available presentation handouts.
11:30 A.M.–12:00 P.M.

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 an 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
1:30 P.M.–2:30 P.M.

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 the 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
Empowering mathematics students and teachers for 28 years through exemplary curriculum, professional development, and leadership

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

We are pleased to support the NCTM Regional Conference in Kansas City. Stop by booth #400 to meet with a CPM mentor teacher, see our materials, and request a preview.

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

MORE MATH FOR MORE PEOPLE
CPM EDUCATIONAL PROGRAM
1:30 P.M.–2:30 P.M.

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
LT², 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
1:30 P.M.–2:30 P.M.

70 ASSESS
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 CW 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**  
**Tools and Technology**  
**Exhibitor Workshop**

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**

1:30 P.M.–2:30 P.M.

**75**  
**Assessment**

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: carololtwitter  
City-As-School, New York, New York

**3501 H, Kansas City Convention Center**

1:30 P.M.–2:30 P.M.

**76**  
**Curriculum**

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**

1:30 P.M.–2:30 P.M.

**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**
1:30 P.M.–2:45 P.M.

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

2505 A, 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

2105, 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

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
The NCTM Annual Meeting & Exposition is ideal for:

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

Empowering the Mathematics Community

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

The latest teaching trends and topics will include:

- **Assessment**: Eliciting and Using Student Thinking
- **Building on Students’ Strengths**: Practices That Challenge, Engage, and Empower
- **Professionalism and Advocacy**
- **Beyond the Classroom Walls**: Empowerment, Access, and Equity
- **Creating Inclusive Classrooms**: Meeting the Needs of Each and Every Student
- **Building Mathematical Knowledge for Teaching**
- **Enhancing Mathematical Thinking** through Reading, Writing, Speaking, and Listening
- **For the Love and Joy of Mathematics**

Learn more at [nctm.org/annual](http://nctm.org/annual) and follow us on [Facebook](https://www.facebook.com), [Instagram](https://www.instagram.com), [LinkedIn](https://www.linkedin.com), [Pinterest](https://www.pinterest.com), [Twitter](https://twitter.com), [YouTube](https://www.youtube.com) #NCTMannual
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

3:15 P.M.–4:30 P.M.

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

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
3:15 P.M.–4:30 P.M.

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: @MNimMath  
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.
3:15 P.M.–4:30 P.M.

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: @lindsayyanngold
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
Juliat 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: @thowsen_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 Geometry through Zaghraf (Islamic Art)
General Interest Session

Zaghraf 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 Zaghraf 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
4:30 P.M.–5:30 P.M.

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
5:00 P.M.–5:30 P.M.

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 Standard 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

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

Conference App
nctm.org/confapp

Twitter
@NCTM

Instagram
@NCTM.math

Facebook
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 demonstrates 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: @pgliljedahl  
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**
8:00 A.M.–9:00 A.M.

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

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

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

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.
8:00 A.M.–9:15 A.M.

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
9:30 A.M.–10:30 A.M.

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 Bangerter
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@BillVictoria
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 ☢ CW 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 ☢ CW 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
9:45 A.M.–11:00 A.M.

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
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 Roussell
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^2 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!
11:00 A.M.–12:00 P.M.

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 Dwiggins
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**  
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**  
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**  
“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**  
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
11:30 A.M.–12:00 P.M.

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
11:30 A.M.–12:00 P.M.

182 \textbf{SPECIAL}
Math Intervention That Works!

\textbf{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 \textbf{T&L}
Open-Ended Problems: Unlocking Potential in Middle School Students

\textbf{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 \textbf{ASSESS}
Reflecting on District Leaders’ Rationalizations for the Standardized Testing of Children

\textbf{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 \textbf{DIFFER}
Research on Social and Cognitive Influences That Impact Teacher Candidates’ Choice to Pursue Math Ed

\textbf{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 \textbf{CURRIC}
STEM—Incorporating the “S”, “T,” and “E” Into Your Classroom: Reflections from a Former Engineer

\textbf{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
1:30 P.M.–2:30 P.M.

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

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

Looking for lessons, activities, and teacher resources? Check out [nctm.org/crcc](http://nctm.org/crcc).
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: @themathgirl
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
1:30 P.M.–2:45 P.M.

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

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

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

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

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

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

NCTM 2018 Regional Conference & Exposition
3:00 P.M.—4:00 P.M.

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

208  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

210  T&L
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

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

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
3:15 P.M.–4:30 P.M.

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 Boiselle
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 
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 
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 
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 
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 before December 1, 2018.
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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.

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.

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.
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202-223-1854
www.eureka-math.org

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MTBoS: Math Twitter Blogosphere  
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Salem, Massachusetts  
879-528-4673  
Explore.MTBoS.wordpress.com

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*Note: PD time earned should be the time actually spent in sessions and/or workshops.*  

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**TOTAL Professional Development Hours Accrued:**  

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

Ken Krehbiel  
Executive Director, NCTM  
Robert Q. Berry, III  
President, NCTM  

*Please check with your state education agency and local administration to determine whether these conference hours can be used for professional development credits.*
A math intervention program for K–5

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

Join our session about Bridges Intervention on Saturday, Nov. 3 from 9:30 to 10:30 in Room 3501 B or visit booth 401 to learn more.

mathlearningcenter.org/intervention
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