Celebrating 100 Years
LOOKING BACK AND MOVING FORWARD

Program Book

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

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CITY __________________________ STATE ________ ZIP ________

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HOSTS
Illinois Council of Teachers of Mathematics
Metropolitan Mathematics Club of Chicago

MEETING FACILITY
All Annual Meeting presentations will be held at the McCormick Place - Lakeside Center. See pages 110-117 for floor plans.

REGISTRATION
Wednesday 7:00 a.m. - 7:00 p.m.
Thursday 7:00 a.m. - 5:00 p.m.
Friday 7:00 a.m. - 5:00 p.m.
Saturday 7:00 a.m. - 12:00 p.m.

EXHIBITS
Thursday 9:00 a.m. - 5:00 p.m.
Friday 9:00 a.m. - 5:00 p.m.
Dedicated exhibit hall time is scheduled from 12:00 p.m. to 1:00 p.m. on Thursday and Friday.

NCTM CENTRAL
Wednesday 10:00 a.m. - 6:00 p.m.
Thursday 9:00 a.m. - 5:00 p.m.
Friday 9:00 a.m. - 5:00 p.m.

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Printed in U.S.A.
PROGRAM CHAIR’S WELCOME
Welcome to this very special Centennial Annual Meeting for mathematics education. Turning 100 is a BIG deal, so we plan to celebrate in a BIG way, throughout this conference and throughout the rest of the year!

Whether this is your first or 50th NCTM Annual Meeting, you are in for a professional learning treat. As always, you’ll find a wide variety of sessions, workshops, bursts, and networking opportunities to arm you with ideas, resources, tools, and materials to use with your students and share with colleagues. Opening speaker Christine Darden will kick off the celebration, and closing speaker Eugenia Cheng will encourage us as we move forward beyond the conference.

And let’s not forget about the additional celebratory activities, including attempting a GUINNESS WORLD RECORDS® title for the largest pattern blocks mosaic, celebrating NCTM history in song with Zalman Usiskin, and recognizing song contest winners on Thursday evening! We’ll also be highlighting Mathical Award authors in burst sessions and the reading room on both Thursday and Friday.

The Program Committee has also worked tirelessly to put together a diverse program with a range of topics and speakers for you to choose from. And don’t forget to visit the Exhibit Hall, where you’ll have the opportunity to visit with vendors and learn about resources for teaching and learning mathematics.

Borrowing from our celebration strands . . . we hope as we look back and move forward during our celebration event that you’ll experience the depth and excitement of mathematics as you explore the implementation of effective teaching practices to build student agency and foster student identity—all of which can create positive change. Enjoy your time here celebrating NCTM and mathematics education!

HOST AFFILIATES LIAISON’S WELCOME
Welcome to the NCTM Centennial Annual Meeting. We at Chicago Public Schools are extremely excited to host you in Chicago and encourage you to explore our great city. Feel free to check in with the conference hosts, the Illinois Council of Teachers of Mathematics and the Metropolitan Mathematics Club of Chicago, to discuss the exciting things happening in CPS or for a friendly restaurant recommendation. We look forward to learning with you!

PRESIDENT’S WELCOME
Welcome to the NCTM Centennial Annual Meeting and Exposition! NCTM’s rich 100-year history is a credit to the strength of its members, the thousands of volunteers who have given their time and expertise over the years, and visionary Board members and leaders. Together they are responsible for making the Council an influential and respected organization in the field of mathematics education. Simply put, NCTM is “Truly Wonderful and Getting Better.”

Our theme for the Centennial Annual Meeting, “Celebrating 100 Years—Looking Back and Moving Forward,” gives us the opportunity to acknowledge the “Truly Wonderful” legacy of the Council while at the same time looking toward the future to “Get Better.” As NCTM celebrates its centennial, we should look back and celebrate the rich legacy the Council has developed over its first 100 years.

Thank you for attending this special celebration. My hope for you is that we grow and learn together through our sense of community. If you are on social media please use #NCTM100 to post your learning, pictures, selfies, and reflections. Let’s memorialize this special celebration together.

EXECUTIVE DIRECTOR’S WELCOME
On behalf of the NCTM staff, welcome to Chicago and a conference that happens once in a lifetime. It’s exciting to see all the planning and work of the past two years come together in a celebration for thousands of attendees on the occasion of our centennial.

Whether you’re part of the attempt to set a GUINNESS WORLD RECORDS title, exploring a 100-year timeline of NCTM accomplishments and significant events in math education, or attending an evening celebrating NCTM and mathematics through music, you’re part of a program that sets this Centennial Annual Meeting apart. And we’ll kick it off in style at the Opening Session.

Looking back, there is plenty to celebrate. Your participation in the Centennial Annual Meeting not only contributes to a brighter future for today’s students, it’s also moving NCTM forward.
Meeting Information

Types of Presentations

All presentations are open to all conference participants. Admission is on a first-come, first-served basis. Saving seats is not permitted.

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

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

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

Exhibitor Workshops (60 minutes) allow exhibitors to showcase their products and services. Rooms are set in either theater or classroom style.

Sunrise Yoga

Namaste! On Thursday, April 2, and Friday, April 3, from 6:00 a.m. to 7:00 a.m., come start the day with fellow yogis. The hour-long, all-levels yoga flow class will be located in the McCormick Place – South Building 4th level at 406 Lobby. Classes are limited to 50 attendees. The class fee is $20, which includes a yoga mat designed for math lovers. Advance registration is required. Space is limited, with on-site registration available. To register, please visit the NCTM Registration Desk the day prior to your class.

Annual Meeting Overview & Orientation

Whether this is your first NCTM Annual Meeting or your twentieth, we have something for you! Hosted by members of the Board of Directors, this orientation will help you get the most out of your time at the Centennial Annual Meeting. Learn about the new features of this year’s meeting or discover something you missed at previous ones. Find out how to navigate presentations, learn to use our conference app, and network with other attendees.

Wednesday Presentation #1 4:00 p.m.–4:30 p.m. E354 B (McCormick Place – Lakeside Center)
Thursday Presentation #3 7:15 a.m.–7:45 a.m. E270 (McCormick Place – Lakeside Center)

Grade Bands

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

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

PiRun

On Saturday, April 4, at 6:00 a.m., we’ll start the final day of the Centennial Annual Meeting & Exposition with a 3.14-km fun run. (Preregistration required.)
Focus Strands

IMPLEMENT THE EFFECTIVE TEACHING PRACTICES

Sessions in this strand will highlight the eight Effective Mathematics Teaching Practices as defined in Principles to Actions: Ensuring Mathematical Success for All, with classroom-tested activities that allow all students to engage with and find success in mathematics. Examples include sessions that promote conceptual understanding and focus on strategic competence, and that support lasting learning, the choice of appropriate tools (including technological ones), the use of assessment to promote student learning, and an emphasis on effective intervention. Sessions will include evidence of classroom implementation, such as samples of student work or classroom videos.

EXPERIENCE THE DEPTH AND EXCITEMENT OF MATHEMATICS

“I never thought about _______ that way!” Sessions about experiencing the wonder, joy, and beauty of mathematics are appropriate for this strand. Sessions in this strand will help participants build deeper understanding of essential ideas and concepts about fundamental topics in mathematics. Sessions could also address new topics in mathematics that may be of interest to K-12 teachers (e.g., computational thinking, mathematical modeling), trajectories of big ideas, or important connections to other disciplines (e.g., design and engineering).

LOOK BACK AND MOVE FORWARD: A CENTENNIAL VIEW

This centennial event is a time for celebrating the successes of NCTM and the progress of mathematics education. Sessions in this strand will offer a centennial perspective on what has been done and learned about teaching and learning as well as on those obstacles that face our profession, and visions for mathematics education for the next 100 years.

CREATE POSITIVE CHANGE

Are you looking to create positive change with regard to mathematics teaching and learning? Sessions in the strand will explore ideas related to enhancing mathematics learning cultures in classrooms, schools, districts, and beyond. One such idea involves developing leadership: seeing teachers as leaders; encouraging the work of those who support teachers, such as instructional coaches; and clarifying the multifaceted role of school administrators in supporting mathematics teaching and learning. Effective professional learning structures and tools will be explored. This strand also provides space to examine systemic structures that promote sound, equitable mathematics teaching and learning for all students and ways to engage families, communities, and other stakeholders in the process.

BUILD STUDENT AGENCY, FOSTER STUDENT IDENTITY, AND PROMOTE SOCIAL CHANGE

This strand focuses on developing ways to build student agency, foster student mathematics identities, and promote social change. Sessions in this strand will focus on strategies that support and empower students to take risks and position them as doers of mathematics. Sessions include but are not limited to discussing equitable classroom norms and routines; creating spaces where students are socially and emotionally safe to engage in mathematics; and using mathematics to understand and critique the world.

NEW TEACHER

Get insights, strategies, and techniques for new, early-career, and preservice teachers that will support your growth and success. Come join us!
Wi-Fi Access
Complimentary Wi-Fi will be available in the McCormick Place – Lakeside Center.
Username: NCTM
Password: NCTM100

Mobile App
The NCTM app keeps you connected with every aspect of the Annual Meeting including sessions, speakers, and exhibits. This free app allows you to view the Exhibit Hall floor plan, highlight your favorite presentations, get a Twitter feed update (hashtag #NCTM100), rate presentations, and connect with other attendees. Visit nctm.org/confapp for more information.

In addition, the NCTM app connects to the mobile itinerary planner so you can personalize and keep track of everything in one convenient place.

Registration and Access to Presentations
Registration will be located in the McCormick Place – Lakeside Center in Exhibit Hall D. You must wear your badge to enter all presentations and the NCTM Exhibit Hall. You will need to show a picture ID to have your badge reprinted.

By registering for the NCTM Centennial Annual Meeting & Exposition, participants grant NCTM the right to use, in promotional materials, their likeness or voice as recorded on, or transferred to videotape, film, slides, audiotape, or other media.

Infinity Bar
The Infinity Bar gives you an opportunity to talk directly with highlighted conference speakers about issues related to mathematics education. Space is limited and time slots fill up fast. You can sign up in advance online or at the Infinity Bar on-site.

Speaker Handouts
Attendees can access available electronic speaker presentation handouts through the mobile app and itinerary planner.

Itinerary Planner
The itinerary planner is a great way to search the conference program book, set up your schedule, and download presentation handouts. The itinerary planner is updated with the latest program changes and presentation information. Visit nctm.org/Plan100.

Program Updates
Check online for a digital copy of the program updates including all of the latest changes, cancellations, and additions!

Bookstore
Save 25% off the list price on all purchases made at the on-site NCTM Bookstore in Exhibit Hall D of the McCormick Place – Lakeside Center. You’ll find a selection of NCTM’s acclaimed books and publications as well as a variety of mathematics-themed specialty products that make great gifts, prizes, and incentives. Preview the store at nctm.org/catalog.

Note on Sales Tax Exemptions: To qualify for sales tax exemption in the NCTM Bookstore, you must furnish a copy of a Illinois tax exemption certificate, issued by the state, at the time of purchase. The law requires NCTM to keep a copy of the certificate, which we cannot return to you.

The NCTM Bookstore is not equipped to handle shipping from the meeting site. FedEx on level 2 of the McCormick Place – Lakeside Center is ready to assist you with your shipping needs.
Performance Tasks, Rubrics, and Anchor Papers That Improve Student Learning

Problem Solving for the 21st Century

- **800+ problem-solving performance tasks** to develop and assess students’ critical thinking and reasoning skills.

- **Preliminary Planning Sheets** serve as the teacher’s guide to the task, outlining the math concepts and skills that students need to know as well as alternative strategies they may use to solve the problem. These also serve as a valuable assessment tool.

- **Assessment rubrics** provide teachers with clear guidelines for evaluating their students’ understanding and providing meaningful feedback.

- **Differentiated tasks** for instruction, exploration, and formative assessment.

- **Corresponding summative assessments** include student anchor papers and scoring rationales.

- **Student rubrics** provide a tool for self- and peer-assessment.

- **Customizations** available for CCSSM and non-CCSSM based curriculums.

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RICH MATH TASKS

ASSESSMENT RUBRIC

STUDENT WORK SAMPLES

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NCTM Central
Visit NCTM Central in Exhibit Hall D of the McCormick Place – Lakeside Center during exhibit hours to learn how NCTM supports you and the field of mathematics education:

- Get sample journals and more at Member Services. 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).
- Explore NCTM’s Classroom Resources and learn about NCTM’s collection of lesson plans, problems, and more.
- Join current and past NCTM presidents and board members as they share Tasks That Transcend Time in the Networking Lounge Presentation Area. A presentation schedule is available on the NCTM Central mobile app, and on the Wednesday schedule and pages 17 and 57.
- Learn about NCTM’s Professional Development offerings, including upcoming events (Regional and Annual Conferences) and NCTM’s new Professional Learning Services.
- Engage with like-minded attendees in the Shared Interest Groups. A group schedule is available on the NCTM Central mobile app, and on the Wednesday schedule and pages 17 and 57.

Celebrate 100 years by visiting NCTM Central and become eligible to win a prize.

Bag and Coat Check Service
A bag and coat check service is available for you to store your belongings during conference hours for a nominal fee. During conference hours Wednesday–Saturday, you can check your items at the bag/coat check, located next to NCTM Annual Meeting Registration in Exhibit Hall D of the McCormick Place – Lakeside Center. Please pick up all items each day by closing time; you may not leave items overnight.

Information Booth
There will be an NCTM Information Booth on level 3 of the McCormick Place – Lakeside Center. Convention staff will be available to answer your questions.

Lost-and-Found
You may retrieve or turn in lost-and-found items at the NCTM Information Booth in McCormick Place – Lakeside Center. At the end of the conference, lost-and-found items will be turned over to Convention Center Security.

Mother’s Room
A Mother’s Pod is located on the level 2 of McCormick Place – Lakeside Center and level 2.5 of McCormick Place – South Building. There is a sign on the pod with information to download the Mamava App.

First Aid
A first aid station will be staffed in the NCTM Exhibit Hall during the conference. If you need medical services while in Chicago, please check with your hotel concierge for the closest medical facilities. For any medical emergency, call 911 without hesitation.

For Your Child’s Safety
During installation and dismantle, no one under 16 years old will be allowed in the Exhibit Hall. 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.
Exhibit Hall Information
Visit the NCTM Exhibit Hall to explore, try out, and purchase products and services for your classroom or to help you meet your career goals. Meet the people who produce these products, get fresh ideas, and see how products work. The hall will be open on:

- Thursday 9:00 a.m.–5:00 p.m.
- Friday 9:00 a.m.–5:00 p.m.

Dedicated Exhibit Hall time is scheduled 12:00 p.m.–1:00 p.m. on Thursday and Friday. Concessions will be available in the back of the NCTM Exhibit Hall. Check out the map of the Exhibit Hall on pages 116–117 and the Exhibitor Directory on pages 118-126.

World Record: GUINNESS WORLD RECORDS® Title Attempt
Sponsored by hand2mind
Join us in the NCTM Exhibit Hall on Thursday, April 2, starting at 10:00 a.m. as we attempt a GUINNESS WORLD RECORDS® title for the largest pattern blocks mosaic.

Mathical Book Prize Authors
The Mathical Book Prize recognizes math-inspiring children’s literature, both fiction and nonfiction, selected to inspire a love of math in the world around us. Prizewinning books are chosen by a committee of math teachers, reading teachers, librarians, math research professors, early childhood experts, and others. The list spans pre-K through grade 12 and features novels, biographies, chapter books, picture books, and more. Get the Mathical List at mathicalbooks.org.

The Mathical Book Prize is presented by the Mathematical Sciences Research Institute (MSRI) in partnership with the National Council of Teachers of English (NCTE) and the National Council of Teachers of Mathematics (NCTM), and in coordination with the Children’s Book Council (CBC). The Mathical Book Prize is made possible with support from the Firedoll Foundation and the Patrick J. McGovern Foundation. MSRI thanks the Simons Foundation for founding support of the prize.

MSRI is proud to collaborate with NCTM to bring eight Mathical authors to the NCTM Centennial Annual Meeting.

Mathical Reading Room
In addition, we hope you will stop by the Mathical Reading Room to meet the Mathical Book Prize Authors. Browse the entire Mathical list in hard copy in the Mathical Reading Room located in the Exhibit Hall on Thursday and Friday. The authors will read from their award-winning books, sign books, and sell books. Authors would love to chat with you about using their books in the classroom.

Mathical

MSRI
Mathematical Sciences Research Institute

Mathical Book Prize
FROM NCTM PUBLICATIONS

Humanizing Disability in Mathematics Education: Forging New Paths
This book examines the current mindset and pedagogy that students with special needs encounter, and then it offers strategies and practices to humanize the mathematics experience for these students.
STOCK #15722

Activity Gems for the PK-2 Classroom
The Activity Gems in this volume are a selected and adapted set of lessons from NCTM’s Navigations series, with a special emphasis on incorporating the Mathematics Teaching Practices in NCTM’s Principles to Actions: Ensuring Mathematical Success for All. Teachers of PK-2 students can use these lessons to engage their students in exploring, thinking, connecting, and advancing in their mathematical understanding and confidence.
STOCK #15753

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

Learning Trajectories for Teachers: Designing Effective Professional Development for Math Instruction
Designed to strengthen the teaching of mathematics in the elementary grades, this book focuses on helping teachers engage in instruction based on learning trajectories. The authors bring together the experiences and key research-based findings of four different groups of teacher educators. The book includes a final discussion and commentary chapter by professional development researcher Hilda Borko.
STOCK #15791

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

Visit our bookstore at NCTM Central at the Centennial Annual Meeting in Chicago and save at least 25% on all purchases!
WEDNESDAY

NETWORKING LOUNGE: TASKS THAT TRANSCEND TIME

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Task</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:30 p.m.-1:15 p.m.</td>
<td><strong>Session:</strong> Tasks Matter</td>
<td><em>Ruplas and Ooplas: A Measurement Mystery</em> Grades 2-5</td>
<td>Margaret (Peg) Smith</td>
</tr>
<tr>
<td>1:30 p.m.-1:50 p.m.</td>
<td><strong>Task:</strong> Stairs Task Middle Grades</td>
<td><em>Stairs Task Middle Grades</em></td>
<td>Fred Dillon</td>
</tr>
<tr>
<td>2:00 p.m.-2:20 p.m.</td>
<td><strong>Task:</strong> Packing Candies Elementary</td>
<td><em>Packing Candies Elementary</em></td>
<td>Latrenda Knighten</td>
</tr>
<tr>
<td>2:30 p.m.-2:50 p.m.</td>
<td><strong>Task:</strong> Linear and Quadratic Change: A Problem from Japan Upper Middle/High School</td>
<td><em>Linear and Quadratic Change: A Problem from Japan Upper Middle/High School</em></td>
<td>Jennifer Outzs</td>
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* Author will be available after talk for book signing

NETWORKING LOUNGE: SHARED INTEREST GROUPS

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<tr>
<th>Time</th>
<th>Group</th>
<th>Leaders</th>
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</thead>
<tbody>
<tr>
<td>1:00 p.m.-2:00 p.m.</td>
<td><strong>NCTM/SIAM/COMAP Math Modeling</strong></td>
<td>Jennifer Suh, Benjamin Galluzzo, and Daniel Teague</td>
</tr>
<tr>
<td>3:00 p.m.-4:00 p.m.</td>
<td><strong>Place Value and the Anti-Racist Mathematician</strong></td>
<td>Hema Khodai, Marian Dingle, Ralph Pantozzi, Tina Cardone, and Tyrone Martinez-Black</td>
</tr>
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Highlights

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Opening Session: T-Strap Shoes & a Sac Dress—“What Love Can Do”... 2

Author Panel Talks

Join us for **two** Author Panel Talks at the Centennial Annual Meeting!

**Classroom Tasks**

Thursday, April 2
2:30–3:30 pm, Room E256

Join celebrated authors as they discuss rich tasks that are classroom ready.

**Access and Equity**

Friday, April 3
2:30–3:30 pm, Room E256

Come learn how access and equity can influence your teaching practices.
Regional Caucuses

2:00pm–4:00pm

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

ALL REGIONAL CAUCUSES WILL BE HELD AT THE MCCORMICK PLACE – LAKESIDE CENTER.

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<th>REGION</th>
<th>PRESIDERS</th>
<th>ROOM</th>
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</thead>
<tbody>
<tr>
<td>Affiliate-at-Large</td>
<td>Carol Matsumoto, Retired, Winnipeg, Manitoba, Canada</td>
<td>E259</td>
</tr>
<tr>
<td></td>
<td>Denise Walston, Council of the Great City Schools, Washington, D.C.</td>
<td></td>
</tr>
<tr>
<td>Canadian</td>
<td>Michelle Naidu, Saskatchewan Teachers Federation, Saskatoon, Saskatchewan, Canada</td>
<td>E271B</td>
</tr>
<tr>
<td>Central</td>
<td>Jackie Murawska, Skokie/Morton Grove School District 69, Skokie, Illinois</td>
<td>E258</td>
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<td></td>
<td>Becky Walker, Howard-Suamico School District, Green Bay, Wisconsin</td>
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<tr>
<td>Eastern</td>
<td>Jeffrey Corbishley, Ridgefield Public Schools, Ridgefield, Connecticut</td>
<td>E265</td>
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<td></td>
<td>Joanna Burt-Kinderman, Pocahontas County Schools, Buckeye, West Virginia</td>
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<tr>
<td>Southern</td>
<td>Judy Rodgers, Rodgers Educational Consulting, Williamsburg, Virginia</td>
<td>E271A</td>
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<tr>
<td></td>
<td>Ryan Nivens, Clemmer College, East Tennessee State University, Johnson City, Tennessee</td>
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<tr>
<td>Western</td>
<td>Joanie Funderburk, Texas Instruments, Parker, Connecticut</td>
<td>E270</td>
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<tr>
<td></td>
<td>Jeffrey Corbishley, Ridgefield Public Schools, Ridgefield, Connecticut</td>
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Notes
IDEAS AND EXPERTISE FROM STENHOUSE AUTHORS TO YOUR CLASSROOM

STOP BY BOOTH #821
Get an extra 15% off all professional books. Use code NCTM2020 from 4/1–4/15.

Rough Draft Math
Revising to Learn
Amanda (Mandy) Jansen

Hands Down, Speak Out
Listening and Talking
Across Literacy and Math
Kassia Omohundro Wedekind
and Christy Hermann Thompson

Early Childhood Math Routines
Empowering Young Minds to Think
Antonia Cameron with Patricia Gallahue
and Danielle Iacoviiello

Open Middle Math
Problems That Unlock Student Thinking, Grades 6–12
Robert Kaplinsky

Beyond Answers
Exploring Mathematical Practices with Young Children
Mike Flynn

Choral Counting & Counting Collections
Transforming the PreK–5 Math Classroom
Megan L. Franke, Elham Kazemi,
and Angela Chan Turrou

How Many?
A Counting Book and Teacher’s Guide
Christopher Danielson

Becoming the Math Teacher You Wish You’d Had
Ideas and Strategies from Vibrant Classrooms
Tracy Johnston Zager

Up for Debate!
Exploring Math Through Argument
Chris Luzniak

AVAILABLE SPRING 2020!
Understanding the Math We Teach and How to Teach It Classroom Libraries Collections, Grades K–3 and 4–8
From early number concepts to fractions and decimals, each of the two collections (K–3 and 4–8) offer high-quality books that can supplement your math instruction while enriching your classroom library.

AVAILABLE FALL 2020!
Building Fact Fluency: A Toolkit for Addition & Subtraction
Developed by math specialist, Graham Fletcher, this comprehensive toolkit provides everything a teacher needs to help students develop number sense on the way to fluency—from cards, games, and videos to online resources, a facilitator’s guide, and hundreds of highly-engaging activities and tasks.

Stenhouse.com | 800-988-9812
Wednesday Afternoon Sessions

1. Annual Meeting Overview & Orientation
   General Interest Session
   McCormick Place - Lakeside Center, E354B

2. Opening Session: T-Strap Shoes & a Sac Dress—“What Love Can Do”
   General Interest Session
   McCormick Place - Lakeside Center, Arie Crown
   Dr. Darden will share her story of how her LOVE for mathematics and aerospace affected her entire life—from being a mathematics teacher, to working at NASA for 40 years, and eventually to speaking to young people all over the country about how she developed the discipline to accomplish this career. And it started with t-strap shoes and a sac dress!!
   Dr. Christine Darden, National Aeronautics and Space Administration (NASA), Retired

After she began her education in segregated schools in her hometown of Monroe, North Carolina, Christine Darden’s parents enrolled her in 1956 in a boarding school where two events totally changed her life. The first was a math class she took—Plane Geometry—where the teacher who taught the subject was unlike any other teacher she had seen. Christine was fascinated by this teacher and her habit of wearing “T-strap shoes” and “sac dresses” almost every day. At a “Teacher-Switch Day” later in the year, Christine asked to be the geometry teacher for the day and went on a search for her own pair of T-strap shoes and sac dress.

The second was during her senior year, when one of Christine’s jobs was taking the morning newspaper to the library. On the morning of October 5, 1957, Christine brought in the paper and saw this headline: “SOVIET UNION DECLARES SPUTNIK.” In this session, Christine will share the story of how her love for mathematics and aerospace has impacted her entire life.
NCTM REGIONAL CONFERENCES & EXPOSITIONS unite you with math education leaders and colleagues in a setting that fosters collaboration, conversation, and the sharing of knowledge. Learn about superior resources and innovative ideas that will help drive student success in your classroom, school, and district.

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- Opportunities to connect, learn, and share with like-minded peers
- The latest educational products and resources in the exhibit hall

WHO SHOULD ATTEND?

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

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THURSDAY

BIG IDEAS MATH®
A comprehensive K-12 curriculum centered around your students’ growth by Ron Larson & Laurie Boswell

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BigIdeasLearning.com/NCTMChicago
Congratulations NCTM on a Century of Leadership in Mathematics Education! Here’s to another hundred years!

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- In-booth education sessions
- Coffee and pastry cafe every morning and afternoon
- And more!

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### Highlights

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**New Teacher Kickoff** .......... 32

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**Experience the Wonder, the Joy, and the Beauty of Math! Learn a Little, Smile a Little, Enjoy a Lot!** ..... 98

**Mathical Author: 100 Bugs! A Counting Book** ................. 128

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**100 Photos + 100 Math Questions from Cities That Have Hosted NCTM Conferences in the Past 100 Years** .......... 167

**Going Dutch? Collaboration in Designing Curricular Materials That Are Meaningful to Students** ...... 211

**Moving Achievement Together Holistically: An Indigenous Approach to Math Education** .......... 212

**Mathical Author: A Hundred Billion Trillion Ways to Explore The World** .......... 270

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**NCTM and a Century of Mathematics Education: A Review Sprinkled with Music** .......... 285

### Networking Lounge: Tasks That Transcend Time

<table>
<thead>
<tr>
<th>Time</th>
<th>Task</th>
<th>Organizer</th>
</tr>
</thead>
</table>
| 10:00 a.m.-10:20 a.m. | **Task:** Is Women’s Income Catching Up to Men’s?  
Grades 8-10 | Gail Burrill |
| 10:30 a.m.-10:50 a.m. | **Task:** Taxman, a Twist on the Factor Game  
Grades 3-5 | Linda Gojak |
| 11:00 a.m.-11:20 a.m. | **Task:** Fraction Density  
Grades 4-7 | Skip Fennell |
| 11:30 a.m.-11:50 a.m. | **Article:** An Appetite for Fractions!  
MTMS | Trena Wilkerson |
| 12:00 p.m.-12:20 p.m. | **Task:** Students Building Expressions/Functions with Reasoning  
Grade 7-Advanced High School | Hank Kepner |
| 12:30 p.m.-12:50 p.m. | **Task:** The McDonald’s Problem  
Middle/High | Diane Briars |
| 1:00 p.m.-1:20 p.m. | **Task:** Would You Work for Me?  
Secondary | Johnny Lott |
| 1:30 p.m.-1:50 p.m. | **Task:** Fostering Geometric Thinking  
Grades 6-10 | Cathy Seeley |
| 2:00 p.m.-2:20 p.m. | **Task:** Sharing Money  
Multiple Grade Levels | Marilyn Strutchens |
| 2:30 p.m.-2:50 p.m. | **Task:** Quotient Quandry Reversibility Task  
Upper Elem/Early Middle | Sarah Bush |
| 3:00 p.m.-3:20 p.m. | **Task:** Patty Paper Geometry  
Middle Grades | Robert Berry |
| 3:30 p.m.-3:50 p.m. | **Task:** The Case of the Grouchy Customers  
Grades 6+ | Michael Shaughnessy |

*Author will be available after talk for book signing*

### Networking Lounge: Shared Interest Groups

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 a.m.-11:00 a.m.</td>
<td>Detracking: Creating Equitable Structures</td>
<td>Bryan Meyer, Andrea McCloskey, and Theodore Chao</td>
</tr>
<tr>
<td>12:00 p.m.-1:00 p.m.</td>
<td>Statistics Education</td>
<td>Christine Franklin and Rebecca Nichols</td>
</tr>
<tr>
<td>2:00 p.m.-3:00 p.m.</td>
<td>NCTM/SIAM/COMAP Math Modeling</td>
<td>Jennifer Suh, Benjamin Galluzzo, and Daniel Teague</td>
</tr>
</tbody>
</table>
The Infinity Bar and the Wellness Workshops will be held in the NCTM Exhibit Hall.

**Infinity Bar:** Conference speakers will talk to individuals or groups of teachers about issues related to mathematics education. You will be able to sign up either in advance or on-site to speak to someone at a designated time.

**Wellness Workshops:** Take time to focus on your well-being. As teachers, you need to constantly respond to change, manage a work/life balance, and stay grounded. These sessions will help you manage life’s challenges as a classroom teacher.

<table>
<thead>
<tr>
<th>INFINITY BAR</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30 a.m.-10:30 a.m.</td>
<td>Marian Small</td>
<td>Skip Fennell</td>
<td>Annie Fetter</td>
<td>Tim Kanold</td>
</tr>
<tr>
<td>11:00 a.m.-12:00 p.m.</td>
<td>Gladis Kersaint</td>
<td>Diane Briars</td>
<td>Eli Luberoff</td>
<td>Crystal Morton</td>
</tr>
<tr>
<td>12:30 p.m.-1:30 p.m.</td>
<td>Jo Boaler</td>
<td>Maggie McGatha</td>
<td>Marian Dingle</td>
<td>Gail Burrill</td>
</tr>
<tr>
<td>2:00 p.m.-3:00 p.m.</td>
<td>Marilyn Burns</td>
<td>Johnny Lott</td>
<td>Cathy Seeley</td>
<td>Dan Meyer</td>
</tr>
<tr>
<td>3:30 p.m.-4:30 p.m.</td>
<td>Fred Dillon</td>
<td>Florence Glanfield</td>
<td>Trena Wilkerson (NCTM President-elect)</td>
<td></td>
</tr>
</tbody>
</table>

**WELLNESS WORKSHOPS**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30 a.m.-10:30 a.m.</td>
<td>Tidying Up Your Life: Declutter and Clear</td>
<td>Arianna Brooks, Corepower Yoga Certified Instructor</td>
</tr>
<tr>
<td>1:30 p.m.-2:30 p.m.</td>
<td>Vulnerability as Self-Care</td>
<td>Laila Nur, LAUSD</td>
</tr>
<tr>
<td>3:00 p.m.-4:00 p.m.</td>
<td>Thank You: A Journaling Workshop</td>
<td>Ruth Cohen, Yoga Alliance Certified Instructor</td>
</tr>
</tbody>
</table>

**Notes**
Thursday Morning Sessions

3  Annual Meeting Overview & Orientation
   General Interest Session
   McCormick Place - Lakeside Center, E270

7:30am–9:00am

4  Seventy-First Annual Delegate Assembly
   General Interest Session
   McCormick Place - South Building, S406A

---

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Notes
Thursday Morning Sessions

5  COVE Early Learning, Where Content Overlaps Verbal-Language & Efficacy
   Pre-K-2 Session
   McCormick Place - Lakeside Center, E261
   Kristin Klingensmith, Institute for Learning, University of Pittsburgh, Pennsylvania
   &klingensmith
   Victoria Bill, Institute for Learning, University of Pittsburgh, Pennsylvania

6  Creating Real-World Learning Situations in Your Elementary Math Classroom
   Pre-K-2 Session
   McCormick Place - Lakeside Center, E351
   Julie Thiele, Kansas State University, Manhattan
   Sherri Martinie, Kansas State University, Manhattan

7  Deepening Number Sense & Eliciting Student Thinking with a Rekenrek
   Pre-K-2 Session
   McCormick Place - Lakeside Center, D2 - B
   Pia Hansen, Math Learning Center, Cheyenne, Wyoming
   Tod Johnston, Clarity Innovations, Portland, Oregon

8  (Re)Thinking Fractions with Dynamic Ruler
   3-5 Session
   McCormick Place - Lakeside Center, D2 - K
   Sheunghyun Yeo, University of Missouri-Columbia

9  Amplifying Language in Sense-Making Routines
   3-5 Session
   McCormick Place - Lakeside Center, D2 - I
   Nichole Lindgren, Buncombe County Schools, Asheville, North Carolina
   Erin Sylves, Fairfax County Public Schools, Fairfax, Virginia

10 Sense Making through Socratic Math
    3-5 Session
    McCormick Place - Lakeside Center, E260
    Mario Valdez, Oak Grove Elementary, Porterville, California
    @ogstars_val

11 Frogs, Cubes, and Robots: Integrating Design Thinking through Origami-Based STEAM Projects
    6-8 Session
    McCormick Place - Lakeside Center, E263
    Norma Boakes, Stockton University, Galloway, New Jersey

12 Mathematical Discourse: Talk Is Only Part of the Equation
    6-8 Session
    McCormick Place - Lakeside Center, E352
    Gladis Kersaint, University of Connecticut, Neag School of Education, Storrs-Mansfield
    @GKersaint

13 Mathematics Intervention: Strategies to Help Students Catch Up
    6-8 Session
    McCormick Place - Lakeside Center, D2 - C
    Shelley Kriegler, Center for Mathematics and Teaching, Sherman Oaks, California
    Cynthia Raff, Center for Mathematics and Teaching, Pasadena, California

14 Creativity and Storytelling in Mathematics Lessons
    8-10 Session
    McCormick Place - Lakeside Center, D2 - D
    @MathigonOrg

15 Investigating Ancient Mathematics: Solving Cubic Equations with Geometric Constructions
    8-10 Session
    McCormick Place - Lakeside Center, E262
    Alana Tholen, University of Iowa, Iowa City

16 Six Purposeful Questions to Form a Culture of Inquisitive Discourse: Reframing Algebra 1
    8-10 Session
    McCormick Place - Lakeside Center, E270
    Emily Allman, Ipswich High School, Massachusetts
    @allmanfiles

17 The Power of Voice: How to Empower and Engage Students (and Still Meet Our Goals!)
    8-10 Session
    McCormick Place - Lakeside Center, D2 - A
    Joleigh Honey, Association of State Supervisors of Mathematics, Salt Lake City, Utah
    @joleighhoney
    Dewey Gottlieb, Association of State Supervisors of Mathematics, Honolulu, Hawaii
Thursday Morning Sessions

18 Using Representations as a Tool for Sense Making and Justification in High School Algebra
   8–10 Session
   McCormick Place - Lakeside Center, E267
   Scott Hendrickson, Mathematics Vision Project, American Fork, Utah
   @ScottMVPMath

19 Machine Learning and the Future of Mathematical Modeling
   10–12 Session
   McCormick Place - Lakeside Center, E264
   Jedediyah Williams, Nantucket High School, Massachusetts
   @jedediyah

20 Self-Assessment in Math? How?
   10–12 Session
   McCormick Place - Lakeside Center, D2 - F
   Claudia Mathison, Ursuline Academy of Dallas, Texas
   Katelyn Hayes, Ursuline Academy of Dallas, Texas

21 The Model Rocket Challenge with Euler’s Method and Python
   10–12 Session
   McCormick Place - Lakeside Center, D2 - H
   Mahmoud Harding, North Carolina School of Science and Mathematics, Durham

22 Go Open: Our Journey and Results with a K-12 Transition to Open Educational Resources (OERs)
   Coaches/Leaders/Teacher Educators Session
   McCormick Place - Lakeside Center, D2 - G
   Brian Seguin, School District of the Menomonie Area, Wisconsin
   @seguin_b
   Amy Zuber Seguin, School District of the Menomonie Area, Wisconsin

23 A Tool to Support Formative Assessment of Equitable Mathematics Teaching and Learning Practices
   General Interest Session
   McCormick Place - Lakeside Center, D2 - E
   Ruth Heaton, Teachers Development Group, Portland, Oregon

24 Choose Your Own Adventure: Equity-Minded Teacher Edition
   General Interest Session
   McCormick Place - Lakeside Center, D2 - J
   Hema Khodai, Brampton, Ontario, Canada
   Tina Cardone, Lesley University, Cambridge, Massachusetts
   Julie R. Wright, da Vinci Arts Middle School, PPS

   General Interest Session
   McCormick Place - South Building, S401D
   Thomas McDougal, Lesson Study Alliance, Chicago, Illinois
   @TFMcD

26 Making Assessment an Integral Part of Instruction: A Focus on Numerical Reasoning, Grades K-8
   General Interest Session
   McCormick Place - Lakeside Center, Arie Crown
   Marilyn Burns, Self-Employed, Sausalito, California
   @mburnsmath

27 Powerful Moments in Math Class: Why Certain Experiences Stand Out and How We Create More of Them
   General Interest Session
   McCormick Place - Lakeside Center, E350
   Michael Flynn, Mount Holyoke College, South Hadley, Massachusetts
   @MikeFlynn55

28 True Confessions of Math Educators = Learning How to Best Serve Our Students
   General Interest Session
   McCormick Place - Lakeside Center, E354B
   Andrew Stadel, Tustin Unified School District, California
   @mr_stadel
Thursday Morning Sessions

29  What Math Do Elementary Math Teachers Really Need to Know?
    General Interest Session
    McCormick Place - South Building, S406B
    Marian Small, University of New Brunswick, Canada
    @marian_small

30  You’ve Got Stories: Now It’s Time to Write!
    General Interest Session
    McCormick Place - Lakeside Center, D2 - L
    Angela Barlow, University of Central Arkansas, Conway

31  Free Problem Posing and the Impact on Developmental Mathematics Students
    Higher Education Session
    McCormick Place - Lakeside Center, E259
    John Sevier
    Appalachian State University, Boone, North Carolina
    Michael Bosse
    Appalachian State University, Boone, North Carolina
    Anthony Fernandes
    University of North Carolina at Charlotte

31.1 Teaching Students to Think with Dimensions Math
    3-5 Exhibitor Workshop
    McCormick Place - Lakeside Center, E253B
    Singapore Math

8:00am—9:00am
Thursday Morning Workshops 8:00am-9:15am

32 New Teachers Kickoff Workshop
McCormick Place - Lakeside Center, E271A
Dave Barnes, National Council of Teachers of Mathematics, Reston, Virginia

33 Building Children’s Mathematical Knowledge via Play-Based Learning
Pre-K-2 Workshop
McCormick Place - Lakeside Center, E25B
Elizabeth Gamino, California Math Council - Central, Fresno
@missmath229
Jaclyn Russell, Clovis Unified School District, California

34 Come Experience Tools, Techniques, and Technology to Amplify ALL Student Voices in K-2 Mathematics
Pre-K-2 Workshop
McCormick Place - South Building, S405
Cheryl Fricchione, Educational Consultant, Toms River, New Jersey
@mathcoachchery
Emily Steenwyk, Rodeph Sholom School, New York, New York
Michelle Alperin, Rodeph Sholom School, New York, New York

35 Empowering Early Learners’ Mathematical Thinking
Pre-K-2 Workshop
McCormick Place - South Building, S404A
Toni Galassini, Chicago Public Schools, Illinois
@ToniGalassini
Gavin Creaden, Chicago Public Schools, Illinois

36 Math Games That Count: More Than FUN and Games—Promoting Math SUCCESS through Play!
Pre-K-2 Workshop
McCormick Place - Lakeside Center, E353B
Seema Gersten, Emek Hebrew Academy, Sherman Oaks, California
Danielle Lototsky, Emek Hebrew Academy, Sherman Oaks, California
Karley Cacibauda, Emek Hebrew Academy, Sherman Oaks, California

37 Calling All Students’ Reasoning! Setting Up Your Class Environment to Nurture Mathematical Writing
3-5 Workshop
McCormick Place - South Building, S404B
Fabiana Cardetti, University of Connecticut, Storrs
Madelyn Colonnese, University of North Carolina at Charlotte
Tutita Casa, University of Connecticut, Mansfield

38 Division by Zero: The Math, the Myth, and the Legend
3-5 Workshop
McCormick Place - South Building, S403
Joann Barnett, Missouri State University, Ozark

39 Embed STEM to Create Reasons for Students to Reason
3-5 Workshop
McCormick Place - South Building, S402
Jennifer Leimberger, University of Illinois at Chicago
@jleimberger1
Elizabeth Cape, University of Illinois at Chicago

40 Five Strategies for Making Your Math Classroom Come Alive for English Language Learners
3-5 Workshop
McCormick Place - Lakeside Center, E353C
Eric Siegel, Generation Ready, Brooklyn, New York
Megan Demarkis, Public School 139, Brooklyn, New York

41 Celebrating 100 Years with Big Beautiful Problems
6-8 Workshop
McCormick Place - Lakeside Center, E451B
Alicia Burdess, Grande Prairie and District Catholic Schools, Alberta, Canada
@BurdessAlicia
Jessie Shirley, Grande Prairie and District Catholic Schools, Alberta, Canada

42 Creating Access and Support for Struggling Middle School Students
6-8 Workshop
McCormick Place - South Building, S401BC
Allison Krasnow, Willard Middle School, Berkeley, California
@allison_krasnow
Geeta Makhija, King Middle School, Berkeley, California
### Thursday Morning Workshops

**8:00am—9:15am**

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<tr>
<th>Workshop</th>
<th>Title</th>
<th>Time</th>
<th>Location</th>
<th>Speakers</th>
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<td>43</td>
<td>People Count: Math and Demography in the Year of the Census</td>
<td>6-8</td>
<td>McCormick Place - Lakeside Center, E271B</td>
<td>Carol Bliese, Population Education, Washington, D.C. @PopulationEd</td>
</tr>
<tr>
<td>44</td>
<td>Building a Pathway to Student Success with Learning Goals and Evidence of Student Thinking</td>
<td>8-10</td>
<td>McCormick Place - Lakeside Center, E450A</td>
<td>Allan Bellman, University of Mississippi, Oxford @abellman17 Hanah Ryan, University of Mississippi, Oxford</td>
</tr>
<tr>
<td>45</td>
<td>Who's Hiding? Empathizing and Expanding Opportunities for All</td>
<td>8-10</td>
<td>McCormick Place - South Building, S404D</td>
<td>Matthew Rosenberg, Chicago Public Schools, Illinois @mrberg Romel Coleman, Chicago Public Schools, Bridgeport, Illinois Latanya Robertson, Chicago Public Schools, Illinois</td>
</tr>
<tr>
<td>46</td>
<td>Dice Tic-Tac-Toe Bingo</td>
<td>10-12</td>
<td>McCormick Place - Lakeside Center, E450B</td>
<td>James Krzeminski, Niles West High School, Skokie, Illinois @jamkrz Robert Nortillo, Niles West High School, Skokie, Illinois Matthew Fahrenbacher, Niles West High School, Skokie, Illinois</td>
</tr>
<tr>
<td>47</td>
<td>Modeling: Teaching It Right!</td>
<td>10-12</td>
<td>McCormick Place - Lakeside Center, E353A</td>
<td>David Ewing, University of Central Missouri, Warrensburg</td>
</tr>
<tr>
<td>48</td>
<td>What Would Your Dream Math Course Look Like?</td>
<td>10-12</td>
<td>McCormick Place - South Building, S401A</td>
<td>Jeremy Judge, Walter Payton College Prep, Chicago, Illinois @jezzajudge</td>
</tr>
<tr>
<td>49</td>
<td>A Buffet of Tasks and Tools for Elementary Mathematics Content Courses and K-8 Coaches</td>
<td></td>
<td></td>
<td>Jackie Murawska, Skokie/Morton Grove School District 69, Illinois @murawskamath Keith Nabb, University of Wisconsin–River Falls</td>
</tr>
<tr>
<td>50</td>
<td>Build Procedural Fluency for Multiplication/ Division that “Sticks” to its Conceptual Base!</td>
<td>3-5</td>
<td>McCormick Place - Lakeside Center, E265</td>
<td>Mary Leer, Consultant, New York, New York Makoto Yoshida, East West Math, Madison, New Jersey</td>
</tr>
</tbody>
</table>

**Visit 215 Table for more info!**

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- Phone: 781-914-3737 (Distributor: Z-kai USA Inc.)
- Website: https://zkaibooks.com
THURSDAY MORNINGSessions

9:30am–10:30am

51 A “Quick Look” at Using Ten-Frame Images to Develop Addition Fact Strategies in Meaningful Ways
Pre-K–2 Session
McCormick Place - Lakeside Center, E352
Gina Kling, Western Michigan University, Kalamazoo

52 Community, Culture, and Mathematics: Developing Lessons That Engage and Connect ALL Students.
Pre-K–2 Session
McCormick Place - Lakeside Center, D2 - A
Justin Burris, University of Houston, Texas
@drburrrismath

53 LSA: Students Explore How To Calculate Subtraction Problems Involving Regrouping 1 Hundred Into 10 Tens
Pre-K-2 Session
McCormick Place - South Building, S401D
Rebecca Reddicliffe, Chicago Public Schools, Illinois

54 Frameworks, Rubrics, and Criteria: Empower Teacher Leaders and Encourage Positive Change
3–5 Session
McCormick Place - Lakeside Center, D2 - B
Annie Forest, Berwyn South District 100, Illinois
@mrsforest

55 Fun Ways to Use Technology in Enhancing any Math Program
3–5 Session
McCormick Place - Lakeside Center, D2 - K
Susan Weiss, Solomon Schechter Day School, Brookline, Massachusetts

56 Getting Started with Differentiation in Your Math Workshop
3–5 Session
McCormick Place - Lakeside Center, D2 - E
Alison Mello, Foxborough Public Schools, Massachusetts
@alisonmellomathpd

57 Guided Math: Success for You and Your Students (Grades 3-5)
3–5 Session
McCormick Place - Lakeside Center, E259
Brittany Goerig, hand2mind, Libertyville, Illinois
@bgoerig
Reagan Tunstall, Tunstall’s Teaching Tidbits

58 “Black Is Positive”: Using Game Play with Urban Middle School Students to Increase Number Fluency
6–8 Session
McCormick Place - Lakeside Center, E260
Lesa Covington Clarkson, University of Minnesota, St. Paul
Elena Contreras Gullickson, University of Minnesota, St. Paul
Jessica Forrester, University of Minnesota, St. Paul

59 Developing Powerful Creators of Mathematics through Rich Argumentation Discourse
6–8 Session
McCormick Place - Lakeside Center, E261
Jennifer Knudsen, TERC, Austin, Texas
@jen_knudsen
Teresa Lara-Meloy, SRI International, Menlo Park, California
Harriette Stevens, SRI International, San Francisco, California

60 Math + Language Teaching Strategies = Success!
6–8 Session
McCormick Place - South Building, S406A
Cathy Marks Krpan, University of Toronto, Ontario, Canada
@CathyMarksKrpan

61 Archimedes’ Box
8–10 Session
McCormick Place - Lakeside Center, D2 - C
Don Balka, Saint Mary’s College, Notre Dame, Indiana

62 Igniting Discourse: Routines for Sparking Mathematical Conversations
8–10 Session
McCormick Place - Lakeside Center, D2 - I
Donna Brink, Pinkerton Academy, Derry, New Hampshire
Ben Winchell, Pinkerton Academy, Derry, New Hampshire
Tracey Moulaison, Pinkerton Academy, Derry, New Hampshire

63 Math Camp: A Summer Intervention That Allows Students to Relax and Find Success in Mathematics
8–10 Session
McCormick Place - Lakeside Center, E263
Cathy Gaspard, California State University, Northridge
@cat_gaspard
Thursday Morning Sessions

64 Strategies for Engaging and Enhancing Student Motivation in Mathematics
- 8-10 Session
- McCormick Place - Lakeside Center, E264
- James Middleton, Arizona State University, Tempe
  @jimboasu

65 Integrating Euler Into AP Calculus: His Context, Results, and Legacy
- 10-12 Session
- McCormick Place - Lakeside Center, E267
- Brent Ferguson, The Lawrenceville School, New Jersey
  @BAFerg
- Teresa Mislik, Hopewell Valley Central High School, New Jersey

66 Taylor Polynomials and Series from the Ground Up
- 10-12 Session
- McCormick Place - Lakeside Center, D2 - H
- Brian Shay, San Dieguito Union High School District, San Diego, California
  @MrBrianShay

67 Creating Clarity, Building Capacity, Growing Leaders: One District’s Story of Change
- Coaches/Leaders/Teacher Educators Session
- McCormick Place - Lakeside Center, D2 - L
- Susan Loveless, Rutherford County Schools, Murfreesboro, Tennessee
  @susanloveless23

68 Personalized Professional Learning: The Power of Job-Embedded Coaching
- Coaches/Leaders/Teacher Educators Session
- McCormick Place - Lakeside Center, E262
- Thomas Nobili, Milford Public Schools, Connecticut
- Kevin Mahoney, Region 14 Schools, Woodbury, Connecticut

69 100 Years of Paper Folding in the Mathematics Classroom
- General Interest Session
- McCormick Place - Lakeside Center, E270
- David Masunaga, Iolani School, Honolulu, Hawaii

70 Assessing Mathematics Assessment Policies and Practices: Lessons Learned and Actions to Move Forward
- General Interest Session
- McCormick Place - Lakeside Center, E351
- Diane Briars, Past President, National Council of Teachers of Mathematics, Reston, Virginia; Pittsburgh, Pennsylvania

71 Don’t Let Your Affiliate’s Relationship with NCTM Miss the MARC!
- General Interest Session
- McCormick Place - South Building, S406B
- Jeffrey Corbishley, Ridgefield High School, Connecticut
- Judy Rodgers, Loudoun County Public Schools, Leesburg, Virginia
- Becky Walker, Howard-Suamico School District, Wisconsin

72 Engaging Families in Adult Mathematics: Promoting Change in Classroom Culture
- General Interest Session
- McCormick Place - Lakeside Center, D2 - J
- Rachel Woolley, New York City Department of Education, Public School 139, Brooklyn
- Megan Demarkis, New York City Department of Education, Public School 139, Brooklyn

73 Grants to Build Innovation in Mathematics Education
- General Interest Session
- McCormick Place - Lakeside Center, D2 - F
- Ralph Connelly, Mathematics Education Trust, Reston, Virginia

74 Limitless: Learn, Lead & Live without Barriers
- General Interest Session
- McCormick Place - Lakeside Center, Arie Crown
- Jo Boaler, Stanford University, California

75 Supporting Productive Struggle through Manipulatives
- General Interest Session
- McCormick Place - Lakeside Center, D2 - G
- Kevin Dykema, Mattawan Consolidated Schools, Michigan
  @kdykema

Implement the Effective Teaching Practices
Experience the Depth and Excitement of Mathematics
Look Back and Move Forward: A Centennial View
Create Positive Change
Build Student Agency, Foster Student Identity, Promote Social Change
Thursday Morning Sessions

76

Talk Number 2 Me: Mathematics & Mindfulness
General Interest Session
McCormick Place - Lakeside Center, D2 - D
Christina Lincoln-Moore, Westside Global Awareness Magnet, Marina Del Rey, California
@virtuouscm

77

Up for Debate! An Introduction to Debate Routines in Math Class
General Interest Session
McCormick Place - Lakeside Center, E350
Chris Luzniak, The Archer School, Los Angeles, California
@cluzniak

78

Why Teach Mathematics?
General Interest Session
McCormick Place - Lakeside Center, E354B
Matthew Larson, Past President, National Council of Teachers of Mathematics, Reston, Virginia; Lincoln Public Schools, Nebraska

78.1 Making Principles to Actions Come Alive with CPM Education Program
8-10 Exhibitor Workshop
McCormick Place - Lakeside Center, E253A
CPM Educational Program, Elk Grove, California

78.2 Leave the Math, Change the Language (K–8)
3-5 Exhibitor Workshop
McCormick Place - Lakeside Center, E253D
Pearson K12 Learning

78.3 Shape the Future of EdTech: Join Mathspace’s User Research Group
8-10 Exhibitor Workshop
McCormick Place - Lakeside Center, E253B
Mathspace, New York, New York
Thursday Morning Workshops

79 Connecting Content to Community: A Road Map to Developing Culturally Relevant Math Tasks
  Pre-K–2 Workshop
  McCormick Place - Lakeside Center, E451A
  Emily Yanisko, Columbia, Maryland
  Alice Cook, Urban Teachers at Johns Hopkins, Baltimore, Maryland
  Ca’trish Griffin, Urban Teachers at Johns Hopkins, Baltimore, Maryland

80 Cross Number Puzzles: Collaborative, Flexible, Strategic, and Grounded in Place-Value Understanding
  Pre-K–2 Workshop
  McCormick Place - S405
  Becky Holden, Trinity School, Atlanta, Georgia
  @bholden86

81 Using the Trajectory Approach to Teach Mathematics in the Early Childhood Classroom
  Pre-K–2 Workshop
  McCormick Place - Lakeside Center, E271B
  Michelle School-Reese, Brillion Public Schools, Wisconsin
  Cheryl Kittel, Brillion Public Schools, Wisconsin

82 Creating Mathematics-Rich STEAM Learning Opportunities for Each and Every Student!
  3–5 Workshop
  McCormick Place - Lakeside Center, E450A
  Sarah Bush, Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Central Florida, Orlando
  @sarahbbush
  Daniel Edelen, University of Central Florida, Orlando
  Richard Cox, Bullitt County Public Schoolsa, Crestwood, Kentucky

83 I Never Thought about SPATIAL REASONING That Way! It’s More Than Just Geometry
  3–5 Workshop
  McCormick Place - South Building, S401BC
  Bronwyn Papasideris, Thames Valley District School Board, London, Ontario, Canada
  @papasiderisb
  Kristin Methot, Thames Valley District School Board, London, Ontario, Canada
  Tracy White, Thames Valley District School Board, London, Ontario, Canada

84 Mathematical Mindsets: Change the Game in the First Fifteen Days
  3–5 Workshop
  McCormick Place - Lakeside Center, E353C
  Lukas Hefty, Pinellas County Schools, Largo, Florida
  @LukasHefty

85 New Uses of Equations to Explore Fraction Relationships
  3–5 Workshop
  McCormick Place - Lakeside Center, E271A
  Victoria Jacobs, University of North Carolina at Greensboro
  Susan Empson, University of Missouri, Columbia
  Joan Case, Hesperia, California

86 Clothesline Math: Statistics on the Open Number Line
  6–8 Workshop
  McCormick Place - Lakeside Center, E265
  Chris Shore, Temecula Valley USD, Murrieta, California
  @MathProjects

87 Focus on the Question: Making Sense of Problems and Persevering in Solving Them
  6–8 Workshop
  McCormick Place - Lakeside Center, E451B
  Melanie Janzen, San Bernardino County Superintendent of Schools, California
  @MelanieJanzen15
  Catherine Vittorio, San Bernardino County Superintendent of Schools, California
  Denise Cates-Darnell, San Bernardino County Superintendent of Schools, California

88 Productive Struggle for All: Supporting Students with Disabilities in a General Education Class
  6–8 Workshop
  McCormick Place - South Building, S404A
  Malia Hite, Utah State Board of Education, Salt Lake City
  @mallowite
Thursday Morning Workshops

9:45am–11:00am

89  Statistics: Why Are You Looking So M.A.D.?
    6–8 Workshop
    McCormick Place - South Building, S404BC
    Nicole Howard, Anne Arundel County Public Schools, Annapolis, Maryland
    Mary Rathlev, Glen Burnie, Maryland

90  Using Learning Trajectories to Assess Students’ Understanding of Algebra Concepts
    6–8 Workshop
    McCormick Place - South Building, S402
    Edith Aurora Graf, Educational Testing Service, Princeton, New Jersey
    Alison Castro Superfine, University of Illinois at Chicago
    Lynda Wynn, CSU Stanislaus, Turlock, California

91  Desmos and the 5 Practices
    8–10 Workshop
    McCormick Place - Lakeside Center, E450B
    Martha Mulligan, Chicago Public Schools, Illinois
    @marthamulligan

92  Problems to Ponder: You Know You Have a Really Good Problem for You and Your Students When . . .
    8–10 Workshop
    McCormick Place - Lakeside Center, E353B
    J. Michael Shaughnessy, Past President, National Council of Teachers of Mathematics, Reston, Virginia;
    Portland State University, Oregon

93  Statistics Content That Every Math Teacher Should Know
    10–12 Workshop
    McCormick Place - Lakeside Center, E258
    Lindsey Gallas, Kentwood Public Schools, Michigan
    @thestatsmedic
    Luke Wilcox, Kentwood Public Schools, Michigan

94  Supporting Students’ Pathways through the Cycle of Inquiry and Justification
    10–12 Workshop
    McCormick Place - South Building, S403
    Michelle Cirillo, University of Delaware, Newark
    @UDMichy
    Jenifer Hummer, University of Delaware, Newark

95  Turner’s Graph of the Week: Using Real-Life Statistical Data to Engage Your Students
    10–12 Workshop
    McCormick Place - Lakeside Center, E353A
    Kelly Turner, Anaheim Union High School District, California

96  Examining Math Identity, Equity, and Racial Bias to Develop Teachers as Change Agents in Mathematics
    Coaches/Leaders/Teacher Educators Workshop
    McCormick Place - South Building, S401A
    Nancy Horowitz, Independent Consultant, Cambridge Public Schools, Massachusetts
    Lynne Godfrey, Independent Consultant, Cambridge Public Schools, Massachusetts
    Katisha John, Cambridge Public Schools, Massachusetts

97  The Key to Coaching Teachers through the Process of Creating Connections for ALL
    Coaches/Leaders/Teacher Educators Workshop
    McCormick Place - South Building, S404D
    Cassie Sisemore, Tulare County Office of Education, Visalia, California
    @cassiesisemore
Thursday Morning Sessions

98  Experience the Wonder, the Joy, and the Beauty of Math! Learn a Little, Smile a Little, Enjoy a Lot!
Session
McCormick Place - Lakeside Center, Arie Crown
Lee Stiff, Past President, National Council of Teachers of Mathematics, Reston, Virginia; North Carolina State University, Raleigh

99  Improving the Impact of Research on Practice: Challenges, Possible Solutions, and Potential Research Pathways
General Interest Session
McCormick Place - Lakeside Center, D2 - L
Jinfa Cai, University of Delaware, Newark
Michelle Cirillo, University of Delaware, Newark
James Hiebert, University of Delaware, Newark
Stephen Hwang, University of Delaware, Newark

100 Growing Primary Mathematicians
Pre-K-2 Session
McCormick Place - Lakeside Center, E259
Lori Price, St. Johns County Schools, Ponte Vedra Beach, Florida

101 No More Tears: Developmentally Appropriate Assessment
Pre-K-2 Session
McCormick Place - Lakeside Center, D2 - I
Lacy Endo-Peery, Great Minds, Woodland Hills, California
Kate Austin, Great Minds, Reston, Virginia
Tammy Hanlon, Great Minds, Tampa, Florida

102 Playing with Mathematical Ideas
Pre-K-2 Session
McCormick Place - Lakeside Center, D2 - B
Janice Novakowski, Richmond School District, British Columbia, Canada
@jnovakowski38

103 Say Goodbye to Keywords
Pre-K-2 Session
McCormick Place - Lakeside Center, E261
Paula Muehler, Math Learning Center, Salem, Oregon
Lori Bluemel, Math Learning Center, Salem, Oregon

104 Fractions on the Number Line: Reconstructing the Unit
3-5 Session
McCormick Place - Lakeside Center, D2 - G
Debra Monson, University of St. Thomas, Minneapolis, Minnesota
@debbiesmonson
Sue Ahrendt, Metropolitan State University of Denver, Colorado
Kathleen Cramer, University of Minnesota, St. Paul

105 One School’s Journey to Center Equity and Social Emotional Learning in Elementary Math Classrooms
3-5 Session
McCormick Place - Lakeside Center, E260
Sarah Hunter, Minneapolis Public Schools, Minnesota
@sarahehunter
Tyrone Martinez, Oak Lawn, Illinois

106 The 5 Practices in Practice: Taking on Classroom Challenges
3-5 Session
McCormick Place - South Building, S406A
Victoria Bill, Institute for Learning, University of Pittsburgh, Pennsylvania
Miriam Sherin, Northwestern University, Evanston, Illinois
Margaret (Peg) Smith, University of Pittsburgh, Pennsylvania (Emeritus)

107 The Practice of Statistics: YES, We Can Do It at School!
3-5 Session
McCormick Place - Lakeside Center, D2 - H
Jane Watson, University of Tasmania, Hobart, Australia

108 AMPing UP Middle School Mathematics Classrooms
6-8 Session
McCormick Place - Lakeside Center, D2 - E
Jeffrey Rosen, Georgia Tech - CEISMC, Atlanta
Douglas Edwards, Georgia Tech - CEISMC, Atlanta

109 LSA: Inviting Students into the Kitchen to Make a Mathematical Meal Together
6-8 Session
McCormick Place - South Building, S401D
Dan Meyer, Desmos, San Francisco, California
@ddmeyer
Thursday Morning Sessions

110. Why Ask Why? How to Use Questioning in a Mathematics Classroom
- 6–8 Session
- McCormick Place - Lakeside Center, D2 - J
- Shannon Motsco, Anne Arundel County Public Schools, Annapolis, Maryland
  @smmoran2
- Jonathan VerMerris, Anne Arundel County Public Schools, Annapolis, Maryland

111. Facilitating Meaningful Discourse through Connecting Data Representations
- 8–10 Session
- McCormick Place - Lakeside Center, E262
- Rick Hudson, University of Southern Indiana, Evansville
- Stephanie Casey, Eastern Michigan University, Ypsilanti
- Christina Azmy, North Carolina State University, Raleigh

112. Make All Students Mathematicians with Desmos Challenge Creator
- 8–10 Session
- McCormick Place - Lakeside Center, E352
- Nolan Doyle, Clover Hill High School, Midlothian, Virginia
  @nd Doyle1015
- David Petro, Windsor Essex Catholic District School Board, Harrow, Ontario, Canada

113. Mathematical Mindsets: Focus on the Problem
- 8–10 Session
- McCormick Place - Lakeside Center, D2 - A
- Laura Smith, New Trier High School, Northfield, Illinois

114. Using Desmos to Create and Implement Social Justice Math Lessons
- 8–10 Session
- McCormick Place - Lakeside Center, D2 - D
- Pamela Seda, Griffin-Spalding County School District, Georgia
  @pamsedal
- Faith Mounihan, Desmos, San Francisco, California

115. How to Raise Test Scores without Teaching to the Test: Providing Access and Equity for All Learners
- 10–12 Session
- McCormick Place - South Building, S406B
- Ivan Cheng, California State University, Northridge
  @drivancheng
- Angelica Morfin, Birmingham Community Charter High School, Van Nuys, California
- Andrea Manzo-Ustariz, Birmingham Community Charter High School, Van Nuys, California

116. Using Cryptography to Teach Statistics and Computer Programming
- 10–12 Session
- McCormick Place - Lakeside Center, D2 - C
- Taylor Gibson, North Carolina School of Science and Math, Durham
- Veronica Vazquez, North Carolina School of Science and Math, Durham

117. What’s the Point of Points? Rethinking the Assessment of Student Mathematics Work
- 10–12 Session
- McCormick Place - Lakeside Center, E263
- Douglas Guyette, Notre Dame de la Baie Academy, Green Bay, Wisconsin

118. Math We Can! A Lab Approach to Growing Students as Mathematicians and Building Teacher Efficacy
- Coaches/Leaders/Teacher Educators Session
- McCormick Place - Lakeside Center, E270
- Mary Mitchell, Math Solutions, Cincinnati, Ohio
  @marymitchell
- Susan Chapman, Math Solutions, League City, Texas

119. Mathematical Mindset: A District-Wide Revolution
- Coaches/Leaders/Teacher Educators Session
- McCormick Place - Lakeside Center, E264
- Jackie Duginske, CUSD 300, Algonquin, Illinois
  @jduginske
- Joseph Santucci, CUSD 300, Algonquin, Illinois
- Paige Sidlo, CUSD 300, Algonquin, Illinois

120. Is 2020 Vision Good Enough? Looking Ahead to What Comes Next
- General Interest Session
- McCormick Place - Lakeside Center, E354B
- Cathy Seeley, Past President, National Council of Teachers of Mathematics, Reston, Virginia; University of Texas, Austin
  @cathyseeley

121. Measuring Equity: Do You Measure Up?
- General Interest Session
- McCormick Place - Lakeside Center, D2 - F
- Peter Eley, Fayetteville State University, North Carolina
  @drpeterley
Thursday Morning Sessions

122 The Transformation of Geometry in the Last 100 Years
   General Interest Session
   McCormick Place - Lakeside Center, E351
   Johnny Lott, Past President, National Council of Teachers of Mathematics, Reston, Virginia; Retired, Oxford, Mississippi

123 Two Is Better Than One: Resources to Support All Students and Teachers In Co-Taught Classes
   General Interest Session
   McCormick Place - Lakeside Center, E350
   Sararose Lynch, Westminster College, New Wilmington, Pennsylvania
   Jeremy Lynch, Slippery Rock University, Pennsylvania

124 Using an Instructional Routine to Build Culture
   General Interest Session
   McCormick Place - Lakeside Center, E267
   Pamela Harris, Texas State University, San Marcos @pwharris

125 Supporting Beginning Teachers with Mathematics Instruction
   Higher Education Session
   McCormick Place - Lakeside Center, D2 - K
   Mary Little, University of Central Florida, Orlando @MaryELittle
   Melissa Carli, University of Central Florida, Orlando
   Lisa Brooks, University of Central Florida, Orlando

125.1 Engage Your Students by Orchestrating Creative Aha! Moments with Technology for Grades 8 to 12
   10–12 Exhibitor Workshop
   McCormick Place - Lakeside Center, E253A
   Texas Instruments Incorporated, Dallas, Texas

125.2 Test Prep: Beyond State Assessments
   General Interest Exhibitor Workshop
   McCormick Place - Lakeside Center, E253B
   IXL Learning, San Mateo, California

125.3 The Impact of Algebra in the Elementary Math Curriculum
   3–5 Exhibitor Workshop
   McCormick Place - Lakeside Center, Presentation Pavilion
   Didax Education

Notes
### Thursday Morning Bursts

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| 11:30am—Noon | **126** Connecting Schools and Families to Strengthen Young Children’s Development in Mathematics  
Pre-K–2 Burst  
McCormick Place - Lakeside Center, E451A  
**Frederique Yova**, North Carolina State University, Raleigh | |  
**127** Making Math Magical with Literature in K–4  
Pre-K–2 Burst  
McCormick Place - South Building, S401BC  
**Gina Kilday**, Metcalf Elementary School, West Greenwich, Rhode Island  
@MathLadyRI  
**Anne Barbour**, Metcalf Elementary School, West Greenwich, Rhode Island | **128** Mathical Author: 100 Bugs! A Counting Book—Inspired, Written and Revised by Elementary Teachers  
Pre-K–2 Burst  
McCormick Place - Lakeside Center, E258  
**Kate Narita**, Farrar Straus Giroux/Macmillan Children’s Publishing Group, New York, New York  
@katenarita |  
**129** Meaningful Student Math Reflections That Lead to Action  
3–5 Burst  
McCormick Place - South Building, S404D  
**Matt Coaty**, CUSD # 95, Lake Zurich, Illinois  
@mcoaty |  
**130** The Fantastic Factors of Fairy Tales: Finding the Math in Classic Children’s Tales  
3–5 Burst  
McCormick Place - Lakeside Center, E451B  
**Lloyd Goldberg**, Clark County School District, Las Vegas, Nevada  
@WholsGoldberg  
**Carie Thibault**, Clark County School District, Las Vegas, Nevada  
**Jessica Spielman**, Clark County School District, Las Vegas, Nevada |  
**131** Identifying Elementary Standards That Lend Themselves to Rich Mathematical Tasks  
3–5 Burst  
McCormick Place - South Building, S402  
**Brooke Max**, Purdue University, West Lafayette, Indiana  
**Andrew Hoffman**, Huntington University, Indiana |  
**132** A Responsive Middle Grades Math Exploration of the Effects of Animal Agriculture on Our Planet  
6–8 Burst  
McCormick Place - Lakeside Center, E271B  
**Eugenia Vomvoridi-Ivanovic**, University of South Florida, Tampa  
**Cheryl Ellerbrock**, University of South Florida, Tampa |  
**133** Female Leadership in the Mathematics Classroom—Supporting Girls’ Math Identities in Middle School  
6–8 Burst  
McCormick Place - South Building, S401A  
**Kellie Pop**, University of Nevada, Reno |  
**134** What’s New with Desmos?  
8–10 Burst  
McCormick Place - Lakeside Center, E353B  
**Jessica Breur**, Mounds View Public Schools, Shoreview, Minnesota  
@breurbreur  
**Mark Kreie**, Brookings High School, South Dakota |  
**135** Computational Thinking: A Problem-Solving Process  
10–12 Burst  
McCormick Place - Lakeside Center, E450B  
Thursday Morning Bursts

138 Geometric Proof Court: Engaging Students to Defend and Argue Proofs through Mathematical Reasoning
10-12 Burst
McCormick Place - South Building, S403
Carol Kinney, Bronx Collaborative High School, NYC DOE, New York
Rebecca Guarino, South Bronx Preparatory High School, NYC DOE, New York

139 The Revolution of Artificial Intelligence in the AP Calculus Classroom
10-12 Burst
McCormick Place - Lakeside Center, E265
Ana Gonzalez Enriquez, Osceola County School for the Arts, Kissimmee, Florida

140 Developing Culturally Responsive Mathematics Educators: Our Journey
Coaches/Leaders/Teacher Educators Burst
McCormick Place - South Building, S404A
Tashana Howse, Georgia Gwinnett College, Atlanta
@tdhowse_math

141 Answering Big Questions by Understanding Big Numbers
6-8 Burst
McCormick Place - Lakeside Center, E450A
Aaron Bingea, Chicago Public Schools

141.1 Disrupting Your History: Goal-Setting from Preservice Teachers’ Mathematics Autobiographies
Coaches/Leaders/ Teacher Educators Burst
McCormick Place - Lakeside Center, E353A
Joan Gujarati, State University of New York (SUNY) at Oswego

142 The Power of the Words We Speak and Think
General Interest Burst
McCormick Place - South Building, S405
Sam Kaplan, Math for America, Los Angeles, California
Diana McClean, Los Angeles Unified School District, California

143 Unpacking the Reality of Mathematics Anxiety in Our Students
General Interest Burst
McCormick Place - South Building, S404BC
Stephanie Quan, Holy Names University, Oakland, California

144 Does Social Justice Really Make a Difference in Student Learning?
Research Burst
McCormick Place - Lakeside Center, E271A
Marian Dingle, DeKalb County School District, Georgia
@DingleTeach

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<td>President’s Address: Unpacking the Catalyzing Change Series to Initiate Critical Conversations</td>
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<td>Replace Math Anxiety with Math Positivity—Finally . . . Fact Fluency!</td>
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<td>Six of One, Half-Dozens of the Other: Routines to Promote Unitizing in the Primary Grades</td>
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<td>Strategies for Eliciting &amp; Using Student Thinking to Facilitate Powerful Lessons with Young Students</td>
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<td>149</td>
<td>Building Math Residue and Identifying Misconceptions with Lessons That Stick</td>
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<td>150</td>
<td>Empowering Students as Mathematical Sense Makers through Teacher Questioning</td>
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<td>151</td>
<td>Hear, Ye! Hear Ye! Strategies for Giving Students Voice in the Mathematics Classroom</td>
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<td>LSA: Using Lesson Study to Implement the Effective Teaching Practices—A Study of Division in Grade 3</td>
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<td>Making Sense of Word Problems</td>
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<td>Step Aside: Student-Driven Math Conversations</td>
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<td>It’s Not Always Simple to Make a Problem Simpler: Seeking Connections That Aren’t Apparent</td>
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<td>Learning Mathematics Actively: Experiences with Mathematics Trails</td>
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<td>Little Activities with a Big Bang</td>
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Thursday Afternoon Sessions

158 Accelerating Learning for ELs Using the Math Workshop Model in the Secondary Math Classroom
8-10 Session
McCormick Place - Lakeside Center, D2 - F
Cassie Eatmon, Fairfax County Public Schools, Virginia
CassieEatmon

159 Coordinating the Expertise of Mathematicians and Educators in Writing a High School Curriculum
8-10 Session
McCormick Place - Lakeside Center, D2 - I
Bill McCallum, Illustrative Mathematics, Tucson, Arizona
@wgmccallum

160 Using Simulation to Develop an Understanding of Probability and Informal Statistical Inference
8-10 Session
McCormick Place - Lakeside Center, E263
Todd Swanson, Hope College, Holland, Michigan
Nathan Tintle, Dordt University, Sioux Center, Iowa

161 Making Math Culturally Relevant through Experiential Learning
10-12 Session
McCormick Place - Lakeside Center, E352
Breedeen Pickford-Murray, The Bay School of San Francisco, California
@btwnthenumbers
Kevin Davis, Great Minds, Syracuse, New York

162 Making Probability Visible: Understanding & Extending Inference
10-12 Session
McCormick Place - Lakeside Center, D2 - H
Peter Petto, Lakewood High School, Ohio
@ppetto

163 Students + Choice = Inspired Learners
10-12 Session
McCormick Place - Lakeside Center, D2 - D
Justine Repplinger, Lake Zurich CUSD 95, Illinois
@repplinger5
Rachel O’Connor, Lake Zurich CUSD 95, Illinois

164 The 5 Practices in Practice: Orchestrating Productive Mathematics Discussions in High School
10-12 Session
McCormick Place - South Building, S406B
Mike Steele, University of Wisconsin-Milwaukee
@mdsteele47
Margaret (Peg) Smith, University of Pittsburgh, Pennsylvania, Emeritus
Miriam Sherin, University of Pittsburgh, Pennsylvania

165 Letting Go of Your Textbook: OER In Math Class
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E267
Melissa Moore, Liberty Public Schools, Missouri
Emily Hoffman, Liberty Public Schools, Missouri

166 Talk Talk Talk Talk Talk: Routines for Math Workshop
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E262
LeVada Gray, Math Solutions, Country Club Hills, Illinois
@iamacgirl
Tanaga Hannah-Rodgers, Math Solutions, Crofton, Maryland

167 100 Photos + 100 Math Questions from Cities That Have Hosted NCTM Conferences in the Past 100 Years
General Interest Session
McCormick Place - Lakeside Center, E354B
Ron Lancaster, University of Toronto, Ontario, Canada

168 Challenging Spaces of Marginalization in the K-5 Math Class
General Interest Session
McCormick Place - Lakeside Center, E270
Nicki Newton, Newton Education Solutions, Bridgeport, Connecticut
@drnickimath
Thursday Afternoon Sessions 1:00pm–2:00pm

169  Equity and Justice in the Math Classroom: A Practical Approach
   General Interest Session
   McCormick Place - Lakeside Center, E350
   Ethan Weker, Mid-Peninsula High School, Menlo Park, California
   Andrea Henderson, Mid-Peninsula High School, Menlo Park, California

170  Mathematics Education Research and Mathematics Instruction: Parallel or Intersecting Domains?
   General Interest Session
   McCormick Place - Lakeside Center, D2 - L
   Cynthia Langrall, Illinois State University, Normal
   Amanda Cullen, Illinois State University, Normal

171  Using Guided Reinvention to Support the Transition from Secondary to Collegiate Mathematics
   Higher Education Session
   McCormick Place - Lakeside Center, E264
   Mark Yannotta, Clackamas Community College, Oregon City, Oregon
   Keith Nabb, University of Wisconsin-River Falls

172  Computational Thinking: Entry Level to Early Algebra? The Study of a Quebec Team
   Research Session
   McCormick Place - Lakeside Center, E260
   Melanie Boucher, Commission scolaire de la Capitale, Quebec, Canada
   Martin Baril, Commission scolaire de la Capitale, Quebec, Canada

172.1 Exploring the 3-Part Lesson: Designing and Implementing an Opening Anchor Task
   3–5 Exhibitor Workshop
   McCormick Place - Lakeside Center, E253A
   think! Mathematics, Neptune Beach, Florida

172.2 Japan Math: A Proven Path to Success
   Pre-K-2 Exhibitor Workshop
   McCormick Place - Lakeside Center, E253B
   Japan America Educational Research Institute (JAERI)

172.3 Routines Don’t Have to Be Routine
   Pre-K-2 Exhibitor Workshop
   McCormick Place - Lakeside Center, E253D
   Pearson K12 Learning, Hoboken, New Jersey
### Thursday Afternoon Workshops

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<td>Constructing Strength-Based Views of the Students We Teach</td>
<td>McCormick Place - Lakeside Center, E353C</td>
<td>Ryan Flessner, Butler University, Indianapolis, Indiana @ryanflessner</td>
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<td>Courtney Flessner, Indiana University, Bloomington</td>
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<td>174</td>
<td>Counting and Place Value: How Are They Connected?</td>
<td>McCormick Place - South Building, S402</td>
<td>Megan Murray, TERC, Cambridge, Massachusetts @Inv3_Math</td>
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<td>Karen Economopoulos, TERC, Cambridge, Massachusetts</td>
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<td>175</td>
<td>Whole Body Math: Kinesthetic and Sensory Engagement in Early Childhood Mathematics</td>
<td>McCormick Place - South Building, S402</td>
<td>Yvonne Liu-Constant, Lesley University, Cambridge, Massachusetts</td>
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<td>Jacquelyn Berkowitz, Somerville Public Schools, Massachusetts</td>
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<td>Stephen DeBenedictis, Somerville Public Schools, Massachusetts</td>
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<td>176</td>
<td>Building a Protractor: Connecting Angles, Degrees, Fraction Operations, and Measurement</td>
<td>McCormick Place - Lakeside Center, E271B</td>
<td>Janna Canzone, University of California, Irvine @irvinemathproj</td>
</tr>
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<td>Karajean Hyde, University of California, Irvine</td>
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<td>177</td>
<td>Extreme Equality in the Math Classroom</td>
<td>McCormick Place - Lakeside Center, E353A</td>
<td>Daryl Rock, Rock Academic Services, Brooklyn, New York</td>
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<td>John Mighton, Jump Math, Toronto, Ontario, Canada</td>
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<td>178</td>
<td>I’ve Selected an Open-Ended Math Task—Now What?</td>
<td>McCormick Place - South Building, S405</td>
<td>Amanda Zimolzak, UChicago STEM Education, University of Chicago, Illinois @Zimolzak1</td>
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<td>Alison Whittington, UChicago STEM Education, University of Chicago, Illinois</td>
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<tr>
<td>179</td>
<td>Rethinking Pre-Assessments: Gathering Data with Equity in Mind</td>
<td>McCormick Place - South Building, S404D</td>
<td>Jenna Lai, Public Schools of Brookline, Massachusetts @jennalaib</td>
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<tr>
<td>180</td>
<td>The 100 Bead String: A Tool You Can Count on (and More!)</td>
<td>McCormick Place - Lakeside Center, E451B</td>
<td>Kristen Manquis, Howard County Public School System, Ellicott City, Maryland @kristenmanquis</td>
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<td>Jennifer Stairs, Howard County Public School System, Columbia, Maryland</td>
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<td>181</td>
<td>Using the Effective Teaching Practices to Develop Rigor with Multiplication and Division</td>
<td>McCormick Place - Lakeside Center, E353B</td>
<td>Linda Gojak, Past President, National Council of Teachers of Mathematics, Reston, Virginia; Willowick, Ohio</td>
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<td>182</td>
<td>Activating Adolescents’ Agency for Linking Language and Learning in Mathematics</td>
<td>McCormick Place - Lakeside Center, E450B</td>
<td>Harold Asturias, Lawrence Hall of Science, University of California, Berkeley</td>
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<td>183</td>
<td>Empowering Students in Math through Entrepreneurship</td>
<td>McCormick Place - Lakeside Center, E258</td>
<td>Erin Krupa, North Carolina State University, Raleigh</td>
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<td>Michael Belcher, North Carolina State University, Raleigh</td>
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<td>Jere Confrey, North Carolina State University, Raleigh</td>
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<td>184</td>
<td>Supporting Written Math Arguments: Leveraging Tech Tools for Feedback, Revision, &amp; Assessment Cycles</td>
<td>McCormick Place - South Building, S404A</td>
<td>Andrea Barraugh, Math Transformations, San Diego, California @MathTransform</td>
</tr>
</tbody>
</table>
Thursday Afternoon Workshops

185 Tape Diagrams: A Valuable Tool for Students
8–10 Workshop
McCormick Place - South Building, S401C
Jennifer Tadlock, Great Minds, Lafayette, Louisiana

186 Where Is the Language Love? Content Objectives Are Not Enough
8–10 Workshop
McCormick Place - Lakeside Center, E451A
Heather Kohn, Marlborough Public Schools, Massachusetts
@heather_kohn

187 Who Thinks Learns! Top 5 Strategies to Foster Thinking and Conversations for High School Students
8–10 Workshop
McCormick Place - South Building, S403
Jules Bonin-Ducharme, CSCDGR, New Liskeard, Ontario, Canada
@jboninducharme

188 Mathematical Language Routines: Cultivating Conversation in High School Classrooms
10–12 Workshop
McCormick Place - Lakeside Center, E271A
Vanessa Cerrahoglu, Orange County Department of Education, California
@mymathsoul
Jennifer Wilson, Illustrative Mathematics, Black Mountain, North Carolina
Elizabeth Ramirez, Illustrative Mathematics, New York, New York

189 Nature Does Math: Using Soap Films to Solve Minimum Distance Problems
10–12 Workshop
McCormick Place - Lakeside Center, E450A
Todd Feitelson, Millbrook School, New York
@toddfeitelson

190 Project-Based Learning: A Journey in Mathematics
10–12 Workshop
McCormick Place - South Building, S401A
Marieta Angjeli, Toronto District School Board, Ontario, Canada
@angjeli4math

191 Pop-Up Math Play: How to Make Joyful Math a Part of Every Day
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - Lakeside Center, E265
Molly Daley, Education Service District 112, Vancouver, Washington
@mdaley15

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April 2nd at 11:00
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Exhibit Hall

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Thursday Afternoon Sessions

192 Catalyzing Change in Early Childhood and Elementary: Broadening the Purposes of Learning Mathematics and Dismantling Inequitable Structures  
Pre-K–5 Session  
McCormick Place - Lakeside Center, E267  
Cathery Yeh, Chapman University, Orange, California  
@YehCathery  
Anne Marshall, Lehman College, New York, New York

193 The Power of Students’ Ideas  
Pre-K–2 Session  
McCormick Place - South Building, S406A  
Annie Fetter, 21st Century Partnership for STEM Education, Rutledge, Pennsylvania  
@MFAnnie

194 Visualization: Connecting Representations—What Works and What Doesn’t?  
Pre-K–2 Session  
McCormick Place - Lakeside Center, E260  
Sarah Schaefer, Mathodology, Atlantic Beach, Florida  
@Mathodology  
Ban-Har Yeap, Consultant, Singapore

195 All Means All: Strategies That Make Math Accessible to Every Student  
3–5 Session  
McCormick Place - Lakeside Center, D2 - A  
John Tapper, St. Michael’s College, Burlington, Vermont

196 Fact Strategy Instruction + Meaningful Discourse = Student Understanding  
3–5 Session  
McCormick Place - Lakeside Center, D2 - E  
Deborah Thompson, DreamBox Learning, Derby, Kansas  
@DThompsonMath

197 LSA: Representation, Computation, Communication: Purposeful Use of Routines within Curriculum Materials  
3–5 Session  
McCormick Place - South Building, S401D  
Kristin Gray, Illustrative Mathematics, Lewes, Delaware  
@mathminds  
Jody Guarino, Orange County Department of Education, California  
John Drake, Newport Mesa Unified School District, California

198 The Story of Problem Solving: Looking Back and Moving Forward  
6–8 Session  
McCormick Place - Lakeside Center, D2 - G  
Sherri Martinie, Kansas State University, Manhattan  
Julie Thiele, Kansas State University, Manhattan

199 Whole-School Math Problems: Empower Students and Create Community  
6–8 Session  
McCormick Place - Lakeside Center, E263  
Julie Biggane, Tompkins Square Middle School, NYC DOE, New York, New York  
Rachel Gordon, Tompkins Square Middle School, NYC DOE, New York, New York

200 Change the Faces in Your Math Classroom  
8–10 Session  
McCormick Place - Lakeside Center, D2 - J  
Donald Rogers, The Right Addition, Towson, Maryland

201 Double-Block Algebra to Foster Math Self-Efficacy  
8–10 Session  
McCormick Place - Lakeside Center, D2 - D  
Phoebe Balentyne, Sycamore CUSD #427, Illinois

202 PBL: Promoting Authentic Student Voice for ELL by Using Algebra to Enhance Career + College Readiness  
8–10 Session  
McCormick Place - Lakeside Center, E262  
Ruby Lin, Flushing International High School, New York  
@rubylin1011

203 Take Your Geometry Lessons to the Next Level with Desmos Activity Builder  
8–10 Session  
McCormick Place - South Building, S406B  
Anna Scholl, Xavier High School, Marion, Iowa  
@MathTeachScholl  
David Petro, Windsor Essex Catholic District School Board, Harrow, Ontario, Canada
Thursday Afternoon Sessions

204 Walking the Walk: Ensuring Success for ALL Students in Detracked High School Mathematics Classes
8-10 Session
McCormick Place - Lakeside Center, E350
Kristin Weller, P.K. Yonge Developmental Research School at the University of Florida, Gainesville
Taylor Bainter, P. K. Yonge Developmental Research School at the University of Florida, Gainesville

205 Starting Your Inquiry Practice as Early Career Teachers
10-12 Session
McCormick Place - Lakeside Center, E264
Samantha Dougherty, Central Hardin High School, Elizabethtown, Kentucky
Cassandra Seiboldt, Lincoln, Nebraska
Erin Oakley, Minneapolis, Minnesota

206 The Joy of Creation: Serious High School Math in the Arts
10-12 Session
McCormick Place - Lakeside Center, D2 - L
Vin Urbanowski, Academy of Information Technology & Engineering, Stamford, Connecticut

207 Two Heads Are Better Than One: Using Co-Teaching to Support Equity in Secondary Mathematics
10-12 Session
McCormick Place - Lakeside Center, D2 - I
Ruthmae Sears, University of South Florida, Tampa
Caree Pinder, University of South Florida, Tampa
Cynthia Castro-Minnehan, University of South Florida, Tampa

208 Enhancing the Quality of Mathematics in Classrooms through Lesson Study: A Japanese Perspective
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, D2 - B
Yoshinori Shimizu, University of Tsukuba, Ibaraki, Japan

209 From Coaching to Confidence: Building Capacity within a School
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E261
Elizabeth Petty, Meigs Middle Magnet School, Nashville, Tennessee

210 Increasing Desmos Love in Your Mathematics Community
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, D2 - C
Chris Wright, Baltimore County Public Schools, Maryland
@cwright4math
Brett Parker, Baltimore County Public Schools, Maryland

211 Going Dutch? Collaboration in Designing Curricular Materials That Are Meaningful to Students
General Interest Session
McCormick Place - Lakeside Center, E351
Arthur Bakker, Utrecht University, the Netherlands

212 Moving Achievement Together Holistically: An Indigenous Approach to Math Education
General Interest Session
McCormick Place - Lakeside Center, Arie Crown
Lisa Lunney Borden, St. Francis Xavier University, Antigonish, Nova Scotia, Canada

213 NCTM Leadership over a Century of Mathematics Education
General Interest Session
McCormick Place - Lakeside Center, E259
Henry Kepner, Past President, National Council of Teachers of Mathematics, Reston, Virginia; University of Wisconsin–Milwaukee

214 Of the Essence: The Art and Science of Learning and Teaching from Data
General Interest Session
McCormick Place - Lakeside Center, D2 - K
Christine Franklin, American Statistical Association, Watkinsville, Georgia

215 Statistics: Then and Now
General Interest Session
McCormick Place - Lakeside Center, D2 - H
Kathryn Kozak, Coconino Community College/AMATYC, Flagstaff, Arizona
Thursday Afternoon Sessions

216 Teaching and Learning Mathematics: Where Have We Been, Where Are We Now, Where Should We Be Going?
   General Interest Session
   McCormick Place - Lakeside Center, E354B
   Gail Burrill, Past President, National Council of Teachers of Mathematics, Reston, Virginia; Michigan State University, East Lansing

217 The Effects of Unpacking Teacher Identity in the Classroom
   General Interest Session
   McCormick Place - Lakeside Center, E270
   Sarah DiMaria, Cedars International Next Generation High School, Austin, Texas @MsDiMaria
   Dwaina Sookhoo, Academy for Young Writers, Brooklyn, New York
   Allie Webb, Columbus City Schools, Ohio

218 Valuing the Whole: Building on Black Girls’ Brilliance through Holistic and Transformative Learning
   General Interest Session
   McCormick Place - Lakeside Center, D2 - F
   Crystal Morton, Indiana University (IUPUI), Indianapolis @drHillMorton
   India Scott, Lawrence Central High School, Indianapolis, Indiana

219 The Evolution of Doctoral Programs in Mathematics Education from Research to Teaching to Whatever
   Higher Education Session
   McCormick Place - Lakeside Center, E352
   Robert Reys, University of Missouri, Columbia

Notes

219.1 AP® Statistics Panel Discussion
10-12 Exhibitor Workshop
McCormick Place - Lakeside Center, E253A
Texas Instruments Incorporated, Dallas, Texas

219.2 AP® Calculus Panel Discussion (Part 1)
10-12 Exhibitor Workshop
McCormick Place - Lakeside Center, E253D
Bedford, Freeman & Worth Publishers, Hamilton, New Jersey

219.3 Fresh Ideas for Sparking and Supporting Student Discourse in the Blended Classroom
6-8 Exhibitor Workshop
McCormick Place - Lakeside Center, Presentation Pavilion
Amplify Education, Brooklyn, New York

219.4 Develop and Assess the Mathematical Practice Standards through the Use of Performance Tasks
Coaches/Leaders/Teacher Educators
Exhibitor Workshop
McCormick Place - Lakeside Center, E253B
Exemplars, Underhill, Vermont
Thursday Afternoon Workshops

220 Building a Community of Mathematical Thinkers in K-2 Classrooms
   Pre-K-2 Workshop
   McCormick Place - South Building, S404D
   Susan Katt, Lincoln Public Schools, Nebraska
   @susiekatt
   Megan Fleischman, Lincoln Public Schools, Nebraska
   Elizabeth Eddy, Lincoln Public Schools, Nebraska

221 Moving beyond Naming Squares, Circles, & Triangles: Developing Geometric Thinking in Young Learners
   Pre-K-2 Workshop
   McCormick Place - Lakeside Center, E450B
   Douglas Douglas-Meyer, Oak Creek-Franklin Joint School District, Milwaukee, Wisconsin
   @mdmeyer
   Melissa Hedge, University of Wisconsin-Milwaukee

222 Using Children’s Literature to Support Understanding of Operations in Preschool and Kindergarten
   Pre-K-2 Workshop
   McCormick Place - Lakeside Center, E353A
   Veronica Castro, Erikson Institute, Chicago, Illinois
   Rebeca Itzkowich, Erikson Institute, Chicago, Illinois

223 Using the QFT (Question Formulation Technique) and 3-Acts to Build Math Skills & Excitement
   Pre-K-2 Workshop
   McCormick Place - Lakeside Center, E271B
   Jaime Brookman, Richmond City Public Schools, Virginia
   @jmejimbo94

224 Building Bridges . . . Not Walls! Moving Students toward Multiplicative Automaticity in Grades 3-5
   3–5 Workshop
   McCormick Place - Lakeside Center, E271A
   Dina Mendola, US Math Recovery Council, Oak Creek, Wisconsin
   @DinaMendola

225 Elementary Fraction Models in Scratch: Making Computational Thinking Connections
   3–5 Workshop
   McCormick Place - Lakeside Center, E25B
   Carla Strickland, UChicago STEM Education, Illinois
   @ClisforCarla
   Kathryn Rich, Michigan State University, East Lansing
   Donna Eaton, UChicago STEM Education, Illinois

226 Going beyond Three-Act Math: Engaging in Mathematical Modeling and Empowering Young Mathematicians
   3-5 Workshop
   McCormick Place - Lakeside Center, E353B
   Jennifer Suh, George Mason University, Fairfax, Virginia
   @completemath
   Megan Wickstrom, Montana State University, Bozeman
   Mary Alice Carlson, Montana State University, Bozeman

227 A “Boxful” of Geometry from One Little Greeting Card
   6-8 Workshop
   McCormick Place - Lakeside Center, E450A
   Nicholas Restivo, MOEMS, Bellmore, New York
   @TweetMOEMS

228 Building Agency, Fostering Identities, and Promoting Social Change via Social Justice Contexts
   6-8 Workshop
   McCormick Place - Lakeside Center, E265
   Marilyn Strutchens, Auburn University, Alabama
   @strutchens

229 Creating Mathematical Discourse through Connections
   6-8 Workshop
   McCormick Place - South Building, S403
   Jennifer Outz, Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Seminole Middle School, Florida
   @outz
   Barb Lynch, Lakewood City Schools, Ohio

230 Progressing through Proportional Reasoning with Mr. Tall and Mr. Short
   6-8 Workshop
   McCormick Place - South Building, S404A
   Alyson Eaglen, Loudoun County Public Schools, Ashburn, Virginia
   @aleaglen
   Beth Terry, Riffa Views International School, Bahrain
   Shrutik Sanghavi, Riffa Views International School, Bahrain

231 Geometry Proof Cards: Diagram-Based Puzzles to Support Learning of Proof in High School Geometry
   8-10 Workshop
   McCormick Place - South Building, S402
   Wayne Nirode, Miami University, Oxford, Ohio
   @WNirode
Thursday Afternoon Workshops

     8-10 Workshop
     McCormick Place - South Building, S401A
     Peg Cagle, LAUSD/Reseda High School, Woodland Hills, California
     @pegcagle

233  Translanguaging to Persevere: Exploring Latinx Bilingual Students’ Collective Problem Solving
     8-10 Workshop
     McCormick Place - Lakeside Center, E451B
     Hector Morales, Northeastern Illinois University, Chicago
     Joseph DiNapoli, Montclair State University, New Jersey
     Craig Willey, Indiana University—Purdue University Indianapolis

234  Man-Made and Natural Disasters: Experimental Simulations for Algebra Classes
     10-12 Workshop
     McCormick Place - Lakeside Center, E451A
     Amy Herman, Math Solutions, Louisville, Kentucky
     Connie Horgan, Math Solutions, Sun City West, Arizona

235  Promoting a Social & Creative Classroom with Desmos Activities
     10-12 Workshop
     McCormick Place - South Building, S404BC
     Mark Kreie, Brookings High School, South Dakota
     Jessica Breur, Mounds View Public Schools, Shoreview, Minnesota

236  Unique Ideas + Reluctant Learners = Amazing Opportunities
     10-12 Workshop
     McCormick Place - South Building, S405
     Aundrea Atwood-Starkey, Anne Arundel County Public Schools, Annapolis, Maryland
     Kevin Wajek, Anne Arundel County Public Schools, Annapolis, Maryland
     Ruth Goldstraw, Anne Arundel County Public Schools, Annapolis, Maryland

237  Growing Teachers into Leaders of High-Quality Equitable Math Instruction
     Coaches/Leaders/Teacher Educators Workshop
     McCormick Place - Lakeside Center, E353C
     Caroline Ebby, University of Pennsylvania, Philadelphia
     Lindsay Goldsmith-Markey, University of Pennsylvania, Philadelphia
     Sheila Stubbs, School District of Philadelphia, Pennsylvania

238  Navigating Coach-Teacher Relationships to Move toward Equity in Math Education
     Coaches/Leaders/Teacher Educators Workshop
     McCormick Place - South Building, S401BC
     Ho Nguyen, San Francisco Unified School District, California
     Nicole Louie, University of Wisconsin-Madison
     Angela Torres, San Francisco Unified School District, California

Notes
Thursday Afternoon Sessions 4:00 p.m.–5:00 p.m.

239 Catalyzing Change in Early Childhood and Elementary: Developing Mathematical Identity, Agency, and Deep Understanding through Equitable Instruction
Pre-K–5 Session
McCormick Place - Lakeside Center, E267
Nicole Rigelman, Portland State University, Oregon
DeAnn Huinker, Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Wisconsin-Milwaukee

240 NSF’s Impact on Mathematics Curriculum and Implementation: Where We’ve Been and Where We Are Going
Session
McCormick Place - South Building, S401D
Karen Marrongelle, National Science Foundation, Alexandria, Virginia
Mike Steele, National Science Foundation, Alexandria, Virginia

241 Hands Down, Speak Out: Exploring the Crossover between Math and Literacy Talk
Pre-K–2 Session
McCormick Place - Lakeside Center, D2 - L
Kassia Omohundro Wedekind, Stenhouse Publishers, Arlington, Virginia
@KassiaOWedekind
Christy Thompson, Fairfax County Public Schools, Falls Church, Virginia

242 What Strategies Work to Tackle Problem Solving in an Urban Community Classroom?
Pre-K–2 Session
McCormick Place - Lakeside Center, E261
Naomi Ishida, Rosalyn Yalow Charter School, New York, New York
Rosa Quiles, Rosalyn Yalow Charter School, Bronx, New York

243 Discover and Leverage Your Students’ Strengths through Powerful Asset-Based Instructional Design
3–5 Session
McCormick Place - South Building, S406B
Beth Kobett, Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Stevenson University, Maryland
@bkobett

244 Making Fractions Fun! It Is Possible!
3–5 Session
McCormick Place - Lakeside Center, D2 - F
Jennifer Wilson, McCants Middle School, Anderson, South Carolina
@mathteachwilson

245 One Little Spark! Igniting Imagination in Elementary Mathematics through STEAM
3–5 Session
McCormick Place - Lakeside Center, D2 - C
Richard Cox, Bellarmine University, Louisville, Kentucky
RC_STEAM
Sarah Bush, Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Central Florida, Orlando

246 Using Rich Tasks to Develop Algebraic Habits of Mind: A Case Study
3–5 Session
McCormick Place - Lakeside Center, D2 - B
Sonal Malpani, Metamorphosis TLC, New York, New York
Antonia Cameron, Metamorphosis TLC, New York, New York
Kimberly Delaney, Metamorphosis P.S. 329Q, Queens, New York

247 A Project on the Theme of Energy Working the Statistical Literacy in Basic School Curriculum
6–8 Session
McCormick Place - Lakeside Center, E352
Yuriko Baldin, Universidade Federal de São Carlos, São Paulo, Brazil

248 Building Authentic Math Engagement through Art
6–8 Session
McCormick Place - Lakeside Center, E259
Colleen Wilson, The Barnes Foundation, Philadelphia, Pennsylvania
Annie Fetter, 21st Century Partnership for STEM Education, Rutledge, Pennsylvania

249 Great Curriculum Is Not Enough: Strategies for Overcoming Implementation Challenges
6–8 Session
McCormick Place - Lakeside Center, E262
Stephen Sebelski, UnboundEd, Philadelphia, Pennsylvania

### Thursday Afternoon Sessions

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<td>250</td>
<td>How Common Wrong Answers Can Be Used to Support Student Learning</td>
<td>4:00 p.m.–5:00 p.m.</td>
<td>McCormick Place - Lakeside Center, E260</td>
<td>Cristina Heffernan, Worcester Polytechnic Institute, Massachusetts @CristinaHeff Cindy Starks, ASSISTments, Arlington, Massachusetts</td>
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<tr>
<td>251</td>
<td>Proportional Reasoning Can Be More Than Cross Multiply and Divide</td>
<td></td>
<td>McCormick Place - Lakeside Center, D2 - E</td>
<td>Olof Steinthorsdottir, University of Northern Iowa, Cedar Falls Suzanne Riehl, University of Northern Iowa, Cedar Falls</td>
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<tr>
<td>252</td>
<td>Empowering Students to Use Dynamic Technology Productively</td>
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<td>McCormick Place - Lakeside Center, E351</td>
<td>Sandy Madden, University of Massachusetts Amherst MathMadden</td>
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<td>253</td>
<td>Teaching Math for Social Justice: Lessons Learned from within a Mile Range</td>
<td></td>
<td>McCormick Place - Lakeside Center, E263</td>
<td>Ma Bernadette Salgarino, Santa Clara County Office of Education, Mountain House, California @salq274</td>
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<tr>
<td>254</td>
<td>You Want Me to Talk to Them? Supporting Students to Work Collaboratively</td>
<td></td>
<td>McCormick Place - Lakeside Center, D2 - A</td>
<td>Janet Andreasen, University of Central Florida, Orlando @JanetAndreasen Christine Miller, The Geneva School, Winter Park, Florida</td>
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<tr>
<td>256</td>
<td>Iterating through the High School Math Curriculum</td>
<td></td>
<td>McCormick Place - Lakeside Center, D2 - J</td>
<td>Cheryl Gann, North Carolina School of Science and Mathematics, Durham, North Carolina @hypatia314</td>
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<tr>
<td>257</td>
<td>The Status Quo in High School Mathematics is Unacceptable</td>
<td></td>
<td>McCormick Place - Lakeside Center, D2 - I</td>
<td>Eric Milou, Rowan University, Glassboro, New Jersey @drMi</td>
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<td>258</td>
<td>Viable Arguments for a Viable Future</td>
<td></td>
<td>McCormick Place - Lakeside Center, D2 - K</td>
<td>John Stevens, Chaffey Joint Union High School District, Ontario, California @jstevens009</td>
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<tr>
<td>259</td>
<td>Building Fluency Flexibility with Formative Instruction Cycles and Routines</td>
<td></td>
<td>McCormick Place - Lakeside Center, D2 - D</td>
<td>Cheryl Tobey, Palermo, Maine Kate Greeley, MSAD 75, Topsham, Maine</td>
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<td>260</td>
<td>Collaborative Teams: How Do We Support Teams to Learn Together?</td>
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<td>McCormick Place - Lakeside Center, D2 - G</td>
<td>Nicora Placa, Hunter College, New York, New York @nicoraplaca</td>
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<td>261</td>
<td>Empower a Culture of Continuous Improvement Using NCSM’s Bold Leadership Essential Actions</td>
<td></td>
<td>McCormick Place - Lakeside Center, E270</td>
<td>Mona Toncheff, NCSM, Phoenix, Arizona @toncheff5</td>
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<td>262</td>
<td>Becoming Mathematical: The Power of Teachers to Productively Shape Students’ Identities</td>
<td></td>
<td>McCormick Place - South Building, S406A</td>
<td>Meaghan Pavlovich, University of Kansas, Lawrence @megpav4</td>
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<td>Carrie LaVoy, University of Kansas, Lawrence Kelli Thomas, University of Kansas, Lawrence</td>
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### Thursday Afternoon Sessions

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<td>263</td>
<td>Leveraging the Principles of Number Talks to Promote Change in the Mathematics Classroom</td>
<td>General Interest Session</td>
<td>McCormick Place - Lakeside Center, Arie Crown</td>
<td>Sherry Parrish, Author and Independent Consultant, Birmingham, Alabama @numbertalks</td>
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<tr>
<td>264</td>
<td>Native American Mathematics Materials for the Classroom</td>
<td>General Interest Session</td>
<td>McCormick Place - Lakeside Center, E350</td>
<td>Charles Funkhouser, California State University, Fullerton</td>
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<td>265</td>
<td>Your Mathematics Heart and Soul: Living the Quadrant II Life!</td>
<td>General Interest Session</td>
<td>McCormick Place - Lakeside Center, E354B</td>
<td>Timothy Kanold, Center for Mathematics Learning, Lodi, California @tkanold</td>
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<td>266</td>
<td>Self-Efficacy in the Calculus II Flipped Classroom</td>
<td>Research Session</td>
<td>McCormick Place - Lakeside Center, E264</td>
<td>John Kerrigan, Middletown Township/Rutgers University, New Brunswick, New Jersey @kerrigan_john, Geraldine Cochran, Rutgers University, New Brunswick, New Jersey</td>
</tr>
<tr>
<td>266.1</td>
<td>Building Research-Based Academic Language Practices into Your Math Lessons</td>
<td>6-8 Exhibitor Workshop</td>
<td>McCormick Place - Lakeside Center, E253A</td>
<td>Speak Agent, Inc.</td>
</tr>
<tr>
<td>266.2</td>
<td>Imagine Learning's Language Advantage: Helping Students to Find Their Voice in the Math Classroom</td>
<td>General Interest Exhibitor Workshop</td>
<td>McCormick Place - Lakeside Center, E253B</td>
<td>Imagine Learning</td>
</tr>
<tr>
<td>266.3</td>
<td>AP® Calculus Panel Discussion (Part 2)</td>
<td>10-12 Exhibitor Workshop</td>
<td>McCormick Place - Lakeside Center, E253D</td>
<td>Bedford, Freeman &amp; Worth Publishers, Hamilton, New Jersey</td>
</tr>
</tbody>
</table>

**Notes**

- Implement the Effective Teaching Practices
- Experience the Depth and Excitement of Mathematics
- Look Back and Move Forward: A Centennial View
- Create Positive Change
- Build Student Agency, Foster Student Identity, Promote Social Change
Thursday Afternoon Bursts

**267** NCTM’s Resources for the Elementary Classroom Burst McCormick Place - Lakeside Center, E450B
Monica Tienda, Key Elementary, Oak Park School District, Royal Oak, Michigan

**268** Counting Collections: Getting Started Pre-K-2 Burst McCormick Place - South Building, S402
Josie Burg, Ankeny Community School District, Iowa @MrsBurg1st
Angela Schneden, Ankeny Community School District, Iowa

**269** A Classroom Structure to Cast a Wider Net for Inclusivity 3-5 Burst McCormick Place - Lakeside Center, E258
Justin Johns, International School of Latvia, Riga @JG_Johns
Evan Guyer, American Embassy School, New Delhi, India

**270** Mathical Author: A Hundred Billion Trillion Ways to Explore The World 3-5 Burst McCormick Place - Lakeside Center, E451A
Seth Fishman, Self Employed, Manhattan Beach, California

**271** Reading like a Mathematician! Making Greater Meaning Is as Easy as 1,2,3 3-5 Burst McCormick Place - Lakeside Center, E353A
Candi DiBiase, HMH - Math Solutions, Merritt Island, Florida
Allison Gesacion, HMH - Math Solutions, Tampa, Florida

**272** Goodbye Notebooks! Exploring a Digital, Inquiry-Based Mathematics Classroom 6-8 Burst McCormick Place - Lakeside Center, E450A

**273** Mathical Author: Secrets, Lies and Algebra: Mathematical Fiction in the Classroom. 6-8 Burst McCormick Place - South Building, S403
Wendy Lichtman, Self Employed, Berkeley, California

**274** Meaning-Makers: Offering a Mathematical Identity as an Advocate for Social Justice 6-8 Burst McCormick Place - South Building, S404A
Sylvia Glassco, The Ancona School, Chicago, Illinois

**275** What Does Effective Fraction Intervention Look Like in Middle School or Beyond? 6-8 Burst McCormick Place - South Building, S401BC
Mark Goldstein, Center for Mathematics and Teaching, Redondo Beach, California

**276** Assessment Tracking, Evaluating, and Reporting Tool for Mastery-Based Competency Development 8-10 Burst McCormick Place - South Building, S401A
Mathew Geddes, St. Michaels University School, Victoria, British Columbia, Canada

**277** Changing Mathematical Mindsets with High School Number Talks: A Story of Our Research 8-10 Burst McCormick Place - Lakeside Center, E353B
Jacqueline Palmquist, Metea Valley High School, Aurora, Illinois @thumbsupmath
Patricia Baltzley, Gardiner, Montana
Alyssa Schneider, Metea Valley High School, Aurora, Illinois

**278** Connecting All Six Trigonometric Functions to the Unit Circle 10-12 Burst McCormick Place - South Building, S404BC
Andrew Hill, Brookfield High School, Connecticut
Thursday Afternoon Bursts

279  Statistics Standards for the School: Solving the Problems of Your School
     McCormick Place - Lakeside Center, E271B
     Nicholas King, University of Tennessee, Knoxville
     Julie Steimer, Knoxville, Tennessee

280  You Down with SBG? Yeah, You know Me
     McCormick Place - Lakeside Center, E353C
     Anthony Lecheler, Notre Dame High School, San Jose, California
     @LechelerMath

281  Evidencing Standards-Based Mathematics Teaching Practices in Classroom Observations
     McCormick Place - Lakeside Center, E265
     Faith Peddie, National Council of Teachers of Mathematics, Reston, Virginia

282  Promoting Equitable Access to Mathematics: The Impact of Neuroscience
     McCormick Place - South Building, S404D
     Dawn Pilotti, Currey Ingram Academy, Brentwood, Tennessee
     Mary Rasgdale, Currey Ingram Academy, Brentwood, Tennessee

283  What If?: Letting Learners Lead
     McCormick Place - Lakeside Center, E271A
     Jodie Bailey, Hilliard City Schools/Ohio Council of Teachers of Mathematics (OCTM)
     @BaileyJodie

284  Math Fair: A Path to Problem Solving and Peer Evaluation
     McCormick Place - South Building, S405
     Ana Barbosa, Instituto Politécnico de Viana do Castelo, Portugal
     Isabel Vale, Escola Superior de Educação, Viana do Castelo, Portugal
     Isabel Cabrita, University of Aveiro, Portugal

Notes
Thursday Afternoon Sessions

5:30pm–7:00pm

285 NCTM and a Century of Mathematics Education: A Review Sprinkled with Music

General Interest Session
McCormick Place - Lakeside Center, Arie Crown

What led to NCTM’s birth in 1920? How did NCTM and mathematics education fare through the Roaring ’20s, the Great Depression, WWII, Sputnik and the New Math, the ’70s back-to-basics era, the ’80s problem-solving movement, the NCTM Standards of the ’90s, No Child Left Behind, and the Common Core? This history will be covered in a presentation including songs and parodies.

Zalman Usiskin, University of Chicago (Emeritus), Illinois
Andrew Chukerman, Composer, Arranger, Music Director; Los Angeles, California

Zalman Usiskin is a professor emeritus of education at the University of Chicago. In 1983 he helped initiate the University of Chicago School Mathematics Project (UCSMP) and he served as its overall director from 1987 until June 2019. He began his career as a high school mathematics teacher and his research has focused accordingly on the teaching and learning of arithmetic, algebra, and geometry, with particular attention to applications of mathematics at all levels, and the incorporation of calculator and computer technology in learning and doing mathematics.

Usiskin is the author or co-author of over 150 articles and other papers on mathematics and mathematics education, and dozens of books and research monographs. In 2014, NCTM published a book containing 38 of his talks and articles. He has been on the program of every NCTM annual meeting since 1972. He received the Glenn Gilbert (National Leadership) Award from the National Council of Supervisors of Mathematics in 1994, and a Lifetime Achievement Award from NCTM in 2001. In 2018 he received the ISDDE Prize for Lifetime Achievement from the International Society for Design and Development in Education.

Andrew Chukerman works extensively in film, television, theatre, and concert work as a composer, orchestrator, music director, and keyboardist. He is a winner of the Richard Rodgers Award, the American Theatre Wing’s Jonathan Larson Award, and the Edgerton Award as composer/co-lyricist of the musical The Princess and the Black-Eyed Pea.

Humanizing Disability in Mathematics Education

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<td><strong>Price</strong></td>
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Without NCTM membership, you’re missing out on benefits that empower you and your students.

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Marilyn Burns, Founder of Math Solutions, speaks at 8am on Thursday, April 2nd.

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Friday

Registration Hours
7:00 a.m.–5:00 p.m.

Exhibit & NCTM Central Hours
9:00 a.m.–5:00 p.m.

NETWORKING LOUNGE: TASKS THAT TRANSCEND TIME

<table>
<thead>
<tr>
<th>Time</th>
<th>Task</th>
<th>Speaker</th>
</tr>
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<tbody>
<tr>
<td>10:00 a.m.–10:20 a.m.</td>
<td>The Michael Jordan Problem High School</td>
<td>Daniel Teague</td>
</tr>
<tr>
<td>10:30 a.m.–10:50 a.m.</td>
<td>Chocolate Chip Cookie Problem Middle School</td>
<td>Kevin Dykema</td>
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<tr>
<td>11:30 a.m.–11:50 a.m.</td>
<td>Rock-Paper-Scissors Difference of Two Die Middle School</td>
<td>Mark Ellis</td>
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<tr>
<td>12:00 p.m.–12:20 p.m.</td>
<td>The Bus Problem All Grade Levels</td>
<td>Rose Marie Zbiek</td>
</tr>
<tr>
<td>12:30 p.m.–12:50 p.m.</td>
<td>Developing Number Sense on the Number Line MTMS</td>
<td>Jennifer Bay-Williams</td>
</tr>
<tr>
<td>1:00 p.m.–1:20 p.m.</td>
<td>The Unusual Baker Grades 3-5</td>
<td>John SanGiovanni</td>
</tr>
<tr>
<td>1:30 p.m.–1:50 p.m.</td>
<td>Trigonometry + Bingo = Tringo High School</td>
<td>Dave Ebert</td>
</tr>
<tr>
<td>2:00 p.m.–2:20 p.m.</td>
<td>What Time Is It? Grades 3-5</td>
<td>Lorie Huff</td>
</tr>
<tr>
<td>2:30 p.m.–2:50 p.m.</td>
<td>A Mystery Function High School</td>
<td>Olive Chapman</td>
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* Author will be available after talk for book signing.

NETWORKING LOUNGE: SHARED INTEREST GROUPS

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>10:00 a.m.–11:00 a.m.</td>
<td>Detracking: Creating Equitable Structures</td>
<td>Bryan Meyer, Andrea McCloskey, Theodore Chao</td>
</tr>
<tr>
<td>12:00 p.m.–1:00 p.m.</td>
<td>Early Childhood (Pre-K-2)</td>
<td>Jennifer McCray, Jeanine Brownell, Marvin Cohen, Matt McLeod</td>
</tr>
<tr>
<td>2:00 p.m.–3:00 p.m.</td>
<td>Place Value and the Anti-Racist Mathematician</td>
<td>Hema Khodai, Marian Dingle, Ralph Pantozzi, Tina Cardone, Tyrone Martinez-Black</td>
</tr>
</tbody>
</table>

Highlights

Beyond Helping with Homework: Meaningful Support for Parents and Math ........................................ 290
Iris Carl Address: ¡Ya Bastal Enough Already! ........................................ 380
Mathical Author: Cao Chong Weighs an Elephant: Creative Thinking by a Child Prodigy in Ancient China .............. 410
Mathical Author: Really Big Numbers ........................................ 416
NCTM Business Meeting ........................................ 426.1
President-Elect Address: Catalyzing Change in Middle School Mathematics: Initiating Critical Conversations... 453
ShadowCon ........................................ 522
Mathical Author: To the Moon and Back—Using Math! ........................................ 549
Mathical Author: Math Has Feelings Too—Exposing Students to the Compassionate and Creative Side of Math ........................................ 550
Mathical Author: Which One Doesn’t Belong? and Other Mathematical Ambiguities ........................................ 553
New Teacher Celebration ........................................ 566
Ignite! Looking Back and Moving Forward ........................................ 566.1
The Infinity Bar and the Wellness Workshops will be held in the NCTM Exhibit Hall.

**Infinity Bar:** Conference speakers will talk to individuals or groups of teachers about issues related to mathematics education. You will be able to sign up either in advance or on-site to speak to someone at a designated time.

**Wellness Workshops:** Take time to focus on your well-being. As teachers, you need to constantly respond to change, manage a work/life balance, and stay grounded. These sessions will help you manage life’s challenges as a classroom teacher.

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### INFINITY BAR

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
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<tr>
<td>9:30 a.m.-10:30 a.m.</td>
<td>Marta Civil, Sherry Parish, Ron Lancaster</td>
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<tr>
<td>11:00 a.m.-12:00 p.m.</td>
<td>Arthur Baker, Lisa Lunney Borden, Linda Sheffield, Karen Karp</td>
</tr>
<tr>
<td>12:30 p.m.-1:30 p.m.</td>
<td>Zal Usiskin, Linda Fulmore, Catherine Fosnot, Julia Aguirre</td>
</tr>
<tr>
<td>2:00 p.m.-3:00 p.m.</td>
<td>José Vilson, Nora Ramirez (Iris Carl Address), Margaret (Peg) Smith, Jennifer Bay-Williams</td>
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### WELLNESS WORKSHOPS

1. **Yoga in the Classroom**  
   *Arianna Brooks, Corepower Yoga Certified Instructor*  
   This workshop will teach mindful yoga poses and meditation that you can incorporate in your classroom environment. Appropriate for all student ages.

2. **Mirrors: The Teacher Survival Tool**  
   *Laila Nur*  
   Windows give us insight into the lives of others and mirrors allow us to see ourselves in the world. But sometimes windows give us the impression that our effort and skills aren’t good enough. Yet, we’ve always been enough. This session will work to help us recognize and connect to the mirrors in our community as a means of self-care and survival.

3. **Chakra Balancing: The History and the Healing**  
   *Ruth Cohen, Yoga Alliance Certified Instructor*  
   What is a chakra? What happens when it is out of balance? What does that mean for you and your body? We will discuss each chakra, what can trigger misalignment and what you can do to find peace and balance.

---

**Notes**

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Friday Morning Sessions

286 Leadership in Action: Presidential Awardees—Impact, Opportunity, and Support
Session
McCormick Place - Lakeside Center, E260
Mike Steele, National Science Foundation, Alexandria, Virginia
Joni Falk, TERC, Cambridge, Massachusetts
Luke Wilcox, East Kentwood High School, Michigan

287 Ideas, Not Answers
Pre-K–2 Session
McCormick Place - Lakeside Center, E352
Berkeley Everett, Glendale, California
@BerkeleyEverett

288 The Equal Sign = Understanding
Pre-K–2 Session
McCormick Place - Lakeside Center, E259
David Janssen, Southern Nevada Regional Professional Development, Las Vegas
Michael Everson, Clark County School District, Las Vegas, Nevada

289 VENN_turing into Math and ELA to Deepen Understanding
Pre-K–2 Session
McCormick Place - Lakeside Center, E263
Jeremy Winters, MTSU, Murfreesboro, Tennessee
Dovie Kimmins, MTSU, Murfreesboro, Tennessee
Cynthia Cliche, Murfreesboro City Schools, Tennessee

290 Beyond Helping with Homework: Meaningful Support for Parents and Math
3–5 Session
McCormick Place - Lakeside Center, Arie Crown
Christopher Danielson, Desmos, Inc., Saint Paul, Minnesota
@Trianglemancsd

291 Bringing Intervention into the 21st Century
3–5 Session
McCormick Place - Lakeside Center, E270
Tomika Altman-Lewis, Seawell Elementary School, Chapel Hill, North Carolina
@Prettysqueaky

292 Play-Full Mathematics for Justice
3–5 Session
McCormick Place - Lakeside Center, D2 - G
Lybrya Kebrea, University of Central Florida, Orlando
@lybryakebreab
Farshid Safi, University of Central Florida, Orlando

293 The Whole School Agreement: Aligning across K-Grade 6
3–5 Session
McCormick Place - South Building, S406A
Karen Karp, Johns Hopkins University, Baltimore, Maryland

294 Transforming Arithmetic into Adventure: Using Story and Number Theory to Launch Children on a Quest
3–5 Session
McCormick Place - Lakeside Center, D2 - C
Amy Alznauer, Northwestern University, Evanston, Illinois
@amyalz

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Friday Morning Sessions

295 Learn How to Implement Tasks That Promote Problem Solving, Reasoning, and Meaningful Discourse
6–8 Session
McCormick Place - Lakeside Center, D2 - K
Hoyun Cho, Capital University, Columbus, Ohio
Gary Lawrence, Mustard Seed School, Hoboken, New Jersey

296 Ratio, Rate, and Proportional Relationships in Japanese Textbooks
6–8 Session
McCormick Place - Lakeside Center, D2 - I
Tadanobu (Tad) Watanabe, Kennesaw State University, Georgia
@watanabeksu

297 The Beauty of Harmonic Divisions of Golden Rectangle Designs
6–8 Session
McCormick Place - Lakeside Center, E262
Stephanie Cooperman, Retired, Chester, New Jersey
Neil Cooperman, Retired, Chester, New Jersey

298 Catalyzing Change and the Essential Concepts: A Catalyst for Equitable Mathematics Instruction
8–10 Session
McCormick Place - Lakeside Center, D2 - F
Mark Russo, Pascack Valley Regional High School District, Montvale, New Jersey
@RussoMarkF

299 Sell Me Math: A Formula for Entrepreneurship
8–10 Session
McCormick Place - Lakeside Center, E264
Erin Mancini, Evanston Township High School, Illinois
@MsManciniETHS
Chris Manila, Evanston, Illinois

300 Solving the Problematic: Creating Tasks, Lessons, and Projects That Model Our Actual, Messy World
8–10 Session
McCormick Place - Lakeside Center, D2 - B
Carl Oliver, City-As-School, Brooklyn, New York

301 Strategies and Tools for Facilitating Meaningful Discussions in Secondary Mathematics Classrooms
8–10 Session
McCormick Place - Lakeside Center, D2 - L
Ziv Feldman, Boston University, Massachusetts
Leslie Dietiker, Boston University, Massachusetts
Suzanne Chapin, Boston University, Massachusetts

302 Teaching Algebra: A Look Back at the Materials and Methods We Have Used over the Last 100 Years
8–10 Session
McCormick Place - Lakeside Center, E350
Benjamin Sinwell, Pendleton High School, Anderson, South Carolina
@Mr_Sinwell

303 Why Is That True? How Does It Work? Finding Multiple Answers for Mathematical Classroom Situations
8–10 Session
McCormick Place - Lakeside Center, E267
Connie Schrock, NCSM Past President/ ESU, Emporia, Kansas
@CFrySchrock

304 Engaging Students through Classic Problems to Promote Curiosity and Reasoning about Mathematics
10–12 Session
McCormick Place - Lakeside Center, D2 - D
Tena Roepke, Ohio Northern University, Ada

305 Is it Possible? Is it Plausible? Become a Probability Detective!
10–12 Session
McCormick Place - Lakeside Center, D2 - A
Robert Lochel, Hatboro-Horsham High School, Pennsylvania
@bobloch

306 Liberation through Project-Based Learning
10–12 Session
McCormick Place - Lakeside Center, E261
Jeffrey Pearson, Prince George's County Public Schools, District Heights, Maryland

NCTM Centennial Annual Meeting & Exposition  April 1–4, 2020 | Chicago
Friday Morning Sessions

8:00am–9:00am

307 Mentoring to Create Change
Coaches/Leaders/Teacher Educators Session
McCormick Place - South Building, S401D
Fred Dillon, Math Stuff, Strongsville, Ohio
@fdizzle1955

308 Six Expectations for Effective Mathematics Instruction: Moving beyond Focus, Coherence, and Rigor
Coaches/Leaders/Teacher Educators Session
McCormick Place - South Building, S406B
Juli Dixon, University of Central Florida, Orlando
@thestrokeofluck

309 “Out of Our Gloomy Past”: Leading a New Era of “Our Mathematics”
General Interest Session
McCormick Place - Lakeside Center, D2 - H
Lou Matthews, Urban Teachers, Washington, D.C.
@loumatthewslive

310 2% Is Not Enough: Learning from Black Male Mathematics Educators (A Pathway Forward)
General Interest Session
McCormick Place - Lakeside Center, E354B
John W. Staley, Baltimore County Public Schools, Randallstown, Maryland
Reginald Todd, Texas Southern University, Houston
Robert Q. Berry III, President, National Council of Teachers of Mathematics, Reston, Virginia; University of Virginia, Charlottesville

311 The Beauty of Movement: Increasing Discourse in Mathematics Classrooms
General Interest Session
McCormick Place - Lakeside Center, D2 - J
Sarah VanDerWerf, Van Der Werf Educational Consulting, Minneapolis, Minnesota
@saravdwerf
Chris Luzniak, The Archer School, West Hollywood, California

312 Thirty Years and Going Strong: NCTM Leadership in the Standards Movement, and Prospects for Tomorrow
General Interest Session
McCormick Place - Lakeside Center, E351
Joan Ferrini-Mundy, University of Maine, Orono

313 What’s in a Grade?: How Feedback and Self-Reflections Changed My College Algebra Classroom
Higher Education Session
McCormick Place - Lakeside Center, D2 - E
Melissa Michael, John Brown University, Siloam Springs, Arkansas
Savannah Carter, John Brown University, Siloam Springs, Arkansas

313.1 Math Workshop: A Hands-On Instructional Model for all Students (K-Grade 5)
General Interest Exhibitor Workshop
McCormick Place - Lakeside Center, E253C
hand2mind, Inc., Vernon Hills, Illinois

313.2 Shape the Future of EdTech: Join Mathspace’s User Research Group
6-8 Exhibitor Workshop
McCormick Place - Lakeside Center, E253B
Mathspace, New York, New York
Friday Morning Workshops

8:00am–9:15am

314 Counting Collections: An Instructional Activity to Build Counting and Place-Value Understandings
Pre-K-2 Workshop
McCormick Place - South Building, S401A
Jody Guarino, Orange County Department of Education, Costa Mesa, California @jody_guarino
John Drake, Newport Mesa Unified School District, Costa Mesa, California
Myuriel Von Aspen, Newport Mesa Unified School District, Costa Mesa, California

315 Developing Computational Thinking in Elementary Learners
Pre-K-2 Workshop
McCormick Place - Lakeside Center, E353C
Sara Delano Moore, ORIGO Education, Kent, Ohio @saradelanomoore
James Burnett, ORIGO Education, Brendale, Australia
Peter Stowasser, ORIGO Education, Brendale, Australia

316 Making Sense of Word Problems: Visualizing Additive Situations
Pre-K-2 Workshop
McCormick Place - Lakeside Center, E271B
Neet Priya Bajwa, Illinois State University, Normal

317 Using Games to Authentically Assess and Strengthen Number Sense
Pre-K-2 Workshop
McCormick Place - South Building, S402
Lauren Solarski, Erikson Institute, Chicago, Illinois @laurensolarski
Lisa Ferguson, Erikson Institute, Chicago, Illinois

318 Exploring Properties and Equivalence: Using Representations to Develop Algebraic Reasoning
3–5 Workshop
McCormick Place - South Building, S404D
Virginia Lewis, Longwood University, Farmville, Virginia
Toni Sorrell, Longwood University, Farmville, Virginia
Maria Timmerman, Longwood University, Farmville, Virginia

319 Language Learners and Mathematics: Building Supports for ALL!
3–5 Workshop
McCormick Place - South Building, S405
Leslie Waltz, School District of Waukesha, Wisconsin @leslie_waltz
Rachel Boario, School District of Waukesha, Wisconsin

320 Making Sense of Decimal Operations: Let’s Talk Money!
3–5 Workshop
McCormick Place - Lakeside Center, E258
Dana Enriquez-Vontoure, Vontoure Learning, LLC, Humble, Texas @Vontoure_Math
Angela Franco, Vontoure Learning, LLC, Humble, Texas

321 Rethinking the Meaning of the Numerator and Denominator
3–5 Workshop
McCormick Place - Lakeside Center, E451B
Debi DePaul, ORIGO Education, Gig Harbor, Washington @debi_depaull
Peter Stowasser, ORIGO Education, Brisbane, Australia

322 “What’s Fair?”: Exploring Social Values through Mathematics
6–8 Workshop
McCormick Place - Lakeside Center, E353A
Steve Starr, Chicago Public Schools (Ret.), Illinois

323 Making Sense of Rational Number Division through Modeling
6–8 Workshop
McCormick Place - Lakeside Center, E265
John Ashurst, Retired, Harlan Independent Schools, Baxter, Kentucky @kiltedcyclist
Lindsay Gold, University of Dayton, Tipp City, Ohio
Michael Houston, Riverside High School, Ellwood City, Pennsylvania

324 The Art of Wonderment and Equity: Bridging the Philosophy of Math (Circles to the Classroom)
6–8 Workshop
McCormick Place - Lakeside Center, E450B
Sara Rezvi, Saga Education, Chicago, Illinois @arsinoepi
Amanda Ruch, Chicago Public Schools, Illinois

325 Math in Motion: Promoting Equity and Engagement through Purposeful Movement
8–10 Workshop
McCormick Place - South Building, S403
Brittany Leknes, International School of Panama, Panama City
Tim Kokotovich, International School of Panama, Panama City
<table>
<thead>
<tr>
<th>Workshop Number</th>
<th>Title</th>
<th>Time</th>
<th>Location</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>326</td>
<td>There’s So Much Out There! How Do I Pick a Good Mathematical task?</td>
<td>8:00am—9:15am</td>
<td>McCormick Place - Lakeside Center, E451A</td>
<td>Jenny Sagrillo, University of Wisconsin-Milwaukee @jsagrillo</td>
</tr>
<tr>
<td>327</td>
<td>Using GeoGebra to Create Memorable Experiences in the Geometry Classroom</td>
<td></td>
<td>McCormick Place - South Building, S401BC</td>
<td>Elizabeth Masslich, Cedarburg High School, Wisconsin @EMasslich</td>
</tr>
<tr>
<td>328</td>
<td>Dynamic Activities to Enhance the AP Calculus Experience</td>
<td></td>
<td>McCormick Place - South Building, S404A</td>
<td>Gail Kaplan, Towson University, Annapolis, Maryland</td>
</tr>
<tr>
<td>329</td>
<td>Student Grouping Structures That Support Discourse and Peer Feedback</td>
<td></td>
<td>McCormick Place - Lakeside Center, E450A</td>
<td>Connie Horgan, Math Solutions, Sun City West, Arizona</td>
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<td>Amy Herman, Math Solutions, Louisville, Kentucky</td>
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<tr>
<td>330</td>
<td>Understanding Confidence Intervals and Power: Simulations for Teaching Statistical Concepts</td>
<td>10–12 Workshop</td>
<td>McCormick Place - Lakeside Center, E271A</td>
<td>Nicholas Koberstein, The North Carolina School of Science and Mathematics, Durham @nkoberstein</td>
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<td>Floyd Bullard, The North Carolina School of Science and Mathematics, Durham</td>
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<tr>
<td>331</td>
<td>Strategies for Enhancing Teacher Learning from Lesson Video</td>
<td></td>
<td>McCormick Place - Lakeside Center, E353B</td>
<td>Meg Bates, UChicago STEM Education, Illinois @megbates_stemed</td>
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<td>Cheryl Moran, UChicago STEM Education, Illinois</td>
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<td>Shereen Oca Beilstein, University of Illinois</td>
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<td>332</td>
<td>Strengths-Based Coaching: Creating a Shared Vision and Growing Professionally</td>
<td>10–12 Workshop</td>
<td>McCormick Place - South Building, S404BC</td>
<td>Delise Andrews, Lincoln Public Schools, Nebraska @deliseandrews</td>
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<td></td>
<td>Beth Kobett, Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Stevenson University, Maryland</td>
</tr>
</tbody>
</table>
### Friday Morning Sessions

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Type</th>
<th>Venue</th>
<th>Speakers</th>
</tr>
</thead>
</table>
| 334     | Beautiful Explanations in the Primary Math Class                     | Pre-K-2 | McCormick Place - Lakeside Center, D2 - I | Solana Ray, Callahan Consulting, Los Angeles, California  
Jessica Balli, Callahan Consulting, San Diego, California |
| 335     | See It, Move It, Grasp It: Math with Virtual Manipulatives          | Pre-K-2 | McCormick Place - Lakeside Center, D2 - K | Chrissy Newell, Stanislaus County Office of Education, Modesto, California  
@MrsNewell |
| 336     | Selecting and Sequencing Student Work to Build Meaningful Conversation in the Primary Classroom | Pre-K-2 | McCormick Place - Lakeside Center, D2 - F | Laura Grandau, Curriculum Associates, Highland Park, Illinois  
Susan Meyer, Peoria, Arizona |
| 337     | Taking an Asset-Based Lens to Students’ Mathematical Thinking       | Pre-K-2 | McCormick Place - Lakeside Center, D2 - G | Marcus Deja, Kent Intermediate School District, Grand Rapids, Michigan  
@DejaMarcus  
Rusty Anderson, Kent Intermediate School District, Rockford, Michigan |
| 338     | Building Mathematical Memory Muscle through Number Talks for Special Education Students | 3-5 | McCormick Place - Lakeside Center, E352 | Stephanie Bernander, University of Wisconsin-Oshkosh  
Terrill Alleman, Natrona County School District, Casper, Wyoming |
| 339     | Inspiring Persistent Problem Solvers: Conceptual Algebra Readiness for Everyone | 3-5 | McCormick Place - Lakeside Center, E263 | Martin Briggs, La Porte Community Schools, Mill Creek, Indiana  
Jennifer Shelton, Valparaiso Community Schools, Indiana  
David Feikes, Valparaiso Community Schools, Indiana |
| 341     | DUCK-In: Deepen the Understanding and Conceptual Knowledge of Integers | 6-8 | McCormick Place - Lakeside Center, D2 - L | Rachelle McNamara, Newport News Public Schools, Virginia  
@Rachelle_Mc_  
Alison Moir, Newport News Public Schools, Virginia |
| 342     | Integrating Mathematics and Coding into the Learning of Shadows      | 6-8 | McCormick Place - Lakeside Center, D2 - A | Erell Feb Germia, Montclair State University, New Jersey  
Nicole Panorkou, Montclair State University, New Jersey |
| 343     | Math Reasoning That Supports Mathematical Procedures               | 6-8 | McCormick Place - Lakeside Center, D2 - H | Nakasha Kirkland, Prince William County Schools, Manassas, Virginia |
Friday Morning Sessions

344 Orchestrating Productive Mathematics Discussions: Overcoming the Challenges
6–8 Session
McCormick Place - Lakeside Center, E350
Margaret (Peg) Smith, University of Pittsburgh (Emeritus), Pennsylvania
Miriam Sherin, Northwestern University, Evanston, Illinois

345 Every Student. Every Day.
8–10 Session
McCormick Place - Lakeside Center, E262
Shawna Morgan, Fremont County School District #1, Lander, Wyoming
Rachel Giesmann, Fremont County School District #1, Lander, Wyoming
McCormick Place - Lakeside Center, E262

346 Creating and Implementing Project-Based Learning and Assessment
10–12 Session
McCormick Place - Lakeside Center, E261
David Postlethwait, Prince William County Public Schools, Woodbridge, Virginia
Shannon Miller, Prince William County Public Schools, Woodbridge, Virginia
Jeannette Newman, Garfield High School, Woodbridge, Virginia

347 Key Connections between Mathematics Curriculum and the SAT
10–12 Session
McCormick Place - South Building, S401D
Jennifer Cox, Indiana University, Bloomington

348 The Mathematics of Elections and Representation
10–12 Session
McCormick Place - Lakeside Center, E260
Julien Meyer, Severn School, Severna Park, Maryland
Chris Lepi, Severn School, Severna Park, Maryland

349 Three Teachers, 3000 Problems, and the Quest to Make Math Stick: Interleaving in the Math Classroom
10–12 Session
McCormick Place - Lakeside Center, E264
Fred Kong, Harry Ainlay High School, Edmonton, Alberta, Canada
Jessica Fisher, Harry Ainlay High School, Edmonton, Alberta, Canada
Steve Hardy, Harry Ainlay High School, Edmonton, Alberta, Canada

350 A Framework to Open Dialogue and Self-Reflection on Equitable Mathematics Instruction
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E270
Cynthia Taylor, Millersville University of Pennsylvania
Kelley Buchheister, University of Nebraska-Lincoln
Christa Jackson, University of Nebraska-Lincoln

351 Creating Change through Co-Teaching: Moving Forward with Inclusive Mathematics
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, D2 - D
Kristin Harbour, University of South Carolina, Columbia
Stefanie Livers, Missouri State University, Springfield

352 Did I Do That? Harnessing the Power of Video for Teacher Reflection and Improved Practice
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, D2 - B
Elizabeth Flegar, Naugatuck School District, Cheshire, Connecticut

353 Engaging Families in Math Fact Fluency
General Interest Session
McCormick Place - South Building, S406A
Jennifer Bay-Williams, University of Louisville, Kentucky
@JBayWilliams

354 Learning, Not Labeling: Challenging Beliefs and Practices to Support Math Learning for All Students
General Interest Session
McCormick Place - South Building, S406B
Mark Ellis, CSU Fullerton, California
@EllisMathEd
Cathery Yeh, Chapman University, Orange, California
**Friday Morning Sessions**

355 Math-Positive Mindsets for Math-Phobic Parents: How to Tackle Parental Concerns about Math Nowadays
General Interest Session
McCormick Place - Lakeside Center, D2 - E
Carrie Cutler, University of Houston, Texas
@DrCarrieCutler

356 Supporting Emergent Bilinguals through Mathematical Inquiry and the Discursive Assessment Protocol
General Interest Session
McCormick Place - Lakeside Center, E259
Richard Kitchen, University of Wyoming, Laramie

357 The Changing Views of Development, the Complexities of Learning Trajectories, and the Challenges
General Interest Session
McCormick Place - Lakeside Center, Arie Crown
Catherine Fosnot, New Perspectives on Learning, CEO, New London, Connecticut
@ctfosnot

358 The Write Stuff … Mathematically Speaking
General Interest Session
McCormick Place - Lakeside Center, E351
Cindy Neuschwander, San Luis Coastal Unified School District, San Luis Obispo, California

359 Using Learning Progressions to Implement the 8 Effective Teaching Practices In Principles to Actions
General Interest Session
McCormick Place - Lakeside Center, E354B
Michael Battista, The Ohio State University, Columbus

360 Secondary Mathematics Teachers' Reflections on Statistical Literacy
Research Session
McCormick Place - Lakeside Center, D2 - C
Amanda Riske, Tempe, Arizona
Fabio Milner, Arizona State University Tempe

360.1 Exploring the 3-Part Lesson: Differentiating the Levels of Learning
3-5 Exhibitor Workshop
McCormick Place - Lakeside Center, E253A
think! Mathematics

360.2 Bar Model Bootcamp: Singapore Math Model Drawing
3-5 Exhibitor Workshop
McCormick Place - Lakeside Center, E253B
Singapore Math, Tualatin, Oregon

360.3 Improve Math Fluency through Effective Interventions (Grades 3-8)
3-8 Exhibitor Workshop
McCormick Place - Lakeside Center, E253C
hand2mind, Inc.

360.4 More Choice, More Voice (K–8)
3-5 Exhibitor Workshop
McCormick Place - Lakeside Center, E253D
Pearson K12 Learning, Hoboken, New Jersey

360.5 Promoting Success on the AP® Exam with The Practice of Statistics
10–12 Exhibitor Workshop
McCormick Place - Lakeside Center, Presentation Pavilion
Bedford, Freeman & Worth Publishers, Hamilton, New Jersey

**Notes**
### Friday Morning Workshops

<table>
<thead>
<tr>
<th>Workshop ID</th>
<th>Title</th>
<th>Time</th>
<th>Location</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>361</td>
<td>5 Practices + 8 Effective Mathematics Teaching Practices = A Winning Combination!</td>
<td>9:45am—11:00am</td>
<td>McCormick Place - South Building, S405</td>
<td>Latrenda Knighten, East Baton Rouge Parish School System, Louisiana @Latrendak</td>
</tr>
<tr>
<td>362</td>
<td>Engaging Students in Mathematical Discussions Using Literature</td>
<td></td>
<td>McCormick Place - South Building, S404A</td>
<td>Monique Lynch, Walden University, Middleburg, Virginia Demery Bader-Saye, NYOS, Austin, Texas</td>
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<tr>
<td>363</td>
<td>Now What? Assessment Data, Pacing Calendar, and Clear Learning Gaps—How Do We Make It All Fit?</td>
<td></td>
<td>McCormick Place - South Building, S401A</td>
<td>Katie Moore, Tillamook School District, Oregon</td>
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<tr>
<td>365</td>
<td>Division of Fractions: Don't Let the Legacy Be Keep, Change, Flip</td>
<td></td>
<td>McCormick Place - South Building, S402</td>
<td>Jeanine Haistings, William Jewell College, Kansas City, Missouri Angela Broadus, Benedictine College, Atchison, Kansas</td>
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<tr>
<td>366</td>
<td>Safe Water in Schools: Mathematical Modeling and Critical Agency in Grades 3-5</td>
<td></td>
<td>McCormick Place - Lakeside Center, E353C</td>
<td>Julia Aguirre, University of Washington Tacoma Erin Turner, University of Arizona, Tucson Mary Foote, Queens College–City University of New York</td>
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<tr>
<td>367</td>
<td>Engaging Students Using Rich Mathematical Tasks by Altering Their Beliefs as Learners of Mathematics</td>
<td></td>
<td>McCormick Place - Lakeside Center, E451B</td>
<td>Holly McCarty, Blue Valley School District, Overland Park, Kansas @bvmathematics</td>
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<tr>
<td>368</td>
<td>Fair Play: Games That Bridge Number Sense, Probability, and Data Analysis</td>
<td></td>
<td>McCormick Place - South Building, S404BC</td>
<td>Aran Glancy, St. Thomas University, Woodbury, Minnesota @aranglancy Christy Pettis, University of Wisconsin–River Falls</td>
</tr>
<tr>
<td>369</td>
<td>Logic for Middle School</td>
<td></td>
<td>McCormick Place - South Building, S401BC</td>
<td>James Olsen, Western Illinois University, Macomb @DrOlsen314 Jesus Aguirre, Student, Macomb, Illinois Alex Rangel, Student, Macomb, Illinois</td>
</tr>
<tr>
<td>371</td>
<td>Formative Assessment Strategies Meetup</td>
<td></td>
<td>McCormick Place - Lakeside Center, E450B</td>
<td>Crystal Vesperman, Saint Paul Conservatory for Performing Artists, St. Paul, Minnesota</td>
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<td>372</td>
<td>The Desmos Dashboard: A Love Letter to the Five Practices</td>
<td></td>
<td>McCormick Place - Lakeside Center, E450A</td>
<td>Michael Fenton, Desmos, Inc., Fresno, California @mjFenton</td>
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</tbody>
</table>
Friday Morning Workshops

9:45am–11:00am

373 Approximation Tasks in Calculus: A Hands-On Way Bring Rigor to Your Classroom
10–12 Workshop
McCormick Place - Lakeside Center, E258
Andrew Wille, Stuyvesant High School, New York, New York
@afwille
Lori Bodner, Brooklyn Technical High School, New York

374 Credit Cards: Using the Geometric Series to Unveil Debts Incurred by the Ubiquitous Plastic
10–12 Workshop
McCormick Place - South Building, S403
Greg Williams, Norfolk Public Schools, Virginia

375 Relighting Mathematical Wonder through Mathematical Modeling
10–12 Workshop
McCormick Place - Lakeside Center, E353A
Aline Abassian, University of Central Florida, Casselberry
@AlineAbassian
Farshid Safi, University of Central Florida, Orlando

376 Simulations That Solve the Collector’s Problem
10–12 Workshop
McCormick Place - Lakeside Center, E265
Raymond Siegrist, SUNY Oneonta, New York

377 Developing Political Knowledge for Teaching Mathematics: Lessons from the Math Equity Group
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - South Building, S404D
Susan Gregson, University of Cincinnati, Ohio
@sagregson
Justin Harris, Roslawn Condon Elementary, Cincinnati, Ohio
Jennifer Steller, Roslawn Condon Elementary, Cincinnati, Ohio

378 Promoting Effective Teaching Practices: Using Student Work to Reflect on Tasks and Implementation
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - Lakeside Center, E451A
Amber Candela, University of Missouri - St. Louis, Saint Louis
@amcan36
Melissa Boston, Duquesne University, Ellwood City, Pennsylvania

379 The I’m W.O.K.E. Project: Widening Options through Knowledge and Empowerment
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - Lakeside Center, E271A
Tonya Clarke, Clayton County Public Schools, Jonesboro, Georgia
@clarkesgotclass
Charlene Matthew, Clayton County Public Schools, Jonesboro, Georgia

Notes
Friday Morning Sessions

380 Iris Carl Address: ¡Ya Bastá! Enough Already!
Session
McCormick Place - Lakeside Center, Arie Crown
Nora G. Ramirez, Executive Director, TODOS, Tempe, Arizona
Nora G. Ramirez is the Executive Director of TODOS: Mathematics for ALL and a mathematics education consultant working in urban, suburban, and rural school districts. She is a founding member and past president of TODOS, a past member of the NCTM Board of Directors, and a past president of the Arizona Association of Teachers of Mathematics (AATM). She has worked at Arizona State University and Maricopa Community Colleges as a professional developer and mathematics specialist. In 2014, she received the Iris Carl Equity and Leadership Award from TODOS recognizing her significant contributions to increasing the quality of mathematics education provided to underserved students, particularly Latinx students. She is a co-editor of Beyond Good Teaching: Advancing Mathematics Education for ELLs (NCTM 2012).

381 Equitable Participation: The Why, What, & How
Pre-K-2 Session
McCormick Place - Lakeside Center, E259
Rusty Anderson, Kent Intermediate School District, Grand Rapids, Michigan
@RAnderson_Math
Andrew Smith, Kent Intermediate School District, Grand Rapids, Michigan

382 Let Your Kids Talk! Teacher Talk Moves Offer ALL Students Voice & Choice in How They Learn Math
Pre-K-2 Session
McCormick Place - Lakeside Center, E352
Barbara Blanke, Educational Consultant, San Luis Obispo, California
@bblankephd

383 Building Students’ Mathematical Competence
3-5 Session
McCormick Place - Lakeside Center, E261
Dan Battey, Rutgers University, New Brunswick, New Jersey
@danbattey

384 Solving the Fractions Problem: From Research to Classroom
3-5 Session
McCormick Place - Lakeside Center, D2 - G
Paul Cholmsky, ExploreLearning, Ottawa, Ontario, Canada

11:00am–12:00pm

385 Building a Conceptual Understanding of Ratios Using Various Models
6-8 Session
McCormick Place - Lakeside Center, D2 - C
Stephanie Doran, The Discovery School, Jacksonville, Florida
Janet Tomlinson, Carnegie Learning, Statham, Georgia

386 Changing the Story: Using Math Workshop to Help Teachers and Students Reach Their Full Potential
6-8 Session
McCormick Place - Lakeside Center, E270
Jennifer Lempp, Author & Educational Consultant, Fairfax, Virginia
@Lempp5
Skip Tyler, Henrico County Public Schools, Quinton, Virginia

387 Impacting Learning for Black and Latinx Youth through Culturally Sustaining Pedagogies
6-8 Session
McCormick Place - Lakeside Center, D2 - D
Desha Williams, Georgia College and State University, Milledgeville
Jasia Clark, Pre-service Teacher, Georgia College and State University, Georgia

388 Pancakes, Pizza, and Fast Food: Great Contexts for Great Middle School Lessons and Projects
6-8 Session
McCormick Place - South Building, S406A
Steven Leinwand, American Institutes for Research, Washington, D.C.
@steve_leinwand

389 The Future of Mathematics Education: Using Artificial Intelligence to Provide Efficient Feedback
6-8 Session
McCormick Place - Lakeside Center, D2 - B
Hilary Kreisberg, Lesley University, Cambridge, Massachusetts
@Dr_Kreisberg
Cristina Heffernan, Worcester Polytechnic Institute, Massachusetts

390 A Lesson on Social Justice—What Should Be In It?
8-10 Session
McCormick Place - South Building, S401D
Kwame Anthony Scott, Chicago, Illinois
Friday Morning Sessions

391 Probability That Students Understand: A Different Approach to Teaching Probability in Grades 9-12
- 8:10 Session
  McCormick Place - Lakeside Center, D2 - A
  Roxy Peck, Cal Poly, San Luis Obispo, California

392 Public Record: Cornerstone of Productive Whole-Class Mathematical Discussions
- 8:10 Session
  McCormick Place - Lakeside Center, E260
  Laura Van Zoest, Western Michigan University, Kalamazoo
  Carlee Hollenbeck, Western Michigan University, Kalamazoo
  Sarah Jokela, Carney-Nadeau Public Schools, Michigan

393 While You Were Out ...
- 8:10 Session
  McCormick Place - Lakeside Center, E263
  Tiffany Peters, Greenville Tech Charter High School, South Carolina
  Charlotte Ihme, Greenville Tech Charter High School, South Carolina

394 Developing Conceptual Understanding through Making Mathematical Connections
- 10:12 Session
  McCormick Place - Lakeside Center, D2 - I
  Laura Singletary, Lee University, Cleveland, Tennessee

395 Let's Do Some Math! A Few Fun and Easy Data Collection Activities That Demonstrate Real-Life Math
- 10:12 Session
  McCormick Place - Lakeside Center, D2 - E
  Stephen Miller, Winchester Thurston School, Pittsburgh, Pennsylvania

396 Optimizing Traffic Flow in the Suez Canal: The Power of the Modeling Cycle
- 10:12 Session
  McCormick Place - Lakeside Center, E262
  Daniel Teague, Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; North Carolina School of Science and Mathematics, Durham

397 What’s Questioning Got to Do, Got to Do with It?
- 10:12 Session
  McCormick Place - Lakeside Center, E267
  Kyle Eller, Wheaton Warrenville South High School, Illinois
  Fred Dillon, Strongsville, Ohio

398 Helping Administrators Support High-Quality K-8 Mathematics Programs: What Do They Need to Know?
- Coaches/Leaders/Teacher Educators Session
  McCormick Place - Lakeside Center, E264
  Martin Gartzman, UChicago STEM Ed, The University of Chicago, Illinois
  Debbie Leslie, UChicago STEM Ed, Illinois

399 The TRUth about PLCs: How the Teaching for Robust Understanding Framework Put the Focus On Students
- Coaches/Leaders/Teacher Educators Session
  McCormick Place - Lakeside Center, E351
  Mary Reed, Oakland Unified School District, California
  Courtney Ortega, Oakland Unified School District, California

400 Challenging Dis/Abilities: Leveraging the Potential of All Students as Math Problem Solvers
- General Interest Session
  McCormick Place - Lakeside Center, D2 - K
  Cathery Yeh, Chapman University, Orange, California
  Emilia Frias, Salk Elementary School, Anaheim, California
  Melissa Brennan, Maxwell Elementary School, Anaheim, California

401 Don’t Go It Alone! Collaborative Lesson Research Is a Structure for Continuous School Improvement
- General Interest Session
  McCormick Place - Lakeside Center, D2 - H
  Akihiko Takahashi, DePaul University, Chicago, Illinois
  @AkihikoTa

10:00am—11:00am
Friday Morning Sessions

402  Fostering Mathematics Identities in African American Children—What Do Teachers Say?
     General Interest Session
     McCormick Place - Lakeside Center, D2 - L
     Linda Fulmore, Education Consultant, Cave Creek, Arizona
     @lmfulmore

403  Making Math Meaningful: Disciplinary Literacy, 3-Act Tasks, & Community Exploration
     General Interest Session
     McCormick Place - Lakeside Center, D2 - J
     Margaret Knapik, GEMS World Academy Chicago, Illinois
     @megknapi

404  Promote Equitable Teaching Practices AND Focus on Content & Connections—Don’t Settle for Only One!
     General Interest Session
     McCormick Place - Lakeside Center, E354B
     Farshid Safi, University of Central Florida, Orlando
     @FarshidSafi
     George Roy, University of South Carolina, Columbia

405  Questioning Practices to Support Mathematical Practices
     General Interest Session
     McCormick Place - South Building, S406B
     Maggie McGatha, M^2 Consulting, Louisville, Kentucky
     Jennifer Bay-Williams, University of Louisville, Kentucky

406  Teaching Basic Computation & Developing Strategic Competence for ELL Students Using the Model Method
     General Interest Session
     McCormick Place - Lakeside Center, E350
     Michelle Sencibaugh, Valley Park School District, Missouri
     Joseph Sencibaugh, Webster University, Saint Louis, Missouri
     Jennifer Bond, Ferguson-Florissant School District, Saint Louis, Missouri

407  What Are the Components of a Successful Mathematics Methods Course for Grades 6-12 Preservice Teachers?
     Higher Education Session
     McCormick Place - Lakeside Center, D2 - F
     Christine Larson, South Dakota State University, Brookings
     @CLL2718

407.1 Making Principles to Actions Come Alive with CPM Mathematics
     6-8 Exhibitor Workshop
     McCormick Place - Lakeside Center, E253A
     CPM Educational Program

407.2 Rate of Change: Algebra through Calculus
     10-12 Exhibitor Workshop
     McCormick Place - Lakeside Center, E253B
     Texas Instruments Incorporated, Dallas, Texas

407.3 Hands-On Learning Is Easy with the Right Tools (K-Grade 5)
     General Interest Exhibitor Workshop
     McCormick Place - Lakeside Center, E253C
     hand2mind, Inc.

407.4 Implementation Models to Help Foster Independence in Math
     8-10 Exhibitor Workshop
     McCormick Place - Lakeside Center, Presentation Pavilion
     Great Work, Inc., Denver, Colorado

Notes
Friday Morning Bursts

408 NCTM’s Resources for the Secondary Classroom

Burst
McCormick Place - Lakeside Center, E451B
Faith Peddie, National Council Teachers Mathematics, Reston, Virginia

409 Helping Students Understand Mathematical Equivalence

Pre-K-2 Burst
McCormick Place - South Building, S402
Kristen Johannes, WestEd, Alameda, California
Jodi Davenport, WestEd, Alameda, California

410 Mathical Author: Cao Chong Weighs an Elephant: Creative Thinking by a Child Prodigy in Ancient China

Pre-K-2 Burst
McCormick Place - South Building, S401A
Songju Daemicke, Consultant, Glenview, Illinois @SongjuD

411 Teaching Elementary School Students to Participate in Mathematics Discourse: Techniques That Work

Pre-K-2 Burst
McCormick Place - Lakeside Center, E353C
Paola Sztajn, North Carolina State University, Raleigh
Daniel Heck, Horizon Research Inc, Chapel Hill, North Carolina
Kristen Malzahn, Horizon Research Inc, Chapel Hill, North Carolina

412 Engaging Parents in Elementary Mathematics

3-5 Burst
McCormick Place - South Building, S401BC
Chad Williams, SMTS, Saskatoon, Saskatchewan, Canada @Chadillac60

413 Math Lesson Structures: Instructional Models for Flexible Delivery of Mathematics Content

3-5 Burst
McCormick Place - Lakeside Center, E353B
Joslyn Katz, Barrington 220, Illinois @joslynkatz
Sean McGann, Barrington 220, Illinois
Laura Meehan, Barrington 220, Illinois

414 Building Procedural Fluency from Conceptual Understanding through Reasoning and Problem Solving

6-8 Burst
McCormick Place - South Building, S405
Glenda Morrissey, Mercer University, Western Springs, Illinois
Zachary Alford, Mercer University, Western Springs, Illinois

415 If a Picture Paints a Thousand Words

6-8 Burst
McCormick Place - Lakeside Center, E450B
Marilyn Dibble, Eisenhower Middle School, Topeka, Kansas

416 Mathical Author: Really Big Numbers

6-8 Burst
McCormick Place - Lakeside Center, E451A
Richard Schwartz, Brown University, Providence, Rhode Island

417 Numeracy Time: Beyond Our Math Classes

6-8 Burst
McCormick Place - Lakeside Center, E265
Tricia Perry, George Waters Middle School, Winnipeg, Manitoba, Canada

418 What Do Fish Tanks, Compatible Groupings, Scheduling, and Coloring Have in Common?

6-8 Burst
McCormick Place - Lakeside Center, E271B
Mary McMahon, North Central College, Naperville, Illinois @MaryNCC

419 Sometimes, Always, Never: Using Conjectures to Develop Mathematical Reasoning

8-10 Burst
McCormick Place - South Building, S403
Kathy Hawes, Henry M. Gunn High School, Washington, D.C.
Friday Morning Bursts

420  The Inequalities of Global Poverty  
8–10 Burst  
McCormick Place - South Building, S404D  
Kristen Smith, Summit Atlas, Seattle, Washington  
@kasmith07

421  Geometry Tiny House Project: Designing Learning, Building Community, Creating Connections  
10–12 Burst  
McCormick Place - Lakeside Center, E258  
Jessica Angelo, Notre Dame High School, San Jose, California  
Beverly Heigre, Notre Dame High School, San Jose, California

422  Mathematics Is More Than Just Numbers: Integrating Astronomy, Engineering, and Physics with NASA  
10–12 Burst  
McCormick Place - South Building, S404A  
Bradly Rivera, Robinson School, San Juan, Puerto Rico  
@Bradly_Rivera  
Joel Sánchez, Robinson School, San Juan, Puerto Rico

423  Things You Should Know That Your Students Learned about Math in Science Class  
10–12 Burst  
McCormick Place - Lakeside Center, E450A  
Josh Berberian, The Shipley School, Bryn Mawr, Pennsylvania

424  Acceleration In Mathematics, to Do or Not to Do? Our Journey  
Coaches/Leaders/Teacher Educators Burst  
McCormick Place - Lakeside Center, E353A  
Michelle Dupree, School District of the Menomonie Area, Wisconsin  
@MichelleMDupree

425  Active Learning Strategies to Elicit and Use Student Thinking  
General Interest Burst  
McCormick Place - Lakeside Center, E271A  
Richelle Marynowski, University of Lethbridge, Alberta, Canada  
@rmmarynow

426  Scared of Math: Strategies for Helping Students with Math Anxiety  
General Interest Burst  
McCormick Place - South Building, S404BC  
Heidi Sabnani, Looney Math Consulting, Foxboro, Massachusetts  
@hisabnani

Friday Afternoon Sessions

426.1  NCTM Business Meeting  
Session  
McCormick Place - Lakeside Center, E267  
Robert O. Berry III, President, National Council of Teachers of Mathematics, Reston, Virginia; University of Virginia, Charlottesville  
rqb3e@virginia.edu | robertqberry
Friday Afternoon Sessions

427 3 Reads + 5 Practices = Awesome Mathematical Discourse
Pre-K-2 Session
McCormick Place - Lakeside Center, D2 - F
Duane Habecker, Merced County Office of Education, California
@dhabeecker

428 Journeys to Fact Fluency
Pre-K-2 Session
McCormick Place - Lakeside Center, D2 - A
Kathryn Rich, Michigan State University, East Lansing
@KatieheCurious
Meg Bates, University of Chicago, Illinois

429 Tasks That Matter! Ensuring Mathematical Success for All Students
Pre-K-2 Session
McCormick Place - Lakeside Center, D2 - K
Loria Allen, AMSTI UA Huntsville, Alabama

430 Making the Most of Children’s Literature: A Context to Explore Math and Understand the World
3-5 Session
McCormick Place - South Building, S406A
Susan O’Connell, Quality Teacher Development LLC, Millersville, Maryland
@sueOConnellMath

431 Questions Matter: A Framework for Questioning to Promote Discourse and Understanding
3-5 Session
McCormick Place - Lakeside Center, E264
Loryn Lenartowicz, Curriculum Associates, Oakland Park, Florida
@LLenartowicz
Derin Garrison, Curriculum Associates, Tampa, Florida

432 Compare Different Ways to Introduce the Concepts of Ratio and Proportion in China, Singapore, and the United States
6-8 Session
McCormick Place - Lakeside Center, D2 - H
Xue Han, National Louis University, Chicago, Illinois

433 Kandinsky, Klee, & Mondrian: Using Abstract Art to Teach Geometric Concepts & Fractions
6-8 Session
McCormick Place - Lakeside Center, D2 - G
Kristina Barnaby, Fairfield Country Day School, Connecticut
@kmbar

434 Read Math + Write Math + Speak Math = Teach Math
6-8 Session
McCormick Place - Lakeside Center, D2 - J
Faith Schwope, Education Service Center Region 11, Grand Prairie, Texas
@mamamath
Michelle Green, Education Service Center Region 11, Fort Worth, Texas
Nancy Trent, Education Service Center Region 11, Fort Worth, Texas

435 What Would Mathematicians Do? Engaging Students in Reasoning and Sense Making
6-8 Session
McCormick Place - Lakeside Center, E259
Elizabeth Barlow, Hardin Valley Middle School, Knoxville, Tennessee
Angela Barlow, University of Central Arkansas, Conway

436 Busted: The Top 5 Myths about Teaching Mathematics to English Learners
8-10 Session
McCormick Place - Lakeside Center, E261
Barbara Kuehl, Salt Lake City, Utah

437 Relationships and Retakes: Helping Students Develop a Growth Mindset
8-10 Session
McCormick Place - Lakeside Center, D2 - B
John Hayden, Piedmont High School, Berkeley, California
@haydenPHS

438 The 3-Part Cure for “Math is Boring!”
8-10 Session
McCormick Place - Lakeside Center, D2 - I
Liesl McConchie, La Mesa, California
@LieslMcconchie

439 Bringing Calculus to Life: Using GeoGebra to Illustrate Calculus Concepts
10-12 Session
McCormick Place - Lakeside Center, E260
Steve Phelps, Hamilton County Education Service Center, Cincinnati, Ohio
@giohio
Sidney Leigh Nataro, Moravian College, Bethlehem, Pennsylvania
**Friday Afternoon Sessions**

1:00pm–2:00pm

**440** Increasing Access to Students’ Opportunities to Learn through Active Learning Environments
- 10–12 Session
- McCormick Place - Lakeside Center, E263
  - Kara Teehan, Middletown High School North, Fair Haven, New Jersey
  - @KLTeehan
  - John Kerrigan, Middletown Township/Rutgers University, New Jersey

**441** Recommendations for Statistics in the Secondary Curriculum: Implications for Teachers
- 10–12 Session
- McCormick Place - Lakeside Center, E352
  - Gail Burrill, Past President, National Council of Teachers of Mathematics, Reston, Virginia; Michigan State University, East Lansing
  - Christine Franklin, American Statistical Association, Watkinsville, Georgia

**442** The Mathematics of Game Shows, Anniversary Edition
- 10–12 Session
- McCormick Place - Lakeside Center, D2 - E
  - Bowen Kerins, Education Development Center Inc, Waltham, Massachusetts
  - @bowenkerins

**443** Coaching to Increase Cognitive Demand: Is It the Task, or How You Use It?
- Coaches/Leaders/Teacher Educators Session
- McCormick Place - Lakeside Center, D2 - C
  - Samantha Booth, Center for Education Policy Research at Harvard University, Cambridge, Massachusetts
  - @samberouth
  - Jackie Kearney, Catonsville, Maryland
  - Claire Gogolen, Catonsville, Maryland

**444** Constructing Goals for Student Learning: Let’s Have a Conversation!
- Coaches/Leaders/Teacher Educators Session
- McCormick Place - Lakeside Center, E350
  - Jessica Hunt, North Carolina State University, Raleigh
  - Mary Kay Stein, University of Pittsburgh, Pennsylvania

**445** Critical Classroom Considerations: Number Sense, Assessment, and Math Tasks–Your Time, Your Turn
- Coaches/Leaders/Teacher Educators Session
- McCormick Place - Lakeside Center, E354B
  - Francis (Skip) Fennell, Past President, National Council of Teachers of Mathematics, Reston, Virginia; McDaniel College, Westminster, Maryland
  - @SkipFennell

**446** Making the Most Out of Existing Structures for Math Teacher Professional Development
- Coaches/Leaders/Teacher Educators Session
- McCormick Place - Lakeside Center, E267
  - Emily Hare, University of North Carolina at Greensboro
  - @EmilyBryantHare

**447** Celebrating 100 Years with 100 Problems Involving 100
- General Interest Session
- McCormick Place - Lakeside Center, E351
  - Patrick Vennebush, Math Learning Center, Falls Church, Virginia
  - @pvennebush

**448** Classroom Norms and Routines for Building Student Agency and Equitable Mathematical Environments
- General Interest Session
- McCormick Place - Lakeside Center, E262
  - Kathy Ernst, Teacher, West Brattleboro, Vermont

**449** Intersections: Indigenous Perspectives on Mathematics Teaching and Learning
- General Interest Session
- McCormick Place - Lakeside Center, E270
  - Florence Gianfield, University of Alberta, Edmonton, Canada
  - @FGianfield

**450** Lessons Learned by Mathematics Noyce Scholars from Launching Tasks
- General Interest Session
- McCormick Place - South Building, S406B
  - Christopher Parrish, University of South Alabama, Mobile
  - Cindy Faith, Satsuma City Schools, Alabama
  - John Cleverdon, University of South Alabama, Mobile
Friday Afternoon Sessions

451 Let’s Dispel the Myths about Women and Mathematics
General Interest Session
McCormick Place - South Building, S401D
Lorraine Howard, President, Women and Mathematics Education, Partner Affiliate of NCTM, NCSM & AMTE, Philadelphia, Pennsylvania

452 Practices, Practices, Practices: 8 for Teachers, 8 for Students—How Do They Relate?
General Interest Session
McCormick Place - Lakeside Center, D2 - D
Travis Lemon, Alpine School District, Lehi, Utah
@TravisLemon

453 President-Elect Address: Catalyzing Change in Middle School Mathematics: Initiating Critical Conversations
General Interest Session
McCormick Place - Lakeside Center, Arie Crown
Trena Wilkerson, President-Elect, National Council of Teachers of Mathematics, Reston, Virginia; Baylor University, Woodway, Texas
@TrenaWilkerson

454 Queering the Mathematics Classroom: Inclusive Mathematics for LGBTQ+ Youth
General Interest Session
McCormick Place - Lakeside Center, D2 - L
Brandie Waid, Drew University, Madison, New Jersey
@MathTeach_BEW
Benjamin Bailey, Teachers College Columbia University, New York, New York

454.1 Exploring the 3-Part Lesson: Reflecting on the Learning Experience
3-5 Exhibitor Workshop
McCormick Place - Lakeside Center, E253A
@thinkMathematics

454.2 Driving on Mars: A Coding Problem
8-10 Exhibitor Workshop
McCormick Place - Lakeside Center, E253B
@TexasInstruments

454.3 Let’s Get Messy! Mathematical Modeling: Engage Your Reluctant Learners (K-12)
3-5 Exhibitor Workshop
McCormick Place - Lakeside Center, E253D
@PearsonK12Learning

Notes
Friday Afternoon Workshops

1:00pm–2:15pm

455 Analyzing and Adapting Online Resources: Increasing the Level of Cognitive Demand
Pre-K-2 Workshop
McCormick Place - Lakeside Center, E271A
Lara Dick, Montandon PSA, Milton, Pennsylvania
Emily Shapiro, Lewisburg, Pennsylvania

456 What If I Say the Wrong Thing?
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - South Building, S402
Joseph Herbert, Richmond, California
@herbertmath628
Hema Khodai, Brampton, Ontario, Canada

457 Get on the Right Track! Using the Rekenrek as a Double-Decker Train to Build Number Sense
Pre-K-2 Workshop
McCormick Place - South Building, S402
Patty King, Mathematics Consultant, Albuquerque, New Mexico
@PattyKingABQ
Amy Hurley, Albuquerque Public Schools, New Mexico

458 Build Bridges among Representations by Writing for Structure
3–5 Workshop
McCormick Place - Lakeside Center, E271B
Christy Pettis, University of Wisconsin-River Falls
@PettisChristy
Terry Wyberg, University of Minnesota, St. Paul
Aran Glancy, University of St. Thomas, St. Paul, Minnesota

459 Intentional Equity Can Be Routine
3–5 Workshop
McCormick Place - South Building, S404A
Kaneka Turner, Illustrative Mathematics, Charlotte, North Carolina
@kanekaturner

460 Math Teaching as Listening: Focus on Student Sense Making to Build Equity in the Classroom
3–5 Workshop
McCormick Place - Lakeside Center, E451B
Heidi Fessenden, Cambridge Public Schools, Massachusetts
@heidifessenden
Liz Vincent, Cambridge Public Schools, Massachusetts

461 Access-orizing Ratio and Percentage with the Unitary Method
6–8 Workshop
McCormick Place - Lakeside Center, E265
Cassandra Turner, Math Champions, PD, Fort Collins, Colorado
@Cassyt
Beth Curran, Consultant, Roanoke, Virginia

462 It’s All about Connections: Let’s See Why Geometry & Algebra Belong Together!
6–8 Workshop
McCormick Place - Lakeside Center, E353A
Karen Greenhaus, Drexel University, Philadelphia, Pennsylvania
@vpigreenie

463 Math Language Routines with Impact for ELL Students and Beyond
6–8 Workshop
McCormick Place - South Building, S404D
Brooke Powers, Open Up Resources
@lbrookepowers
Morgan Stipe, Kuemper Catholic Schools, Carroll, Iowa

464 Reasoning Talks: Creating Number Talk Reasoning Structures for Grades 6-8
6–8 Workshop
McCormick Place - Lakeside Center, E450B
Cory Bennett, Idaho State University, Pocatello
@AlohaCory
Marci Reddish, Pocatello School District, Idaho
Stephanie Moore, Idaho State University, Chubbuck

465 Creating a Student-Centered Classroom: Where Every Student Is a Mathematician!
8–10 Workshop
McCormick Place - Lakeside Center, E451A
Heather Vonada, Woodstock Union High School, Vermont

466 Discover the Power of Instructional Routines to Create Engagement and Promote Lasting Learning
8–10 Workshop
McCormick Place - South Building, S405
Jennifer Graziano, Sacramento City Unified School District, California
Stephen Arndt, Sacramento City Unified School District, California
Friday Afternoon Workshops

467 What the Heck Is a Story Table? The Algebraic Reasoning Tool You've Probably Never Heard Of
8-10 Workshop
McCormick Place - South Building, S401BC
Shira Helft, Desmos, San Francisco, California
@mshelft

468 Easing Students into Mathematical Modeling with Thought Tool Tasks
10-12 Workshop
McCormick Place - Lakeside Center, E450A
John Pelesko, University of Delaware, Newark
Michelle Cirillo, University of Delaware, Newark

469 Exploring Continuity, Limits, and One-Sided Limits through Hands-On Experience with Marble Run
10-12 Workshop
McCormick Place - Lakeside Center, E258
Inna Tokar, The Calhoun School, New York, New York

470 Making Sense of Inference for Sampling and Experiments
10-12 Workshop
McCormick Place - Lakeside Center, E353C
Daren Starnes, The Lawrenceville School, Hilton Head, South Carolina
Josh Tabor, Canyon del Oro High School, Oro Valley, Arizona

471 Where Do Those Trig Functions Get Their Names? Geometry, of Course!
10-12 Workshop
McCormick Place - South Building, S401A
Craig Cullen, Illinois State University, Normal
Tami Martin, Illinois State University, Normal
Roger Day, Illinois State University, Normal

472 More Joy, More Play: How Improv Theater Can Engage Teachers and Students in Mathematical Practices
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - Lakeside Center, E353B
Andrea McCloskey, Penn State University, University Park, Pennsylvania
Jennifer Knudsen, Austin, Texas
Andrea Young, Ripon College, Austin, Texas

473 Public Math Pop-Up: Build Your Own Temporary Math Installation
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - South Building, S404BC
Chris Nho, High Tech High School, Chicago, Illinois
Christopher Danielson, Desmos, Inc., Saint Paul, Minnesota
Molly Daley, Education Service District 112, Saint Paul, Minnesota

Notes
Friday Afternoon Sessions

2:30pm–3:30pm

474 Catalyzing Change in Middle School Mathematics: Broadening the Purposes of Learning Mathematics and Dismantling Inequitable Structures
Session
McCormick Place - Lakeside Center, E267
Christa Jackson, Iowa State University, Ames
George Roy, University of South Carolina, Columbia

475 Beyond a Timed Test . . . Assessing Addition and Subtraction Fact Fluency
Pre-K–2 Session
McCormick Place - Lakeside Center, E259
Kristin Johnson, Troy CCSD 30-C, Plainfield, Illinois
Amy Deang, Troy CCSD 30-C, Plainfield, Illinois

476 Problem Solving—Not a Problem ... Moving from Word Problems to Problem Solving in the Centennial (K-2)
Pre-K–2 Session
McCormick Place - Lakeside Center, D2 - L
Suzanne Hood, Hall County Schools, Flowery Branch, Georgia

477 Using Storytelling to Empower Our Students to Discover and Author Their Mathematical Identity
Pre-K–2 Session
McCormick Place - Lakeside Center, E260
Lachanda Garrison, DoDEA, FPO, AE
@educationoflife

478 Differentiation Adds Up in the Math Classroom
3–5 Session
McCormick Place - Lakeside Center, D2 - C
Pamela Gruzynski, Hoffman Estates, Illinois

479 Emphasize the Thinking, not the Computation
3–5 Session
McCormick Place - Lakeside Center, E261
Rob Nickerson, ORIGO Education, Lakewood, Colorado
Andrea Kotowski, ORIGO Education, Earth City, Missouri
Heather Monks, ORIGO Education, Earth City, Missouri

480 Guided Math That Works: Intensive, Short-Term, Targeted, Effective!
3–5 Session
McCormick Place - Lakeside Center, D2 - J
Sandy Handrick, Leander ISD, Texas
@SandyHandrick

481 Making Math Fun with Gamification
3–5 Session
McCormick Place - Lakeside Center, E262
Kevin Smith, Dakota State University, Madison, South Dakota
@KevinSmithSD

482 Teaching without Telling: Analyzing Tasks for Fractions
3–5 Session
McCormick Place - Lakeside Center, D2 - H
Melike Kara, Towson University, Maryland

483 Hey! Teacher! Leave Them Kids Alone: Empowering Students through the Mathematics Teaching Practices
6–8 Session
McCormick Place - Lakeside Center, E351
Kathryn Bingman, NYC DOE, Bronx, New York
Byron Licari, Van Nest Academy, Bronx, New York

484 Integer Card Games: Moving Students from Concrete to Pictorial to Abstract
6–8 Session
McCormick Place - Lakeside Center, D2 - G
Jana Stockstill, Great Minds, Bolivar, Missouri

485 All Are Invited! Creating a Culture of Learning for Each and Every Student
8–10 Session
McCormick Place - South Building, S406A
Jacqui Lehmkuhl, Troy High School, Ohio
@JacquiLehmkuhl
Friday Afternoon Sessions

486 Improving Mathematics Teachers’ Culturally Responsive Lesson Planning and Teaching
8:30am—9:30am
McCormick Place - Lakeside Center, D2 - D
Darryl Corey, Radford University, Virginia
Nikita Patterson, Georgia State University, Atlanta

487 Quadratic Quandary: Where and How Do Quadratic Functions and Equations Fit?
8:30am—9:30am
McCormick Place - South Building, S406B
W. Gary Martin, Auburn University, Alabama
@wgarym

488 Rehumanizing the Mathematics Classroom for Students with Disabilities
8:30am—9:30am
McCormick Place - Lakeside Center, D2 - K
Katie Westby, Brattleboro Union High School, Vermont
@katie_westby

489 Creating a Math Classroom of #DreamChasers
10:30am—11:30am
McCormick Place - Lakeside Center, E263
Joanna Stevens, Garrard County High School, Lancaster, Kentucky
@MrsStevensMath

490 Elementary Mathematics Specialists: Connecting Math Teaching and Learning for Positive Change
Coaches/Leaders/Teacher Educators Session
McCormick Place - South Building, S401D
Marilyn Cannon, Raytown School District, Missouri
@m5cannon
Ann McCoy, University of Central Missouri, Warrensburg

491 Maximizing the Potential of Elementary Mathematics Coaches
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, D2 - F
Patricia Campbell, University of Maryland, College Park

492 Wade in the Water: Engaging Tensions in Culturally Relevant and Responsive Mathematics Teaching
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E264
Lou Matthews, Urban Teachers, Washington, D.C.
Emily Yanisko, Columbia, Maryland
Jessica Proffitt, Urban Teachers, Richmond, Virginia

493 100 Years of Mathematics: Our Achievements and Our Remaining Challenges
General Interest Session
McCormick Place - Lakeside Center, E350
Gregory Foley, Ohio University, Athens
Stephen Phelps, Hamilton County ESC, Cincinnati, Ohio

494 Combining Mathematics with Engineering to Enhance the Teaching of Data Science
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E352
Talitha Washington, Howard University, Washington, D.C.
@doctor_talitha
Erick Jones, University of Texas Arlington

495 Empowering Your ELLs to Interact with Rich Mathematics
General Interest Session
McCormick Place - Lakeside Center, D2 - E
Victoria Peacock, Great Minds/Eureka Math, Lake View, New York
Lisa Gradney, Great Minds, Gonzales, California

496 Getting into Shape: Developing K-8 Spatial Abilities for STEM Expertise and Innovation
General Interest Session
McCormick Place - Lakeside Center, Arie Crown
Linda Sheffield, Northern Kentucky University, Emerita, Fort Thomas

Implement the Effective Teaching Practices
Experience the Depth and Excitement of Mathematics
Look Back and Move Forward: A Centennial View
Create Positive Change
Build Student Agency, Foster Student Identity, Promote Social Change
Friday Afternoon Sessions

497  Guidelines for Teaching Statistics and Data Analysis in K-12
   General Interest Session
   McCormick Place - Lakeside Center, D2 - B
   Anna Bargagliotti, Loyola Marymount University, Los Angeles, California
   Christine Franklin, American Statistical Association, Watkinsville, Georgia

498  Leverage the Repeatable Nature of Reasoning Routines to Develop Effective Math Teaching Practices
   General Interest Session
   McCormick Place - Lakeside Center, E354B
   Grace Kelemanik, Fostering Math Practices, Natick, Massachusetts
   Amy Lucenta, BPE, Natick, Massachusetts

499  Toward a Powerful Mathematics Classroom: Listening to Bilingual Learners
   General Interest Session
   McCormick Place - Lakeside Center, E270
   Marta Civil, The University of Arizona, Tucson
   @MartaCivil

500  Video Game Mathematics: Translating Mathematics into Action
   General Interest Session
   McCormick Place - Lakeside Center, D2 - I
   Kurt Salisbury, Baylor University & Midway Middle School, Waco, Texas
   @kurt_salisbury

501  The Roles of Representations and Denominators in Prospective K-8 Teachers’ Fractional Understanding
   Research Session
   McCormick Place - Lakeside Center, D2 - A
   Richard Busi, James Madison University, Harrisonburg, Virginia
   Jennifer Gibson, James Madison University, Harrisonburg, Virginia
   Alexis Stevens, James Madison University, Harrisonburg, Virginia

501.1  Nspired Insights into Calculus
   10-12 Exhibitor Workshop
   McCormick Place - Lakeside Center, E253B
   Texas Instruments Incorporated, Dallas, Texas

501.2  The Trojan Horse of Mathematics
   6-8 Exhibitor Workshop
   McCormick Place - Lakeside Center, E253C
   Amplify

501.3  Two Great Options for On-Level Statistics
   10-12 Exhibitor Workshop
   McCormick Place - Lakeside Center, Presentation Pavilion
   Bedford, Freeman & Worth Publishers, Hamilton, New Jersey

Notes
Friday Afternoon Workshops

502 Addition and Subtraction Strategy Games That Promote Conceptual Understanding and Procedural Fluency
Pre-K-2 Workshop
McCormick Place - Lakeside Center, E258
Cynthia Cliche, Murfreesboro City Schools, Tennessee
Jeremy Winters, Middle Tennessee State University, Murfreesboro
Dovie Kimmins, Middle Tennessee State University, Murfreesboro

503 Engaging Discourse: The Power of Reflective Listening
Pre-K-2 Workshop
McCormick Place - Lakeside Center, E450B
Jessica Bobo, Curriculum Associates, Fort Worth, Texas

504 Guided Math for the Early Childhood Classroom
Pre-K-2 Workshop
McCormick Place - South Building, S405
Karie Gladis, Self-Employed, San Clemente, California

505 Exploring and Implementing Mathematical Modeling in the Elementary Grades
3-5 Workshop
McCormick Place - South Building, S402
Megan Wickstrom, Montana State University, Bozeman
Amber Yates, Thompson Falls Elementary, Montana

506 Getting the Words Out: Explanation and Representation at the Center of Math Work in Urban Classrooms
3-5 Workshop
McCormick Place - South Building, S404D
Susan Jo Russell, Somerville, Massachusetts

507 Developing Mathematical Thinkers and the Teacher Moves to Get Them There
6-8 Workshop
McCormick Place - South Building, S401BC
Mandy Harvell, Ritenour School District, St. Louis, Missouri
Melissa Crowley, Ritenour School District, Saint Peters, Missouri

508 Discovering the Joy in Mathematics through Implementing a “Mathematician’s Workshop Lab!”
6-8 Workshop
McCormick Place - Lakeside Center, E451B
Alecia McGill, Bonita Unified Schools, San Dimas, California

509 Using Instructional Routines in Summer Math Camp to Create Student Confidence & Agency
6-8 Workshop
McCormick Place - Lakeside Center, E271B
Samantha Wuttig, Fairbanks North Star Borough School District, Alaska
Tara DeVaughn, Ben Eielson, Jr.-Sr. High School, North Pole, Alaska

510 Effective Teaching Strategies to Support Special Education Students in Mathematics
8-10 Workshop
McCormick Place - Lakeside Center, E450B
Heather McMillin, East Side Union High School District, San Jose, California

511 Implementing Tasks That Promote Reasoning and Problem Solving
8-10 Workshop
McCormick Place - South Building, S403
Jeremy Zelkowski, The University of Alabama, Hoover
Daniel Ilaria, West Chester University, Chester Springs, Pennsylvania

512 We Run This: Building Agency through Student-Led Collectivist Discourse Strategies
8-10 Workshop
McCormick Place - South Building, S401A
Benjamin Walker, Walter Payton College Prep, Chicago, Illinois

513 Assessment with Desmos
10-12 Workshop
McCormick Place - South Building, S404BC
Julie Reulbach, Cannon School, Mooresville, North Carolina

Implement the Effective Teaching Practices
Experience the Depth and Excitement of Mathematics
Look Back and Move Forward: A Centennial View
Create Positive Change
Build Student Agency, Foster Student Identity, Promote Social Change
Friday Afternoon Workshops

514 Enhancing Secondary Math Instruction with Scratch Coding
10–12 Workshop
McCormick Place - Lakeside Center, E353A
Dan Shuster, Simi Valley USD, California
@SimiCodeSquad

515 Sequences: Understanding and Discovering Patterns from Photos of a Pyramid
10–12 Workshop
McCormick Place - Lakeside Center, E353B
Mike Koehler, Blue Valley North High School (Retired), Kansas City, Missouri

516 Squares, Circles, Sums, and Related Curiosities
10–12 Workshop
McCormick Place - Lakeside Center, E271A
Albert Cuoco, Education Development Center Inc, Waltham, Massachusetts

517 5 Actions for Productive Struggle
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - Lakeside Center, E450A
John SanGiovanni, Howard County Public School System, Westminster, Maryland
@JohnSanGiovanni

518 Effective Interventions for Students with Mathematics Learning Disabilities
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - Lakeside Center, E451A
Sridhar Nagubandi, Churchill School and Center, New York, New York
Henry Vas Nunes, Churchill School and Center, New York, New York

519 Rough Drafts in Math Class: Going beyond Getting Correct Answers
General Interest Workshop
McCormick Place - Lakeside Center, E265
Amanda Jansen, University of Delaware, Newark
@MandyMathEd

520 The Art of Creating Examples and Non-Examples in Mathematics
General Interest Workshop
McCormick Place - South Building, S404A
Zandra de Araujo, University of Missouri, Columbia
@zdearaujo
Samuel Otten, University of Missouri, Columbia
Jaepil Han, University of Missouri, Columbia

Notes
### Friday Afternoon Sessions

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#### Friday Afternoon Sessions Details

**521**
Catalyzing Change in Middle School Mathematics: Implementing Equitable Instruction and Developing Deep Mathematical Understanding

- **Session**: McCormick Place - Lakeside Center, E267
- **Sarah Bush**, Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Central Florida, Orlando
  
  - **Eric Milou**, Rowan University, Glassboro, New Jersey

**522**
ShadowCon Centennial 2020

- **General Interest Session**: McCormick Place - Lakeside Center, Arie Crown

  At ShadowCon20, you will get to learn with a wide variety of educational leaders. Each speaker will give a provocative 10-minute talk and challenge the audience with a call to action. As always, the goal of ShadowCon is to expand access to and extend your engagement with the speakers and their ideas. It is our hope that you will leave with a desire to take action and share your new ideas with colleagues and students. This event is organized and hosted by members of the NCTM community.

**523**
Are You Getting the Most Out of Number Talks?

- **Pre-K-2 Session**: McCormick Place - South Building, S406B

  - **Kathy Richardson**, Math Perspectives Teacher Development Center, Bellingham, Washington

  - *kathy@mathperspectives.com | kathyandsue*

**524**
Fostering a Positive Math Identity: How Student Self-Affirmations Can Counteract Stereotype Threat

- **Pre-K-2 Session**: McCormick Place - Lakeside Center, D2 - A

  - **John Silverthorne**, Wauwatosa School District, Wisconsin
  - **@mathcoachlife**

**525**
In Their Own Words: Getting the Most Out of the Lesson Objective

- **Pre-K-2 Session**: McCormick Place - Lakeside Center, D2 - F

  - **Melanie Gutierrez**, Great Minds, Washington, D.C.
  - **Lauren DelFavero**, Great Minds, Washington, D.C.

**526**
Formative Assessment: How Do Teachers Use Evidence of Student Thinking? What Is the Students’ Role?

- **3-5 Session**: McCormick Place - South Building, S401D

  - **Beth Terry**, Riffa Views International School
  - **@Bterry3B**

  - **Dana Islas**, Grijalva Elementary School, Tucson, Arizona

**527**
Harnessing the Power of Real-Time Assessment

- **3-5 Session**: McCormick Place - Lakeside Center, E260

  - **Elizabeth Venn**, DreamBox Learning, Bellevue, Washington
  - **@elvenn**

  - **Sara Hinsley**, DreamBox Learning, Raleigh, North Carolina

  - **David Woods**, DreamBox, Bellevue, Washington

**528**
I Know, You Know, We All Know—Access for All

- **3-5 Session**: McCormick Place - Lakeside Center, D2 - I

  - **Karen Hicks**, Chicago Public Schools, Illinois

  - **Sharonda Thomas**, Chicago Public Schools, Illinois

**529**
Place-Value Understanding through the Lens of an Elementary Student: Seems So easy, but Is It?!

- **3-5 Session**: McCormick Place - Lakeside Center, D2 - G

  - **Jenny Ainslie**, Orange County Public Schools, Cary, North Carolina
  - **@JennyAinslie**

  - **Valerie Faulkner**, North Carolina State University, Raleigh

  - **Jessica Hunt**, North Carolina State University, Raleigh

**530**
4 Strategies to Help Students Start Math Problems and Stick with Them

- **6-8 Session**: McCormick Place - Lakeside Center, E270

  - **Kyle Pearce**, Greater Essex County District School Board, Belle River, Ontario, Canada
  - **@MathletePearce**

  - **Jon Orr**, Lambton Kent District School Board, Tilbury, Ontario, Canada

---

**Implement the Effective Teaching Practices**

**Experience the Depth and Excitement of Mathematics**

**Look Back and Move Forward: A Centennial View**

**Create Positive Change**

**Build Student Agency, Foster Student Identity, Promote Social Change**
Friday Afternoon Sessions

4:00pm–5:00pm

531 How to Help Students Become Problem Solvers, not Math Robots
6–8 Session
McCormick Place - Lakeside Center, E354B
Robert Kaplinsky, Long Beach, California
@robertkaplinsky

532 Love of Numbers: Using Enjoyment to Build Confidence and Number Sense
6–8 Session
McCormick Place - Lakeside Center, D2 - D
William Lacefield, Mercer University, Macon, Georgia
Susie Morrissey, Mercer University, Macon, Georgia
Tonya Clarke, Clayton County Public Schools, Jonesboro, Georgia

533 Mathematics in Real Life: Open-Ended Problems Can Connect the Dots
6–8 Session
McCormick Place - Lakeside Center, D2 - L
Johan Koekemoer, Skoleondersteuningscentrum, Pretoria, South Africa
@TheKoek

534 Mathematics, Computational Thinking, and Spatial Reasoning through 3D Modeling and Printing
6–8 Session
McCormick Place - Lakeside Center, E263
Heejoo Kim, SRI International, Menlo Park, California
Jennifer Knudsen, SRI International, Austin, Texas
Ken Rafanan, SRI International, Menlo Park, California

535 Positioning Reluctant Students as Math Thinkers and Doers!
6–8 Session
McCormick Place - Lakeside Center, E261
Claudia Bertolone-Smith, California State University Chico
Lynda Wiest, University of Nevada, Reno
Heather Crawford, Nevada Department of Education, Carson City

536 Leveraging Mathematics to Affect Community Change
8–10 Session
McCormick Place - Lakeside Center, D2 - C
Hannah Lakin, Maine Mathematics and Science Alliance, Augusta
@HannahLLakin
Rhonda Tate, Maine Mathematics and Science Alliance, Augusta

537 Relational PBL Mathematics: Promoting Equity by Accessing Agency
8–10 Session
McCormick Place - Lakeside Center, E262
Carmel Schettino, Avenues: The World School, New York, New York
@SchettinoPBL

538 Best Teacher Choice I’ve Made: Written Assessments
10–12 Session
McCormick Place - Lakeside Center, D2 - J
Rachel Baker, Saint Paul Public Schools, Minnesota
@racquel21

539 Building Math Self-Efficacy
10–12 Session
McCormick Place - Lakeside Center, D2 - H
Jennifer Chirles, Trumbull Public Schools, Connecticut
@jchirles

540 Visualizing Complex Roots of a Quadratic Equation in Relation to the Associated Quadratic Function
10–12 Session
McCormick Place - Lakeside Center, D2 - E
Thomas Edwards, (Retired), Detroit, Michigan
S Asli Ozgun-Koca, Wayne State University, Detroit, Michigan
Angela Principato, South Lake High School, Detroit, Michigan

541 Developing a Mathematics Learning Culture: Cultivating Leaders in Professional Learning Communities
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E259
Nicole Rigelman, Portland State University, Oregon

542 The HeART of Coaching: Asking Purposeful Questions
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E264
Brenda Konicke, Math Solutions, New York, New York
@brendakonicke
Joel Leventhal, Math Solutions, Philadelphia, Pennsylvania
Friday Afternoon Sessions

543 Math and Mingle: Using Conferring to Engage Elementary Students in Math Conversations
  General Interest Session
  McCormick Place - Lakeside Center, E351
  Matt Hayden, Monona Grove School District, Wisconsin
  Mark Esch, Monona Grove School District, Wisconsin

544 Mirror, Mirror on the Wall: How Is Your Classroom Culture & Instruction Responsive to All?
  General Interest Session
  McCormick Place - South Building, S406A
  Andrew Smith, Kent Intermediate School District, Grand Rapids, Michigan
  @smithand1015
  Rusty Anderson, Kent Intermediate School District, Grand Rapids, Michigan
  Marcus Deja, Kent Intermediate School District, Grand Rapids, Michigan

545 Sankofa: Looking Back to Honor 100 Years of Black Mathematicians, Moving Forward in the 21st Century
  General Interest Session
  McCormick Place - Lakeside Center, E352
  Shelly Jones, Central Connecticut State University, New Britain
  @ShellyMJones1

546 Sending Out an S.O.S.: Teacher Burnout
  General Interest Session
  McCormick Place - Lakeside Center, D2 - K
  Daniel Luevanos, San Marcos Unified School District, Escondido, California
  @danluevanos

547 The Mathematics Teacher: What Has (and Has Not) Changed in 100 Years?
  General Interest Session
  McCormick Place - Lakeside Center, E350
  Drew Corley, Amplify Education, Inc., Raleigh, North Carolina
  @Drew_Corley

548 Using Focused Questioning to Center on Student Thinking
  General Interest Session
  McCormick Place - Lakeside Center, D2 - B
  Edward Nolan, Towson University, Parkville, Maryland
  @ed_nolan
  Thomasenia Adams, University of Florida, Gainesville

Notes
Friday Afternoon Bursts

549  Mathtical Author: To The Moon And Back - Using Math!

Pre-K–2 Burst
McCormick Place - South Building, S404A

Helaine Becker, Self-Employed, Toronto, Ontario, Canada
@helainebecker

550  Mathtical Author: Math Has Feelings Too—Exposing Students to the Compassionate and Creative Side of Math

Pre-K–2 Burst
McCormick Place - Lakeside Center, E353B

Julia Mosca, Self Employed, Rocky River, Ohio
@JFinleyMosca

551  Playing with Early Math to Build Access, Autonomy, and Attitude

Pre-K–2 Burst
McCormick Place - Lakeside Center, E265

Jennifer McCray, Erikson Institute, Chicago, Illinois

552  Hands-On Geometry for Deeper Conceptual Understanding for All Learners in Grades 3-5

3–5 Burst
McCormick Place - Lakeside Center, E271A

Margie Mason, William & Mary, Williamsburg, Virginia
Monica Grillo, William & Mary, Williamsburg, Virginia

553  Mathtical Author: Which One Doesn’t Belong? and Other Mathematical Ambiguities

3–5 Burst
McCormick Place - South Building, S402

Christopher Danielson, Desmos, Inc., Saint Paul, Minnesota
@TrianglemanCSD

554  Measure for Measure: Equivalent Fractions and Musical Notes

3–5 Burst
McCormick Place - South Building, S404BC

Michelle Demko, The Allen-Stevenson School, New York, New York

555  Facilitating Equitable Classroom Discourse with Desmos

6–8 Burst
McCormick Place - Lakeside Center, E258

Robert Janes, East Hartford, Connecticut
Lisa Bejarano, DESMOS, San Francisco, California

556  Playing with Water and Learning about What Graphs Represent

6–8 Burst
McCormick Place - South Building, S404D

Teo Paoletti, Montclair State University, New Jersey
@drtpaoletti

Madhavi Vishnubhotla, Montclair State University, New Jersey
Mustafa Mohamed, Montclair State University, New Jersey

557  Remedial Just Sounds Bad: Reimagining Math Electives

6–8 Burst
McCormick Place - Lakeside Center, E450B

Emily Burkett, Sheffield Junior High School, Alabama
@burkett_learn

558  Going Deep: Engaging in Problem Solving with Great Depths of Knowledge

8–10 Burst
McCormick Place - South Building, S401BC

Rachel Fruin, Educational Consultant, Chicago, Illinois
@rachelfruin

Kathleen Williams, NCUSD203, Naperville, Illinois

560  Are You Listening? Black Students Perceptions of the Mathematics Classroom

10–12 Burst
McCormick Place - South Building, S401A

Jennifer Banks, Washtenaw Intermediate School District, Ann Arbor, Michigan
@jbanksphd7

561  Error Bound: That Strange Lagrange

10–12 Burst
McCormick Place - Lakeside Center, E353A

Kelly Orsi, Prairie Ridge HS, Crystal Lake, Illinois
@orsipedia

562  To Infinity and Beyoncé: Mathematical Connections in Music

10–12 Burst
McCormick Place - Lakeside Center, E451B

Martin Funk, New Trier High School, Winnetka, Illinois
**Friday Afternoon Bursts**

**563** How to Nurture Leadership in Your Building through Math Teams
- Coaches/Leaders/Teacher Educators Burst
- McCormick Place - Lakeside Center, E271B
- **Meredith Stanley**, Independent Math Specialist, Asheville, North Carolina
  @meredith4math

**564** Shape the Future for Your Students with the U.S. Census Bureau’s Statistics in Schools Program
- Coaches/Leaders/Teacher Educators Burst
- McCormick Place - South Building, S403
- **Heidi Crawford**, U.S. Census Bureau, Washington, D.C.

**565** Unveiling the False Truth behind the Equation: Black + Boy = At Risk + Math
- General Interest Burst
- McCormick Place - South Building, S405
- **Sophia Gerrick-Stier**, LilMathGirl, Douglassville, Pennsylvania
  @lilmathgirl

**Friday Afternoon Workshop**

**566** New Teacher Celebration
- Workshop
- McCormick Place - Lakeside Center, E450A
- **Dave Barnes**, National Council of Teachers of Mathematics, Reston, Virginia

**Friday Afternoon Session**

**566.1** Ignite! Looking Back and Moving Forward
- Session
- McCormick Place - Lakeside Center, E354B
- Hear from nine classroom teachers at various stages of their teaching careers as they are challenged to give a five-minute talk, using twenty slides that auto advance every fifteen second whether they are ready or not. Matt Larson will emcee this exciting event! A cash bar will also be available.
- **Matthew Larson**, Past President, National Council of Teachers of Mathematics; Lincoln Public Schools, Nebraska
  @miarson_math
- **Dwaina Sookhoo**, Academy for Young Writers, Brooklyn, New York
  @mathapprentice
- **Mario Valdez**, Oak Grove Elementary, Porterville, California
  @ogstars_val
- **Marian Dingle**, DeKalb Public Schools, Georgia
  @DingleTeach
- **Hema Khodai**, Brampton, Ontario, Canada
  @HKhedai
- **Brian Shay**, San Dieguito High School District, California
  @MrBrianShay
- **Jamie Wong**, Lorena Middle School, Texas
  @wong_math
- **Fred Dillon**, Retired Teacher, Strongsville, Ohio
  @fdizzle1955
- **Manju Connolly**, George Washington High School, Chicago, Illinois
  @ameliorationage
Guiding teachers through six specific actions—valuing, fostering, building, planning, supporting, and reflecting on struggle—this book provides an essential plan for embracing productive perseverance in mathematics.

John J. Sangiovanni, Susie Katt
Kevin J. Dykema
Grades K–8

Encourage productive struggle by identifying teacher and student strengths, designing strengths-based instruction, discovering students’ points of power, and promoting strengths in the school community.

Beth McCord Kobett,
Karen S. Sharp
Grades K–6

Teach mathematics through the lens of social justice to connect content to students’ daily lives and fortify their mathematical understanding.

Robert Q. Berry III,
Basil M. Conway IV,
Brian R. Lawler,
John W. Staley
High School

Enhance your fluency in the five practices to bring powerful discussions of mathematical concepts to life in your classroom.

Margaret (Peg) Smith,
Victoria Bill, Miriam Gamo,
Michael D. Steele
Elementary
Middle School
High School

Take the initial focus off specific numbers and computations and put it on the actions and relationships expressed in word problems.

Kimberly Morrow-Leong,
Sara Delano Moore,
Linda M. Gojak
Grades K–2
Grades 3–5
Grades 6–8—Available Fall 2020

Enter to win a $300 Corwin Math Library and get a free whiteboard!

Bring your program coupon to booth #721

corwin.com/math
NCTM has meticulously designed workshops on a number of topics that we can bring to your district. Your teachers will gain strategies to engage students in mathematical thinking, reasoning, and sense making to significantly strengthen teaching and learning.

**Topics include**
- Productive Struggle
- Facilitating Discourse
- Algebra Readiness
- Making Mathematics Accessible
- Preparing Students for SAT Success

nctm.org/pd
### Saturday Morning Sessions

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| 567         | Equity Begins in K-2 Mathematics: Learn the Fundamentals with Us!   | 8:00am–9:00am    | McCormick Place - Lakeside Center, E259 | Myrtle Davis, Prince George’s County Public Schools, Oxon Hill, Maryland  
Jasmine Davis, Prince George’s County Public Schools, Upper Marlboro, Maryland                                                   |
| 568         | Re-Envisioning Early Childhood Mathematics with Playful Problem Solving | 8:00am–9:00am    | McCormick Place - Lakeside Center, E350 | Antonia Cameron, Metamorphosis Teaching Learning Communities, New York, New York  
Jennifer Costanzo, Metamorphosis Teaching Learning Communities, New York, New York  
Stephanie Slabic, Metamorphosis Teaching Learning Communities, Brooklyn, New York                                                   |
| 569         | Asking the Right Questions to Ensure Deeper Understanding            | 8:00am–9:00am    | McCormick Place - Lakeside Center, E260 | Kevin Larkin, Pinellas County Schools, Largo, Florida  
Adrienne DeLong, Pinellas County Schools, Largo, Florida                                                                                  |
| 570         | Cultural Capacity: Embracing Cultural Differences in K-12 Mathematics | 8:00am–9:00am    | McCormick Place - Lakeside Center, E253A | Kiana Thomas, Norfolk State University, Virginia                                                                                      |
| 571         | Gimme More Math! Turn Your Students into Raving Math Fans            | 8:00am–9:00am    | McCormick Place - Lakeside Center, E351 | Diana Pecina, Bedtime Math Foundation, Summit, New Jersey  
Shayna Sackett-Gable, Bedtime Math Foundation, Summit, New Jersey                                                                         |
| 572         | Rich Tasks Transition Naturally from Percentages and Rates to Algebra in Grades 6-10 | 8:00am–9:00am    | McCormick Place - Lakeside Center, E253B | Marianne Srock, Macomb Intermediate School District, Clinton Twp., Michigan                                                              |
| 573         | Who Is Teaching Financial Literacy to Our Students?                 | 8:00am–9:00am    | McCormick Place - Lakeside Center, E263 | Jacqueline Scanlan, Math Specialist, Savannah, Georgia  
Elizabeth Korman, Middle School Math Teacher, Pasadena, California                                                                          |
| 574         | Whose Down with S-B-G? The Ins and Outs of Standards-Based Grading  | 8:00am–9:00am    | McCormick Place - Lakeside Center, E352 | McKendry Marano, James River High School, Midlothian, Virginia                                                                           |
| 575         | In Their Words: Helping Student Growth and Learning through Writing in Math | 8:00am–9:00am    | McCormick Place - Lakeside Center, E259 | Jacqueline Scanlan, Math Specialist, Savannah, Georgia  
Elizabeth Korman, Middle School Math Teacher, Pasadena, California                                                                          |
| 576         | Polynomial Long Division: Why Do We Care?                           | 8:00am–9:00am    | McCormick Place - Lakeside Center, E267 | Joseph Obrycki, Niles North High School, Skokie, Illinois                                                                 |
| 577         | 8 Ideas for Increasing the Critical Mass of Math Learners            | 8:00am–9:00am    | McCormick Place - Lakeside Center, E253B | Barbara Smith, University of Toronto (OISE), Ontario, Canada                                                                          |
| 578         | How Will You Leave Your MARK?                                       | 8:00am–9:00am    | McCormick Place - Lakeside Center, E264 | Christine Percy, School District of Palm Beach County, West Palm Beach, Florida  
Susanna Strickland, School District of Palm Beach County, West Palm Beach, Florida  
Jennifer Hataway, School District of Palm Beach County, West Palm Beach, Florida                                                               |
Implement the Effective Teaching Practices
Experience the Depth and Excitement of Mathematics
Look Back and Move Forward: A Centennial View
Create Positive Change
Build Student Agency, Foster Student Identity, Promote Social Change

8:00am—9:00am
NCTM Centennial Annual Meeting & Exposition  April 1–4, 2020 | Chicago
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Changing the conversation around math through rigorous, collaborative problem solving
Stop by Booth 316 to learn about Amplify’s new, highly engaging K–12 blended math curriculum.
Stop by to:
• Enter to win daily prizes, including autographed copies of Math Recess by Sunil Singh and DonorsChoose gift cards.
• Experience social, collaborative next-generation digital tools powered by Desmos.
• Pick up a takeaway classroom activity kit.
• Meet our team of collaborators and thought leaders.

To learn more about Amplify Math, visit amplify.com/math.

Attend one of our sessions:
Thursday, 2:30 p.m. | Presentation Pavilion
Fresh ideas for sparking and supporting student discourse in the blended classroom
Jaclyn Claiborne, Senior Managing Editor, 9–12 Math Curriculum at Amplify

Friday, 2:30 p.m. | Room # E253c
The Trojan horse of mathematics: Engaging students through narrative
Zach Wissner-Gross, Ph.D., Vice President, Math Curriculum at Amplify

Friday, 4 p.m. | Room # E350
The mathematics teacher: What has (and has not) changed in 100 years?
Drew Corley, Senior Managing Editor, 3–5 Math Curriculum at Amplify

Saturday, 9:30 a.m. | Room # E352
Illuminating the history of mathematics through puzzles, lost games, and number exploration
Sunil Singh, Author and Amplify Consultant

Reserve your spot for our math trivia night!
Thursday, 6 p.m. | Vu Rooftop
Join us to compete for prizes in our mathematical trivia night, hosted by Sunil Singh.
Register at amplify.com/nctm-2020. (Space is limited.)

Notes

Saturday Morning Sessions

579 Purposefully Prepping for Productive Perseverance
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E270
Janice Krouse, Illinois Mathematics & Science Academy, Aurora
Comfort Akwaji-Anderson, Waterloo Community School District, Iowa

580 5 Proven Tools for Engaging ELLs: Hope for Teachers!
General Interest Session
McCormick Place - Lakeside Center, E354B
James Ewing, Stephen F. Austin State University, Nacogdoches, Texas
@EwingLearning

581 How We Move From Equality to Equity and Justice in Mathematics Teaching
General Interest Session
McCormick Place - Lakeside Center, Arie Crown
Jose Vilson, TheJLV NYC Department of Education, New York, New York
Marian Dingle, DeKalb Public Schools, Georgia

582 The Global Schoolhouse: What We Can Learn from Teaching Mathematics in Impoverished Communities
General Interest Session
McCormick Place - South Building, S406B
Julie Jacobi, The Global Schoolhouse Initiative, Chicago, Illinois
@tgschoolhouse
Haley Forsyth Ertel
The Global Schoolhouse Initiative, Montreal, Quebec, Canada

583 Unveiling “Math Milestones” for Grades K-8
General Interest Session
McCormick Place - Lakeside Center, E262
Jason Zimba, Student Achievement Partners, New York, New York

584 Helping Students to Write Proofs: Stumbling Blocks and Potential Solutions
Higher Education Session
McCormick Place - Lakeside Center, E261
Frank Forte, Raritan Valley Community College, Branchburg, New Jersey
Changing the conversation around math through rigorous, collaborative problem solving

Stop by Booth 316 to learn about Amplify’s new, highly engaging K–12 blended math curriculum.

Stop by to:

- Enter to win daily prizes, including autographed copies of *Math Recess* by Sunil Singh and DonorsChoose gift cards.
- Experience social, collaborative next-generation digital tools powered by Desmos.
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*Jaclyn Claiborne*
Senior Managing Editor, 9–12 Math Curriculum at Amplify

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*Zach Wissner-Gross, Ph.D.*
Vice President, Math Curriculum at Amplify

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Illuminating the history of mathematics through puzzles, lost games, and number exploration

*Sunil Singh*
Author and Amplify Consultant

To learn more about Amplify Math, visit amplify.com/math.
Saturday Morning Workshops

8:00am–9:15am

585 Count Me In! Counting Collection Trajectories for Elementary Mathematics
Pre-K-2 Workshop
McCormick Place - Lakeside Center, E258
Kate Austin, Great Minds, Reston, Virginia
@kaustin320
Marianne Strayton, Clarkstown Central School District, New City, New York
Lisa Watts-Lawton, Los Angeles Unified School District, California

586 Subitizing Superpowers! Structuring as the Phonics of Mathematics
Pre-K-2 Workshop
McCormick Place - South Building, S405
Shelley Dickson, Fayette County Public Schools, Lexington, Kentucky
@shelley_math

587 Build It, Fold It, Draw It: Develop Understanding of the Attributes of Polygons
3-5 Workshop
McCormick Place - Lakeside Center, E450B
Laurie Boswell, Big Ideas Math, Franconia, New Hampshire
@laboswell
Tammy Hanlon, Great Minds/Eureka Math, Dade City, Florida

588 Size? Or Number? Knowing the Nuances of Word Problem Types Helps Students be Better Problem Solvers
3-5 Workshop
McCormick Place - Lakeside Center, E353A
Beth Barnes, Great Minds/Eureka Math, Niverville, New York
@barnesb31
Tammy Hanlon, Great Minds/Eureka Math, Dade City, Florida

589 A Routine for Reasoning to Ensure ALL Students Are Modeling with Mathematics
6-8 Workshop
McCormick Place - Lakeside Center, E353B
Amy Lucenta, Natick, Massachusetts
@AmyLucenta
Grace Kelemanik, Fostering Math Practices, Natick, Massachusetts

590 Engage and Empower All Students Using Interactive Simulations
6-8 Workshop
McCormick Place - South Building, S401BC
Amanda Mcgarry, University of Colorado Boulder
@McGarryMath

591 Making Meaning of Systems of Equations with Contexts and Representations
6-8 Workshop
McCormick Place - Lakeside Center, E271B
Raymond Johnson, Colorado Department of Education, Denver
@MathEdnet
Frederick Peck, University of Montana, Missoula
David Webb, University of Colorado Boulder

592 The Data Postcard Project: Engaging Student Choice, Self-Awareness, and Art through Statistics
6-8 Workshop
McCormick Place - South Building, S404BC
Elissa McAlvey, The Nueva School, San Francisco, California

593 The Most Misunderstood Standards in Grades 6-8: Are These Instructional Mistakes Happening in Your Class?
6-8 Workshop
McCormick Place - Lakeside Center, E451B
Brian Dean, Instruction Partners, New Port Richey, Florida
@FLMathNinja
Rebecca Few, Instruction Partners, New Port Richey, Florida

594 Using String Art to See the Functional Beauty in Math Runes
6-8 Workshop
McCormick Place - Lakeside Center, E450A
Maida Russell, Carver Middle School, Missouri State University, Springfield
@MaidaRussell1
Adam Harbaugh, Springfield, Missouri

595 Empowering Intervention Students to Love Math through Relationship Building and Positive Mindsets
8-10 Workshop
McCormick Place - South Building, S403
Lisa Amick, University of Kentucky, Lexington

596 Origami and Mathematics
8-10 Workshop
McCormick Place - South Building, S401A
Joy Hsiao, Brooklyn Technical High School, New York
Saturday Morning Workshops

597  Using Student Self-Assessment to Increase Mastery for All Learners
     8–10 Workshop
     McCormick Place - Lakeside Center, E265
     Lizzy Skousen, Illustrative Mathematics, Corinth, Texas
     Jennifer Wilson, Illustrative Mathematics, Black Mountain, North Carolina

598  Sharing Skepticism and Arguing Constructively in Math Class
     10–12 Workshop
     McCormick Place - South Building, S404A
     David Wees, Dreambox Learning, Denman Island, British Columbia
     Sara Hinsley, DreamBox Learning, Bellevue, Washington

599  The Six-Step Process of Conducting Statistical Investigations: Learning from Data
     10–12 Workshop
     McCormick Place - Lakeside Center, E353C
     Ruth Carver, Germantown Academy, Fort Washington, Pennsylvania
     Beth Chance, Cal Poly University, San Luis Obispo, California

600  Use Student-Created Videos to Elicit Excitement and Deep Understanding of Mathematics
     10–12 Workshop
     McCormick Place - South Building, S402
     Linda Saeta, Claremont High School, California
     @LindaSaeta
     Maria Flores, Claremont Unified School District, California

601  Using Activities in AP Calculus to Link the Mathematical Practices with Differential Equations
     10–12 Workshop
     McCormick Place - Lakeside Center, E271A
     Karen Hyers, Tartan High School, Oakdale, Minnesota
     @keyhyers

602  Creating and Using Achievement Level Descriptors in the Mathematics Classroom
     Coaches/Leaders/Teacher Educators Workshop
     McCormick Place - South Building, S404D
     Mary Veazey, NWEA, Austin, Texas
     Kate Brien, NWEA, Austin, Texas
     Molly Igoe, NWEA, Dover, New Hampshire

603  Developing Equity Agency among Mathematics Teachers
     Coaches/Leaders/Teacher Educators Workshop
     McCormick Place - Lakeside Center, E451A
     Circe Stumbo, West Wind Education Policy Inc., Iowa City, Iowa
     @CirceStumbo
     Comfort Akwaji-Anderson, Waterloo Community School District, Iowa

Notes
Saturday Morning Sessions

9:30am–10:30am

604 Developing Early Number Sense
Pre-K–2 Session
McCormick Place - Lakeside Center, E351
Katie Flores, UChicago STEM Education, Illinois
Elizabet Spaepen, UChicago STEM Education, Illinois
Debbie Leslie, UChicago STEM Education, The University of Chicago, Illinois

605 Exploring Written Discourse in Elementary Mathematics Classrooms
Pre-K–2 Session
McCormick Place - Lakeside Center, E262
Nicole Gearing, Utah Valley University, Orem

606 How to Put the “Productive” into the “Struggle” in Grades K-2
Pre-K–2 Session
McCormick Place - Lakeside Center, E253B
Carly Findley, Accelerate Learning, Houston, Texas
@carlyrfindley
Bonnie Duhé, Accelerate Learning, Houston, Texas
Kelsey Toomey, Accelerate Learning, Houston, Texas

607 Discovering Precise Points of Struggle to Trace the Building Blocks of Elementary School Mathematics
3–5 Session
McCormick Place - Lakeside Center, E261
C. Kyle Falting, Zearn, New York, New York
Stephanie Ely, Zearn, New York, New York
Shalinee Sharma, Zearn, New York, New York

608 Reading the K–5 Math Standards for Rigor and Complexity & Designing Questions to Match
3–5 Session
McCormick Place - South Building, S406B
Shelbi Cole, Student Achievement Partners, Palm Harbor, Florida
@ShelbiCole1
Ted Coe, Achieve Inc., Scottsdale, Arizona
Sarka Mraz, NWEA, Washington, D.C.

609 ARGO Math: A Problem/Project-Based Math Curriculum
6–8 Session
McCormick Place - Lakeside Center, E260
Justin Maffei, JASON Learning and Warren County Public Schools, Front Royal, Virginia
@maffelmth

610 Fight Climate Change with Mathematics!
6–8 Session
McCormick Place - Lakeside Center, E267
Debasmita Basu, The New School, Bloomfield, New Jersey
Nicole Panorkou, Montclair State University, New Jersey

611 Not Your Same Old Math Summer School: Empowering Reluctant and Struggling Math Students
6–8 Session
McCormick Place - Lakeside Center, E264
Dianne Gizowski, DCMO BOCES, Norwich, New York
@DoMoreMath

612 Intervention Instructional Strategies for the Secondary Classroom
8–10 Session
McCormick Place - Lakeside Center, E263
Rachel Giesmann, Fremont County School District #1, Lander, Wyoming
@giesmannr
Shawna Morgan, Fremont County School District #1, Lander, Wyoming

613 Game-Based Learning in Mathematics: Affordances and Pitfalls
10–12 Session
McCormick Place - Lakeside Center, E270
Thomas Dick, Oregon State University, Corvallis
Michael Renne, Oregon State University, Corvallis

614 Engaging, Empowering, and Retaining Mathematics Teacher Leaders
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E253A
Paula Jakopovic, University of Nebraska at Omaha
Kelly Gomez-Johnson, University of Nebraska at Omaha

615 Revitalizing Teachers through Evocative Coaching
Coaches/Leaders/Teacher Educators Session
McCormick Place - South Building, S401D
Allison Crisher, Virginia Beach City Public Schools
@AllisonCrisher
Sam Rhodes, James Madison University, Harrisonburg, Virginia
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[you]

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NCTM.org/Annual2020  #NCTMSTL20
Saturday Morning Sessions

9:30am—10:30am

616 Creating Interesting Ways for Students to Be Right AND Wrong
General Interest Session
McCormick Place - Lakeside Center, Arie Crown
Eli Luberoff, Desmos, Inc., San Francisco, California

617 Division to Functions: Using Student Thinking to Create a Through Line from Elementary to Algebra
General Interest Session
McCormick Place - Lakeside Center, E350
Theodore Sagun, UCLA GSE&IS, Whittier, California
Kristine Ho, UCLA GSE&IS, Los Angeles, California

618 Have You Read Any Good Math for Social Justice Lately?
General Interest Session
McCormick Place - Lakeside Center, E354B
Enrique Ortiz, University of Central Florida, Orlando

619 Illuminating the History of Mathematics through Puzzles, Lost Games, and Number Exploration
General Interest Session
McCormick Place - Lakeside Center, E352
Sunil Singh, Buzzmath, Montreal, Quebec, Canada

620 Inquiry as a Pathway to More Equitable Mathematics Instructional Practices
General Interest Session
McCormick Place - South Building, S406A
Nancy Dana, University of Florida, Gainesville
Kristin Weller, PK Yonge Developmental Research School at the University of Florida, Gainesville

621 Textbooks One Hundred Years Ago
General Interest Session
McCormick Place - Lakeside Center, E259
Mary Lindquist, Past President, National Council of Teachers of Mathematics, Reston, Virginia; Lewisburg, West Virginia

Notes
### Saturday Morning Workshops

**9:45am–11:00am**

<table>
<thead>
<tr>
<th>Workshop ID</th>
<th>Title</th>
<th>Session Time</th>
<th>Venue Details</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>622</td>
<td>Building K-2 Teachers' Mathematical Content Knowledge by “Doing the Math”</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - South Building, S402</td>
<td>Gina Piero, Worthington City Schools, Powell, Ohio @ginacpiero</td>
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<tr>
<td>623</td>
<td>Focusing Interventions: Planning with Formative Assessments and High-Leverage Concepts</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - Lakeside Center, E265</td>
<td>Erica Moy, Essex Westford School District, Essex Jct, Vermont</td>
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<tr>
<td>624</td>
<td>Recognizing and Responding to Students’ Mathematical Potential</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - South Building, S404A</td>
<td>Janine Firmender, Saint Joseph’s University, Philadelphia, Pennsylvania</td>
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<td>Catherine Little, University of Connecticut, Storrs</td>
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<tr>
<td>625</td>
<td>Tapping into Children's Inner Math Guru: Teacher Interactions to Foster Student Agency</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - Lakeside Center, E450A</td>
<td>Alyssa Renie, Erikson Institute, Chicago, Illinois</td>
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<td>and Learning</td>
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<td>Donna Johnson, Erikson Institute, Chicago, Illinois</td>
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<td>Jill Sapoznick, Erikson Institute, Chicago, Illinois</td>
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<tr>
<td>626</td>
<td>An Approachable Method for Understanding and Making Sense Out of Fractions</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - South Building, S405</td>
<td>Nevels Nevels, Hazelwood School District, Florissant, Missouri @nnevelsphd</td>
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<td>Taresa Wright-Fraser, Saint Louis Public Schools Board of Education, Missouri</td>
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<td>627</td>
<td>Be Both Author and Illustrator of Mathematical Understanding</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - Lakeside Center, E25B</td>
<td>Jill Gough, Trinity School, Atlanta, Georgia @jgough</td>
</tr>
<tr>
<td>628</td>
<td>Desmos for Elementary: Gamify Math Class &amp; Amplify Learning</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - Lakeside Center, E451B</td>
<td>Jamie Garner, Stanislaus County Office of Education, Modesto, California</td>
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<td>@mavenofmath</td>
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<tr>
<td>629</td>
<td>Using Strategic Partnerships to Increase Learning</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - Lakeside Center, E271A</td>
<td>Danielle Moore, Teaching One Moore, Los Angeles, California</td>
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<tr>
<td>630</td>
<td>Promoting STEM Engagement in Mathematics Classrooms: A Focus on Problems, Students, and</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - Lakeside Center, E450B</td>
<td>Kathryn Appenzeller, Michigan State University, East Lansing</td>
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<td>Charles Fessler, Michigan State University, East Lansing</td>
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<td>Sunyoung PARK, Michigan State University, East Lansing</td>
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<td>631</td>
<td>Using Manipulatives to Assess Student Understanding of Geometry</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - South Building, S401BC</td>
<td>Barbara Post, California State University, Fullerton</td>
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<td>Nita Walker, California State University, Fullerton</td>
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<td>632</td>
<td>Experiencing Mathematics: Arts Integration to Build School Community</td>
<td>9:45am–11:00am</td>
<td>McCormick Place - Lakeside Center, E271B</td>
<td>Ellie Balk, <a href="http://www.elliebalk.com">www.elliebalk.com</a>, Brooklyn, New York @elliebalk</td>
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<td>Tricia Stanley, Williamsburg High School of Arts and Technology, Brooklyn, New York</td>
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Erin Sudakis
Grade 7 Teacher

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3. Close student gaps

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Saturday Morning Workshops

633 Making Space: Analyzing Student Discourse Actions in Mathematics to Promote Access to More Voices
8-10 Workshop
McCormick Place - Lakeside Center, E353A
Melissa Boston, Duquesne University, Pittsburgh, Pennsylvania @MBostonMath
Amber Candela, University of Missouri-St. Louis
Juli Dixon, University of Central Florida, Orlando

634 Studying the Desmos Activity Building Code: The 12 Desmos Design Principles
8-10 Workshop
McCormick Place - South Building, S403
Nico Rowinsky, Toronto District School Board, Ontario, Canada @rowmath
David Petro, Windsor Essex Catholic District School Board, Harrow, Ontario, Canada

635 Using Improvement Science to Continuously Improve Your Instruction
8-10 Workshop
McCormick Place - South Building, S404D
Toni Smith, American Institutes for Research, Washington, D.C.
Kirk Walters, WestEd, Washington, D.C.

636 What Have We Learned in 100 Years of Teaching Factoring?
8-10 Workshop
McCormick Place - Lakeside Center, E451A
Ralph Pantonzi, Kent Place School, Millington, New Jersey @mathillustrated

637 Mathematics + Social Justice = Opportunities and Purpose for Your Students
10-12 Workshop
McCormick Place - South Building, S401A
John Staley, Baltimore County Public Schools, Randallstown, Maryland @jstaley06
Basil Conway, Columbus State University, Georgia
Brian Lawler, Kennesaw State University, Georgia

638 Building Mathematics Equity: Creating a Love of Math with Our English Language Learners
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - Lakeside Center, E353B
Andrea Kotowski, ORIGO Education, Placitas, New Mexico @ORIGOAPS
Heather Monks, ORIGO Education, Earth City, Missouri
Rob Nickerson, ORIGO Education, Earth City, Missouri

639 Courage to Coach: Changing Cultures
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - Lakeside Center, E353C
Nanci Smith, Arizona Christian University, Peoria @DocNanci
Lori Everson, Everson Consulting, Anthem, Arizona

640 How Cool Is Mathematics? Designing a Drone Light Show Just Like the Olympics!
Coaches/Leaders/Teacher Educators Workshop
McCormick Place - South Building, S404BC
Kathleen Snook, COMAP, Bedford, Massachusetts
Solomon Garfunkel, COMAP, Bedford, Massachusetts

Notes
Saturday Morning Sessions

11:00am–12:00pm

641 Developing Fractional Thinking through Visualization and Modeling
Pre-K–2 Session
McCormick Place - Lakeside Center, E260
Kathleen Courtney, LaGrange South District 105, Downers Grove, Illinois
@katiecourtney74
Maureen Demer, LaGrange South District 105, Evergreen Park, Illinois

642 Lost in Translation: From Writers’ Workshop to Leveled Math Groups
Pre-K–2 Session
McCormick Place - Lakeside Center, E354B
Tracy Zager, Portland Public Schools, Maine
@tracyzager

643 The Number Core Leads Us to the Pathway of Number Sense
Pre-K–2 Session
McCormick Place - Lakeside Center, E263
Lori Sponenburgh, Great Minds

644 Math Running Records: How One Assessment Changed the Math Culture in My District
Pre-K–2 Session
McCormick Place - South Building, S406B
AnnElise Record, AnnElise Record Consulting LLC, Concord, New Hampshire

645 Building Fraction Understanding through Number Talks
3–5 Session
McCormick Place - Lakeside Center, E350
Nicole Fletcher, Fairfield University, Connecticut
@NicoleSFletcher

646 Equity-Based Mathematics Teaching Practices Embedded in a Math Workshop Task and Share.
3–5 Session
McCormick Place - Lakeside Center, E351
Stephanie Sigmon, Fairfax County Public Schools, Alexandria, Virginia
@MathOSSRegion5
Tammy Kraft, Fairfax County Public Schools, Annandale, Virginia

647 You CAN Talk Your Way Out of It! Using Number Talks for Distributed Practice
3–5 Session
McCormick Place - South Building, S406A
Melinda Griffin, American Institutes for Research, Waltham, Massachusetts
Teri Marx, American Institutes for Research, Washington, D.C.
Jenna Richard, American Institutes for Research, Coventry, Rhode Island

648 100 (or So) One Hundred Grid Activities for the Algebra Student
6–8 Session
McCormick Place - Lakeside Center, E352
Elena Contreras Gullickson, University of Minnesota, Saint Paul
Lesa Covington Clarkson, University of Minnesota, Saint Paul
Jessica Forrester, University of Minnesota, Saint Paul

649 Planning for Voice and Agency While Addressing Misconceptions with Reluctant Learners
6–8 Session
McCormick Place - Lakeside Center, E267
Janine Scott, Houghton Mifflin Harcourt, Fort Worth, Texas

650 What a Good Question!: Strategies for Enhancing Teachers’ Questioning Strategies
6–8 Session
McCormick Place - Lakeside Center, E259
Nancy Anderson, MIT, Milton, Massachusetts
@NAndersonMath

651 Alternative Assessments to Support Standards-Based Grading
8–10 Session
McCormick Place - Lakeside Center, E253B
Barbara Swartz, McDaniel College, Westminster, Maryland
@baswartz23
Brad Swartz, Liberty High School, Syjesvukke, Maryland
Saturday Morning Sessions

652 I Think, Therefore I Belong: Technology and Pedagogy That Affirms Mathematical Identity
8–10 Session
McCormick Place - Lakeside Center, E262
Faith Moynihan, Desmos, San Francisco, California
@faithmoynihan
Lisa Bejarano, Desmos, Manitou Springs, Colorado

653 Using Technology to Bring the World of Multivariate Functions into Secondary Mathematics
10–12 Session
McCormick Place - Lakeside Center, E261
M Kathleen Heid, Pennsylvania State University, University Park
Matthew Black, Pennsylvania State University, University Park

654 Creating the Capacity for Change: Structures for Empowering Elementary Teachers
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E264
Melissa Pearson, West Windsor-Plainsboro Regional School District, Yardley, Pennsylvania
@pearsonwwp
Susan Totaro, West Windsor-Plainsboro Regional School District, Ewing, New Jersey
Maryann Carnevale, West Windsor-Plainsboro Regional School District, Princeton Junction, New Jersey

655 Supporting the Math-Anxious Beginning Teacher in an Era of Increased Rigor
Coaches/Leaders/Teacher Educators Session
McCormick Place - Lakeside Center, E270
Jillian Lederhouse, Wheaton College, Illinois
Julia Buckingham, Alexandria, Virginia

656 Developing Mathematical Identities: Practical Strategies to Empower Students
General Interest Session
McCormick Place - South Building, S401D
Anna Michelle LaMar, Opportunities For Learning, Santa Clarita, California
Leslie Banks, Opportunities For Learning, Santa Clarita, California

657 Everything You Want to Know about Thriving as a Teacher of Mathematics That No One Ever Told You
General Interest Session
McCormick Place - Lakeside Center, E253A
Sean Nank, California State University San Marcos, Carlsbad
@Sean_Nank

Notes
Saturday Morning Bursts

658 Embedding Problem Solving into Your Curriculum Burst
McCormick Place - Lakeside Center, E265
Fawn Nguyen, Mesa Elem School, Oxnard, California

Looking at Data as a Team to Drive Your Math Vision
Pre-K-2 Burst
McCormick Place - Lakeside Center, E450A
Katie Horneland, Imagine Learning, Tampa, Florida
Jazmin Medrano, Imagine Learning, Lubbock, Texas
Adriane Harden, Imagine Learning, Provo, Utah

659 Where Are We and Where Can We Go from Here? Assessing Students’ Level of Geometric Reasoning
3-5 Burst
McCormick Place - South Building, S404A
Thomas Fox, University of Houston-Clear Lake, Texas

660 Modifying Executive Function and Mathematical Demands in Classroom Activities for Young Children
Pre-K-2 Burst
McCormick Place - Lakeside Center, E25B
Candace Joswick, University of Texas at Arlington

661 Bringing Math Enrichment to the Classroom
6-8 Burst
McCormick Place - Lakeside Center, E271B
Amanda Ruch, Chicago Public Schools/Chavez MAC, Illinois
@amanda235711
Sara Rezvi, Saga Education, Chicago, Illinois

662 Designing and Implementing a Middle School Summer STEM Camp: Possibilities and Tensions
6-8 Burst
McCormick Place - Lakeside Center, E353C
Allyson Hallman-Thrasher, Ohio University, Athens
Courtney Koestler, Ohio University OHIO Center for Equity in Math and Science, Athens
Danielle Dani, Ohio University, Athens

663 Designing and Implementing a Middle School Summer STEM Camp: Possibilities and Tensions
6-8 Burst
McCormick Place - Lakeside Center, E353C
Allyson Hallman-Thrasher, Ohio University, Athens
Courtney Koestler, Ohio University OHIO Center for Equity in Math and Science, Athens
Danielle Dani, Ohio University, Athens

664 Focused Learning for All: Maximize Student Growth through Targeted Interventions at All Levels
6-8 Burst
McCormick Place - Lakeside Center, E353B
Amy Zuber Sequin, SDMA, Menomonie, Wisconsin
Kathy Forster, SDMA, Menomonie, Wisconsin

665 Mastering Skills-Based Grading
6-8 Burst
McCormick Place - South Building, S401BC
Tami Geurts, Olympia Middle School, Stanford, Illinois
@tami_geurts
Jennifer Love, Olympia Middle School, Stanford, Illinois
DeeDee Stine, Olympia Middle School, Stanford, Illinois

666 Fun with Flags: Algebra & Geometry Connections to Build Mathematical Knowledge & Global Awareness
8-10 Burst
McCormick Place - South Building, S404BC
Kelly Remjian, Independent STE(A)M Consultant, Presenter, and Professional Development & Curriculum Specialist, Belleville, Illinois
@Teachers4STEAM

667 Free Your Students’ Inner Mathematicians with Math Stories
10-12 Burst
McCormick Place - South Building, S404D
Susan D’Agostino, Johns Hopkins University, Baltimore, Maryland
@susan_dagostino

668 Getting Off on the Right Foot: Learning to Launch Cognitively Demanding Tasks
10-12 Burst
McCormick Place - Lakeside Center, E451A
Mark Creager, University of Southern Indiana, Evansville
Christopher Parrish, University of South Alabama, Mobile
Rachel Snider, The College of New Jersey, Ewing

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Thurs April 2nd: 4:00PM  McCormick Place - Lakeside Center  Room: E253A

Ben Grimley  ben@ speakagent.com

speakagent.com
### Saturday Morning Bursts

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<th>Burst</th>
<th>Title</th>
<th>Time</th>
<th>Location</th>
<th>Speakers</th>
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</table>
| 669   | Networking to Highlight Student-Centered Formative Assessment          | 11:30am—12:00pm | McCormick Place - Lakeside Center, E451B | W. Tad Johnston, American Institutes for Research, Washington, D.C.  
Kerrie Avjian, East Providence School District, Coventry, Rhode Island |
| 670   | Sports Statistics                                                     | 11:30am—12:00pm | McCormick Place - Lakeside Center, E271A | Adam Bezinovich, Sycamore High School, Illinois |
| 671   | Math Is Service When Students Are the Teachers                        | 11:30am—12:00pm | McCormick Place - Lakeside Center, E353A | Lauren Zarandona, Mississippi School for Math and Science, Columbus |
| 672   | Create a STEM Certificate to Encourage a Culture of Mathematics in Your Building | 11:30am—12:00pm | McCormick Place - Lakeside Center, E450B | David Berger, Menomonie High School, Wisconsin |
| 673   | How Do Teachers Address Cultural Linguistic Diversity in Their Instruction Design? | 11:30am—12:00pm | McCormick Place - South Building, S403 | Hea-Jin Lee, The Ohio State University at Lima  
Leah Nherera-Patnode, The Ohio State University at Lima  
Seonhee Cho, Mount Saint Vincent, Lima, Ohio |
| 674   | Opening Your Students’ Conceptual Engagement Using Open Middle Resources | 11:30am—12:00pm | McCormick Place - South Building, S402 | Amanda Meiners, University of Iowa, Iowa City  
Alana Tholen, University of Iowa, Iowa City  
Anna Payne, Baylor University, Waco, Texas |
| 675   | Reclaiming Their Time: Removing the Barriers to Ensure Student Learning | 11:30am—12:00pm | McCormick Place - South Building, S401A | Natalie Holliman, GIRLSwSTEAM, Little Rock, Arkansas  
Kelli Mack, Houston ISD, Texas  
Kendra Nwosu, Houston ISD, Texas |
| 676   | Techno-Mathematical Discourse: Encouraging Math Talk with Virtual Manipulatives | 11:30am—12:00pm | McCormick Place - South Building, S405 | Katie Anderson-Pence, University of Colorado, Colorado Springs  
Dr. Eugenia Cheng, School of the Art Institute of Chicago, Illinois |

### Saturday Afternoon Session

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<tbody>
<tr>
<td>677</td>
<td>Closing Session: Inclusion-Exclusion in Mathematics and Beyond</td>
<td>12:30pm—1:30pm</td>
<td>McCormick Place - Lakeside Center, Arie Crown</td>
<td>Dr. Eugenia Cheng, School of the Art Institute of Chicago, Illinois</td>
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</table>

Dr. Eugenia Cheng is Scientist-in-Residence at the School of the Art Institute of Chicago. She won tenure in Pure Mathematics at the University of Sheffield, UK, and has a PhD in Pure Mathematics from the University of Cambridge. Eugenia was an early pioneer of math on YouTube, and her videos have been viewed over 15 million times. In addition to teaching undergraduates, she has assisted with mathematics in elementary, middle and high schools for 20 years. She is the author of the popular math books *How to Bake Pi, Beyond Infinity, The Art of Logic,* and *x + y: A Mathematician’s Manifesto for Rethinking Gender* (due out in 2020). Eugenia is also a columnist for the *Wall Street Journal* and a concert pianist.
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Access https://mc04.manuscriptcentral.com/mltpk12 to submit manuscripts. Limit your article or submission to the word count listed above, excluding references and figures, where applicable. You are encouraged to include such digital components as a video clip, audio file, Livescribe® file, SMART Board™ file, or other form of multimedia to enhance the submission.

Mathematics Teacher: Learning and Teaching PK–12 (MTLT) is an exciting new NCTM journal with a unique point of view—your view as a practicing teacher of mathematics. MTLT offers readers a plethora of relevant, enriching articles that have been enhanced with digital content when possible. The journal spans PK–12 but continues to provide focused grade-band-specific articles.

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The Host Affiliates for this conference and the Affiliates-at-Large appears below. 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.

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

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  Jill Drake, jdrake@westga.edu

About the Host Organizations

The Illinois Council of Teachers of Mathematics (ICTM) is the premier organization in the state working to promote equitable, high-quality mathematics teaching and learning for all children. Organized in 1949 by a small group of interested mathematics teachers, ICTM’s members now include mathematics educators living in every corner of the state and working with students at all grade levels, from early childhood to university. ICTM’s various leadership, collaboration, advocacy, and professional development activities—including a dynamic annual conference, a vibrant program of mathematics contests for middle and high school students, online professional development and networking activities, and support of affiliates throughout the state—aim to create and foster greater interest in the teaching of mathematics, and greater learning opportunities for all students.

The Metropolitan Mathematics Club of Chicago (MMC) is a major professional organization of mathematics educators in the greater Chicago area. Founded in 1914 as the Men’s Mathematics Club of Chicago, the MMC was instrumental in the founding of the National Council of Teachers of Mathematics six years later. For this reason, the MMC was given NCTM affiliate charter #1. The MMC changed its name (but not its initials) after it admitted women in 1972. (A separate Women’s Mathematics Club [WMC] existed from 1916, the organizations resisted mergers, and the WMC ceased existence later in the 1970s.) The MMC hosts dinners featuring high-quality speakers monthly throughout the school year, a conference of workshops each winter, and biennial summer workshops.
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The College Board is a mission-driven, not-for-profit organization that connects students to college success and opportunity. Founded in 1900, the College Board was created to expand access to higher education. Today, the membership association is made up of over 6,000 of the world’s leading educational institutions and is dedicated to promoting excellence and equity in education.

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The Math Learning Center (MLC) is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based curriculum, resources, and professional development. Our products and services are used by educators throughout the United States and in many international locations.

think! Mathematics
Booth 324
Neptune Beach, Florida

TODOS: Mathematics for ALL
Booth 829
Tempe, Arizona
www.todos-math.org

TODOS advocates for equity and high-quality mathematics education for all students—in particular, Latina/o students. One of TODOS’ goals is to advance educators’ knowledge and ability that lead to implementing an equitable, rigorous, and coherent mathematics program that incorporates the role language and culture play in teaching and learning mathematics.

TouchMath
Booth 233
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See It, Say It, Hear It, and Touch It! TouchMath’s multisensory approach gives students of all abilities and learning styles equal access to standards-based curricula. Educators across the country and around the world rely on TouchMath’s proven strategies to maximize student potential, prepare for state tests, and achieve AYP benchmarks. Celebrate our 43rd Anniversary and learn more about our expanded family of products at our NCTM booth.

UChicago STEM Education
Booth 628
Chicago, Illinois
http://stem.education.uic.edu

UChicago STEM Education is a center devoted to research, development, and direct supports for educators, families, and children. The center resides within the Physical Sciences Division of the University of Chicago. The mission of UChicago STEM Education is to connect research and practice to improve education for all.

WeDu Communications
Booth 334
Rowland Heights, California
http://www.wedugroup.com

WeDu Communications: a Global Educational Content company that strives to become a global figure in the mathematics educational business. “Ryan’s Math Adventure” is a global cartoon where math creates magic. This comic book is a fantasy-adventure series where kids learn both basic math concepts and how to solve problems in everyday situations. Paperback and Kindle versions are both available on Amazon. We have also created a 3D animation of the book series as well. Currently, we are in the midst of developing an online education website called OLL KIDS/MATH. This is a globally curated education service based on learning analysis that can utilize content effectively for fun, engaging education. Kids are able to play games, watch videos, and complete math-related tasks in order to upgrade their personal avatars. Parents and teachers are also able to track their kids’ progress and see what they are learning.

Wendy Pye Publishing Ltd
Booth 1238
Auckland, New Zealand
www.sunshine.co.nz

Wendy Pye Publishing is an educational literacy publisher specializing in reading and math for K-12 in both print and digital under the successful Sunshine branding. The range includes teaching resources for whole class, small group and independent learning. Math program includes number, algebra, measurement, geometry, data, and chance.

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With our leading handwriting recognition software, you can type and handwrite mathematical notations with MathType. Instructors can save time grading exams and students can show their work using Wiris Quizzes. Wiris Quizzes offers computer-based grading of math and science questions that enhance your LMS with mathematical features that make it easier for the quiz creator and quiz taker.

Wolfram
Booth 109
Champaign, Illinois
www.wolfram.com

Best known for Mathematica and Wolfram|Alpha, Wolfram Research has been innovating in STEM education worldwide for over three decades with knowledge-based applications, repositories and initiatives. The new Wolfram|Alpha Notebook Edition combines natural language input, advanced computation, and dynamic visualization into a single, unified tool perfect for teaching and learning.
Women and Mathematics Education
Booth 828
Philadelphia, Pennsylvania

The purpose of Women and Mathematics Education is to encourage and promote equal opportunity and treatment for girls and women to study and have a sustaining academic and career interests in the mathematical sciences; serve as a clearinghouse for ideas and resources in the area of women and mathematics; promote leadership among women and girls in the broad mathematics education community; and conduct research and professional development in the area of women and mathematics.

Z-kai Inc.
Booth 215
Shizuoka, Japan
https://zkaibooks.com

Z-kai has provided educational services in Japan since 1931, particularly focused on developing challenging material for top level PreK-12 students. Zoom-Up Workbook that we published in the US also contains a lot of good math problems that helps students develop mathematical thinking skills for success in the future. Visit https://zkaibooks.com.

Zearn
Booth 224
New York, New York
www.zearn.org

Zearn is a nonprofit curriculum publisher on a mission to ensure all children love learning math. Zearn publishes Zearn Math, a top-rated K-5 (and soon to also be 6-8) curriculum that unites hands-on teaching and digital learning to support teachers in making math accessible and engaging for all students. Zearn also offers Intervention, PD, and Implementation tools to support district- and school-wide learning.
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in recognition of attendance and participation at the NCTM Centennial Annual Meeting & Exposition
April 1–4, 2020 | Chicago

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

Educator’s Name: ____________________________________________________________________________________

Description of Professional Development Activity: This is a four-day annual meeting sponsored by the National Council of Teachers of Mathematics. Over 600 presentations are offered for teachers of prekindergarten through college. Topics range from administration to geometry, precalculus to statistics.

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

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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.
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