

# NCTM Regional Conference & Exposition 2017 CHICAGO | NOV 29-DEC 1

PREMIER MATH EDUCATION EVENTS



## Program Book

See valuable  
**COUPONS**  
beginning on  
page 97

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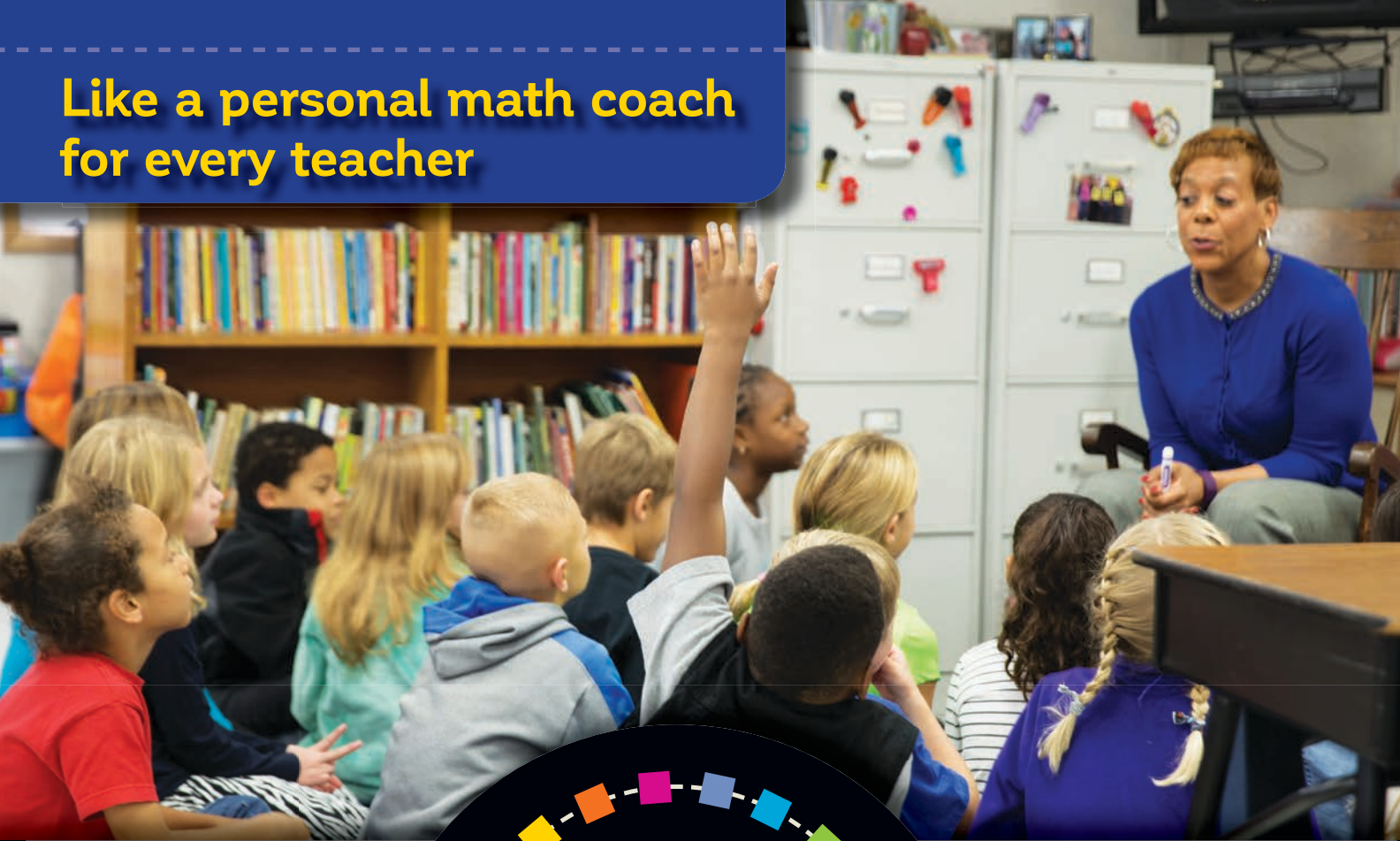
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TEACHERS OF MATHEMATICS



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# NCTM Regional Conference & Exposition 2017 CHICAGO | NOV 29-DEC 1

## HOSTS

Illinois Council of Teachers of Mathematics (ICTM)  
Metropolitan Mathematics Club of Chicago (MMC)

All Regional Conference presentations will be held at the Hyatt Regency Chicago. See pages 78–85 for floor plans.

## REGISTRATION

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

## EXHIBITS

Wednesday	4:00 p.m.	–	6:00 p.m.
Thursday	8:00 a.m.	–	5:00 p.m.
Friday	8:00 a.m.	–	2:00 p.m.

## NCTM CENTRAL

Wednesday	4:00 p.m.	–	6:00 p.m.
Thursday	8:00 a.m.	–	5:00 p.m.
Friday	8:00 a.m.	–	2:00 p.m.



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## nctm.org/chicago

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

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# Welcome to Chicago!

Welcome to the NCTM Regional Conference & Exposition in Chicago, Illinois! We hope the Conference will give you an opportunity to continue your lifelong learning, reflect on and grow your professional practice, and connect with others who share your commitment to the equitable, high-quality teaching and learning of mathematics for all students.

In addition to the great sessions and workshops and the vibrant exhibits, we hope you'll also take some time to enjoy Chicago's many cultural offerings — all so you'll return home rejuvenated, excited, full of new ideas, eager to continue the conversations you started here, and ready to implement innovative ideas with your own students and colleagues.

Our talented Program Committee has worked diligently for many months to select over 250 exciting and valuable presentations addressing our seven themes:

- Designing Learning Experiences
- Dismantling Barriers: Promoting Equity and Access
- A Student's Journey in Mathematics
- Intentional, Effective Use of Tools and Technology
- Assessment
- Professionalism: Building Capacity, Collaboration, and Leadership
- STEM: Where's the M?

We're particularly excited to open on Wednesday night with a panel of amazing speakers presenting on equity and access, followed by a moderated question-and-answer period. This will be an engaging, dynamic kickoff to two full days of thought-provoking sessions!

While you're here, we hope you also find time to enjoy our great city. You likely know about our world-class theatre, shopping, music, and food (*Condé Nast Traveler* magazine rated us "America's Best Restaurant City" this spring). And Chicago is truly a city of neighborhoods, so if your stay allows, we hope you get a chance to get beyond downtown and experience the diversity that makes the city so exciting. But it's not just a great place to visit; math is embedded into Chicago from the coordinate system of our street grid (with its "origin" at State and Madison) to the commerce, architecture, and sports we live among every day.

So here are a few special attractions every mathematical tourist should know about—and we're not just talking about the periodic motion of Navy Pier's Centennial Wheel:

- The captivating, complex reflections off the surface of Chicago's favorite ellipsoid, Anish Kapoor's *Cloud Gate* (affectionately known as "The Bean"), in Millennium Park
- *Lines in Four Directions* by artist Sol LeWitt, outdoors at 10 West Jackson Boulevard

- A few blocks away, more mathematical works at the Art Institute of Chicago, while across the street is a scale model of the city at the Chicago Architecture Foundation
- The new "Numbers in Nature" permanent exhibit at the Museum of Science and Industry, the largest science museum in the Western Hemisphere, features creative explorations of beautiful patterns and a mirror maze (that's trickier than it seems).
- Mathematical themes at Hotel Indigo (abounding in the golden ratio and Fibonacci sequences), and Hotel EMC2, whose Emmy Noether event space features an installation by Eugenia Cheng, the scientist-in-residence at the School of the Art Institute of Chicago — who will speak on "How to Bake Pi: Making Abstract Mathematics Palatable" at MMC's monthly dinner meeting on December 15
- And finally, on Saturday, please join us at Walter Payton College Prep High School, where the sine waves in the floor will be joined by even greater mathematical wonders from hundreds of elementary, middle, and high school students sharing their work on novel math projects at Math Circles of Chicago's fifth annual QED: Chicago's Youth Math Symposium (see [mathcirclesofchicago.org/qed](http://mathcirclesofchicago.org/qed) for details).

From the 1914 founding of MMC — later NCTM Affiliate #1 — to ICTM's monthly webinars in support of the equitable, high-quality teaching and learning of mathematics, Chicago and Illinois have been closely associated with NCTM since even before its founding. On behalf of the Program Committee, the Volunteer Committee, the NCTM staff, the host organizations, and the many, many volunteers who have worked so many hours to make this conference a reality, we hope you will enjoy the sessions, the exhibits, and the chance to meet and work together with colleagues from across the country.

And thank *you* for being a part of it. May you return to your home and classroom informed, inspired, and ready to help your students learn with new ideas and strategies!



**Patricia Trafton**

Program Committee Chair  
Past President, Metropolitan  
Mathematics Club of Chicago,  
Illinois; Lincoln Middle School,  
Schiller Park, Illinois



**Sendhil Revuluri**

Volunteer Committee Chair  
Director-at-Large, Illinois Council  
of Teachers of Mathematics  
Director, Math Circles of Chicago  
@revuluri



# Program Information

The NCTM 2017 Regional Conference & Exposition officially begins on Wednesday with the Opening Session at 5:30 p.m. Presentations on Thursday and Friday begin at 8:00 a.m. and are scheduled concurrently throughout the day.

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

Please remember:

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

## New and Preservice Teachers Workshop

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

**Thursday and Friday**

**9:45 a.m.–11:00 a.m.**

**Gold Coast, West Tower, Bronze Level**

## Overview & Orientation

Whether you are new to the NCTM community or are a seasoned veteran, there is something exciting and engaging for everyone! In this presentation given by members of the Board of Directors, you will learn how to get the most of your conference experience. Learn what's new or discover an opportunity you've missed in the past, find out how to navigate presentations, learn how to use the NCTM app, and network with other attendees. Meet other first-time attendees and join conference mentors who share your particular interests.

**Thursday and Friday**

**7:15 a.m.–7:45 a.m.**

**Grand Ballroom A, East Tower, Gold Level**

## Types of Presentations

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

**Sessions** (60 minutes) represent a common format where the speaker relates his or her ideas to an audience. Rooms are either theater style or classroom style and vary in size.

**Workshops** (75 minutes) are rooms set with round tables for hands-on work.

**Bursts** (30 minutes) are presentations that focus on a specific topic or idea. Rooms are set with round tables. The goal is information sharing, conveyed quickly and succinctly.

**Exhibitor Workshops** (60 minutes) are set theater style for at least 100 people. Exhibitors showcase their products and services away from the Exhibit Hall. Look for the symbol indicating exhibitor workshops in the program book.

## Grade Bands

To assist attendees in finding appropriate presentations to attend, each presentation lists the presentation's target grade-band audience. The grade bands are:

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

## Program Updates

Visit **nctm.org/Chicago** for program updates including all the latest changes, cancellations, and additions. You can also follow along with the conference app to view event alerts and up-to-the-minute information.

## Wi-Fi

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

**Username: NCTM**

**Password: NCTM2017**



# Focus Strands

## DESIGNING LEARNING EXPERIENCES **DLE**

The Designing Learning Experiences strand offers opportunities to inform effective teaching practice. This strand focuses on the intersection among worthwhile tasks, purposeful questioning, and supporting productive struggle with a focus on mathematical processes and practices. Sessions in this strand will explore how effective teaching can move students toward deeper understanding of important mathematical ideas.

## DISMANTLING BARRIERS: PROMOTING EQUITY AND ACCESS **EQUITY**

Sessions in this strand will focus on dismantling barriers that have kept students from using mathematics to improve their own lives and the lives of their communities. Participants will examine structural barriers (e.g., racism, sexism, language barriers, lack of accommodations, and others) that disproportionately impact students' and their communities' experience of learning mathematics, on a personal, classroom, school, district, state, or national level. Sessions may focus on engaging in the cultures, communities, and families of our students to improve classroom outcomes as well as on examining instructional practice and programs that are effective for all students, and in particular students who may have been denied access to educational opportunities in any way for any reason, which has limited their mathematics learning.

## A STUDENT'S JOURNEY IN MATHEMATICS **JRNY**

A sound mathematics curriculum develops coherently throughout a students' school journey. A robust curriculum also encompasses solid mathematical practices while connecting and engaging students with mathematics in the real world, empowering students and improving their lives by building their critical reasoning skills. Sessions in this strand will address these components of a mathematics curriculum as well as address the question "How can teachers be supported in keeping their students' journey coherent within curriculum restraints?"

## INTENTIONAL, EFFECTIVE USE OF TOOLS AND TECHNOLOGY **TOOLS**

Technology and tools are powerful resources in the math classroom when they are used purposefully to promote sense making, reasoning, and communication among students. The sessions in this strand will explore the use of tools and technology to give students access to meaningful problems, promote student discourse, encourage mathematical curiosity and inquiry, and visualize and understand mathematical ideas.

## ASSESSMENT **ASSESS**

Assessments should drive everything that happens in classrooms, including the choices teachers make about instruction and tasks. Teachers, teacher leaders, math specialists/coaches, researchers, and administrators all have roles to play in designing, supporting, and making use of effective and efficient assessment practices. Assessment includes testing but is much more than that. Sessions in this strand will address questions such as: What supports do teachers need in order to use student thinking in their planning and instruction? How can we get better at assessing things like students' dispositions, thinking, and reasoning skills (mathematical practices)? How can we get better at assessing the extent to which our tasks meet our goals, engage our students in thinking deeply, and so on? How can we get better at using assessments to inform students about their learning?

## PROFESSIONALISM: BUILDING CAPACITY, COLLABORATION, AND LEADERSHIP **CCL**

This strand is for all math educators—teachers, principals, coaches, specialists, researchers, and professors. What practices, structures, and supports empower teachers to develop their craft? Sessions in this strand will explore topics such as growing leaders within schools, districts, and regions; establishing and supporting professional learning communities; leveraging our positions to advocate for all our students; and developing mathematical and pedagogical knowledge for all teachers.

## STEM: WHERE'S THE M? **STEM**

In this strand, mathematics is not subordinate. Minimally, high-quality STEM instruction requires deep content and pedagogical-content knowledge in mathematics, as well as the ability to integrate and make connections among the sciences while incorporating technology and the processes of engineering in rich, real-world contexts and applications. In essence, STEM teaching is quality teaching and learning where students are engaged in significant real-world explorations, problem solving, and mathematical modeling. The focus of this strand will involve non-trivial mathematics integrated with Science, Technology, Engineering, and perhaps other disciplines.



## Insightful Education Sessions, Dynamic Exhibits

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

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

### What you'll walk away with:

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

## Tips for a Rewarding Regional Conference & Exposition

- Get available speaker handouts at **nctm.org/planChicago**.
- If you're experiencing the conference with your colleagues, attend different presentations and share your learnings with one another after the conference.
- Silence your cell phone during presentations.
- Be safe! Remove your name badge when you leave the conference facilities.

## Registration and Access to Presentations

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

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

## For Your Child's Safety

Due to the size and nature of the conference, this event is not an appropriate setting for children under 16 years of age. Children under age 16 will not be permitted in the Exhibit Hall. We appreciate your understanding and cooperation.

## Information Booth

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

## First-Aid Station

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


## Presentation Handouts

Attendees can access available electronic presentation handouts through the conference app and online planner at **nctm.org/planChicago**. Handouts will be available until January 2018.

## Exhibits

Make time to visit the Exhibit Hall. The hours allow ample opportunity to explore, test, and purchase resources for your classroom. You'll also be able to meet product specialists, get fresh ideas, and watch demonstrations on how products will help you in your classroom. We've provided dedicated time to visit the exhibits; no presentations will take place from 12:00 p.m. to 1:30 p.m. on Thursday and Friday. Check out the map of the Exhibit Hall on page 86 and the list of exhibits on pages 87–91.

## Exhibitor Workshops

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



# General Information

## Online Conference Planner

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

## NCTM App

Start planning early and stay connected throughout the event with the NCTM mobile app. Whether you have an iPhone, iPad, Android, or tablet, the app will be your onsite sidekick! Get the app and select your event to access these features and more.

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

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

## NCTM Central

Spend some time in NCTM Central! This exciting area has everything all in one convenient location, right at the entrance of the Exhibit Hall. You can't miss it!

Wednesday 4:00 p.m.–6:00 p.m.  
Thursday 8:00 a.m.–5:00 p.m.  
Friday 8:00 a.m.–2:00 p.m.

- Whether you are a new NCTM member or a seasoned veteran, you can learn more about what your membership can do for you at **Member Services**. We can walk you through your benefits, including your online access to lessons, classroom-ready activities, online journal articles, and more. Make sure to stop by and pick up sample journals and other materials. Not a member or wish to renew your membership? Make sure to join NCTM or renew your membership onsite and be placed in a drawing for a \$25.00 NCTM Gift Certificate! NCTM is its members!

- Browse the **NCTM Bookstore** and save **25% off the list price** on all purchases! View firsthand all the publications that NCTM has to offer. You will also find a variety of specialty products that you can use as gifts, prizes, and incentives to spread the word about the importance of mathematics. Start your wish list today by previewing NCTM's wealth of resources at [nctm.org/store](http://nctm.org/store). The Bookstore is not equipped to handle shipping; the business center can assist you with your shipping needs.

*Note on sales tax exemptions: To be considered exempt from sales tax in the NCTM Bookstore, you must provide a copy of an Illinois tax exemption certificate at the time of purchase. NCTM is required by law to keep a copy of the certificate; we cannot return it to you. To qualify, you must pay with a purchase order, check, or credit card from the school to which the Illinois exemption certificate is issued. NCTM cannot accept personal checks, personal credit cards, or cash in conjunction with tax exemption certificates. Tax exemption certificates for states other than Illinois are not valid for this Regional Conference.*

- **Classroom Resources.** Drop by to learn more about the newest set of resources, **Activities with Rigor and Coherence (ARCs)**, or just to hear about all the exciting resources that are ready to use in your math classroom.
- **Networking Lounge.** Join us in our activity areas:

### Play and Learn

- Play with materials from Math On-A-Stick at the Minnesota State Fair
- Learn how to support student learning through play
- Share your creations in person and on social media

### Relax and Recharge

- Make use of charging stations
- Take a seat and reflect with colleagues

### Problems of the Week Resources

- Learn how to navigate to this classroom resource on the NCTM website
- What are the advantages of using the Scenario?
- Discover available funding and resources to support you in your career and professional development with **Mathematics Education Trust (MET)** grants, scholarships, and awards. Visit [nctm.org/met](http://nctm.org/met).
- Stop by **the Math Forum** to pick up samples of problem-solving resources, and more. Visit [mathforum.org](http://mathforum.org).





## HIGHLIGHTS

Opening Session: Taking Action Together for Access, Equity, and Empowerment: A Panel Discussion, 1

## GET SOCIAL

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



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



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



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



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

## REGISTRATION HOURS

3:00 p.m.–7:00 p.m.

## EXHIBIT HOURS

4:00 p.m.–6:00 p.m.

## NCTM CENTRAL HOURS

4:00 p.m.–6:00 p.m.

## FIRE CODES

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



**1 EQUITY****Taking Action Together for Access, Equity, and Empowerment: A Panel Discussion****Session**

Get ready for a thought-provoking evening as six speakers and a moderator share their perspectives about equity and access in mathematics education. Each speaker's presentation will last 10 minutes. After the last speaker, the moderator will lead a 30-minute discussion and Q&A.

**Grand Ballroom, East Tower, Gold Level**



**Danny Martin (Moderator)**  
University of Illinois at Chicago



**Elham Kazemi**  
University of Washington, Seattle



**Rochelle Gutiérrez**  
University of Illinois at Urbana-Champaign



**Annie Perkins**  
Southwest High School,  
Minneapolis, Minnesota



**Tyrone Howard**  
Education Consultant, Oak Lawn,  
Illinois



**Kassia Omohundro Wedekind**  
Consultant, Falls Church, Virginia



**Dina Williams**  
Los Angeles Unified School District,  
California





## HIGHLIGHTS

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## GET SOCIAL

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



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



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



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

## REGISTRATION HOURS

7:00 a.m.–3:00 p.m.

## EXHIBIT HOURS

8:00 a.m.–5:00 p.m.

## NCTM CENTRAL HOURS

8:00 a.m.–5:00 p.m.

## FIRE CODES

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



7:15 A.M.–7:45 A.M.

2

## Regional Conference Overview & Orientation

### Workshop

Hosted by members of the Board of Directors, this session will show you how to maximize your overall conference experience. Learn what's new or discover something you've missed in the past, find out how to navigate presentations, learn how to use the Conference App, and network with other attendees.

**Board of Directors**

National Council of Teachers of Mathematics, Reston, Virginia

**Grand Ballroom A, East Tower, Gold Level**

8:00 A.M.–9:00 A.M.

3

**EQUITY**

## Algebra Readiness for All Students

### 3–5 Session

This session will provide an overview of the Conceptual Algebra Readiness for Everyone, (CARE) Project. The presenters will demonstrate how the program attempts to engage all students—from advanced learners to struggling and special needs students. CARE activities allow for differentiation as they can be solved at many different levels.

**David Feikes**

Purdue University Northwest, Westville, Indiana

**Martin Briggs**

Laporte Community Schools, Indiana

**Renate Zavesky**

Laporte Community Schools, Indiana

**Plaza Ballroom, East Tower, Green Level**

4

## Designing and Implementing Rigorous AND Playful Mathematics Experiences for Young Children

### Pre-K–2 Session

This session will address the design and implementation of mathematics tasks for young children that are both playful and rigorous. Participants will talk about how to use questioning and prompts that promote high-level mathematical reasoning and connections in the context of rich, engaging, open-ended problems and tasks for young learners.

**Deborah Leslie**

UChicago STEM Education, Illinois

**Regency Ballroom A, West Tower, Gold Level**

5

## Engaging Students through Rich Problems and Questions

### 6–8 Session

Discover how to embrace the Standards of Mathematical Practice with rich problems that will engage and inspire your students. I will share resources and my favorite places to find problems, suggestions for transforming a traditional problem to a rich task, and effective questioning strategies.

**Heather Wukelich**

Austintown Local Schools, Ohio

**Regency Ballroom B, West Tower, Gold Level**

7

**DLE**

## Hidden Figures: Not Just a Movie but, a Way of Equitable Academic Life

### General Interest Session

Has the failure of math education led to a lack of number sense awareness that has affected the way we make decisions today? Explore ways to mathematize our students' known world and invite them into solving meaningful mathematics tasks. Attendees will explore strategies and effective teaching practices that give urban students the power to reveal the hidden math around us everyday. My ten-minute panel talk at Wednesday's Opening Session will explore this topic, and this session will allow us to explore the strategies and teaching practices more in depth.

**Dina Williams**

Los Angeles Unified School District, California

**Grand Ballroom EF, East Tower, Gold Level**

8

## Literacy? But I Teach Math!

### 8–10 Session

This session will examine the use of practical research-based literacy strategies to instruct students in their approach to understanding math content. These techniques for literacy instruction in the math classroom will assist students in understanding how to navigate both multiple-choice and free response questions with greater independence.

**Christina Pawlowski**

Commack High School, New York

**Lawrence Maggio**

Plainedge High School, North Massapequa, New York

**Regency Ballroom C, West Tower, Gold Level**

Thursday

**DLE** Design Learning Experiences

**EQUITY** Dismantling Barriers: Promoting Equity and Access

**EW** Exhibitor Workshop

**JRNY** A Student's Journey In Mathematics

**ASSESS** Assessment



8:00 A.M.–9:00 A.M.

9

JRNY

## Making Tasks Worthwhile and Meaningful for Students by Doing Them Again and Again and . . .

A Student's Journey in Mathematics

8–10 Session

If students did not find a task worth doing, then why would we ask them to do it again? Because a task can become more meaningful and worthwhile when they reflect on how to begin it in a new way; when students solve it in multiple ways and compare the results; and when they encounter the same task in another class using new mathematical content.

Ron Lancaster

University of Toronto, Ontario, Canada

EW Theater Riverside Center, East Tower, Purple Level

10

## MTBOS Greatest Hits: Strategies That Magnify the Math Practices and Deepen Student Thinking

3–5 Session

Come learn how math instruction is enriched using strategies shared by our MTBOS colleagues. The soundtrack of our daily math practice includes Notice/Wonder, Estimation 180, Number Talks, WODB, and more! Instructional specialists work with teachers to help design instruction that engages students in math conversations that deepen understanding.

Alexandra Collison

Webster Central School District, New York

Melisa Phillips

Webster Central School District, New York

Eric Blask

Webster Central School District, New York

Michigan 1, East Tower, Bronze Level

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LAURIE BOSWELL

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Thursday



11

## Not Just a Guess: K–2 Estimation Experiences

### Pre-K–2 Session

The ability to estimate is a key part of number sense and can serve as a predictor of future math success. How can we help our students develop this skill in the early grades? Come learn how you can move your students beyond just guessing by incorporating short and powerful estimation experiences into your math routines.

**Yojairy Sands**

The Cathedral School, New York, New York

**Maria Peneda**

The Cathedral School, New York, New York

**Acapulco, West Tower, Gold Level**

12

TOOLS

## Now That You Flipped Your Class, What Comes Next?

### 10–12 Session

Making videos and taping lectures is the easy part. What comes next is where the real learning occurs. In this session, we will discuss how to maximize the potential of the flipped classroom model. Activities for a wide range of classes (including calculus, AP Statistics, precalculus, and algebra 2) will be shared.

**Joel Evans**

Consultant, Horsham, Pennsylvania

**Michigan 2, East Tower, Bronze Level**

13

JRNY

## Conversations That Matter: Applying Math to Explore Important Real-World Issues with Linear Equations

### 8–10 Session

How can students use math to better understand the world, and what conversations are possible in a grades 8–10 math class? In this presentation, we'll distinguish between conceptual understanding tasks and authentic applications. We'll then use systems of linear equations to explore an important social question: Should we increase the minimum wage?

**Karim Ani**

Mathalicious, Austin, Texas

**Columbus Hall II, East Tower, Gold Level**

14

CCL

## We've Got Your Back: Supporting New Teachers

### Coaches/Leaders/Teacher Educators Session

Learn about the steps a new teacher and his mentor undertook to deepen pedagogical knowledge and to develop leadership skills. We share experiences from our collaboration over the years including lesson and professional development planning, reflecting on shared teaching experiences, and creating opportunities for becoming a leader.

**Frederick Dillon**

[@fdizzle1955](#)

Institute for Learning, Strongsville, Ohio

**Anthony Bokar**

Dover High School, New Philadelphia, Ohio

**Grand Ballroom CD, East Tower, Gold Level**

14.1

EW

DLE

## Quiet Too Long—How to Amplify Student Voice

### 3–5 Exhibitor Workshop

Join a conversation on the foundations of discourse. Discover what research tells us about how students enter the discussion—how to promote and create culture and routines around amplifying student voice. This workshop will be interactive, lively, and fun. You'll walk away with increased knowledge and confidence to effect change. We will use the work of Akihiko Takahashi and Japanese lesson study, as well as that of Jo Boaler, Susan Jo Russell, and Deborah Schifter.

**Pearson**

Chandler, Arizona

**Michigan 3, East Tower, Bronze Level**



**14.2** **CCL****Examine the Teaching of Addition of Fractions with Unlike Denominators through Problem Solving****General Interest Session**

This three-hour session will begin with a presentation describing how a powerful form of lesson study can help a school address challenges of teaching and learning. Then, there will be a live lesson with grade 5 students. Finally, participants will discuss the impact of the lesson and how it cultivated Common Core math practices.

**Akihiko Takahashi**

DePaul University, Chicago, Illinois

**Thomas McDougal**

Lesson Study Alliance, Chicago, Illinois

**Alexandra Johansen**

Lesson Study Alliance, Chicago, Illinois

**Crystal Ballroom, West Tower, Green Level**

**15** **TOOLS****A Technology-Enriched Introduction to Logarithms****10–12 Workshop**

Any introduction to logarithms should begin with a study of exponential functions. Using a graphical approach featuring transformational geometry can lead to more engaging student exploration and deeper understanding. This hands-on workshop will use the TI-Nspire with its unique geometric and graphical capabilities to show how this can be accomplished.

**Raymond Klein**

Teachers Teaching with Technology, Glen Ellyn, Illinois

**Toronto, West Tower, Gold Level**

**16** **EQUITY****Acquiring Math as a Second Language through Reading, Writing, Listening, and Speaking****8–10 Workshop**

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

**Rodrigo Portillo**

Socorro ISD, El Paso, Texas

**Columbus Hall AB, East Tower, Gold Level**

**17****Be Intentional: Developing Mathematical Thinking****Pre-K–2 Workshop**

Empowering students to be active learners in the classroom begins with intentionally planned meaningful tasks that promote productive struggle, discourse, and the Standards for Mathematical Practice. As teachers, we need to promote “struggling as learning” and foster the journey students are on.

**Rob Nickerson**

ORIGO Education, Lakewood, Colorado

**Darek Naglak**

ORIGO Education, Earth City, Missouri

**Columbus Hall CD, East Tower, Gold Level**

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18

## Egyptian Fractions: How Historical Contexts and Notations Can Make Fractions and Decimals Make Sense

### 3–5 Workshop

Come learn how ancient Egyptians solved problems involving fractions and how problems from the Ahmes Papyrus can support your students in developing a deep understanding of fractions, decimals, and the connections between them. Connecting different representations will be emphasized. Leave with activities appropriate for use in the middle grades.

**Christy Pettis**

University of Minnesota, Minneapolis

**Aran Glancy**

Purdue University, West Lafayette, Indiana

**Bethann Wiley**

Purdue University, West Lafayette, Indiana

**Columbus Hall KL, East Tower, Gold Level**

19

CCL

## Frogs and Toads: A Math Circle for Teachers

### 6–8 Workshop

Share the excitement of solving problems and doing mathematics as you participate in a math-circle style problem-solving session! Participants will work together on a challenging mathematical task. We will then all discuss implications for teaching problem solving and why engaging in mathematics is an important part of ongoing learning.

**Peter Tingley**

Loyola University Chicago, Illinois

**Karin Lange**

Loyola University Chicago, Illinois

**Gold Coast, West Tower, Bronze Level**

20

TOOLS

## Implementing STEM Activities in Algebra 1 and Algebra 2

### 8–10 Workshop

Come see how simple physical science experiments can be implemented in an algebra 1 and/or algebra 2 class to give meaning to algebraic topics. We'll look at density/displacement, Hooke's law, and gathering other data sets to make inferences.

**Denise Young**

Blue Valley West High School, Overland Park, Kansas

**Columbus Hall EF, East Tower, Gold Level**

21

## Instructional Strategies for Supporting the Range of Learners

### Pre-K–2 Workshop

This session focuses on eight instructional strategies for differentiating classroom activities to meet the needs of the range of learners. These strategies are designed to help teachers learn to adjust the learning environment, and to scaffold or extend the main math ideas of an activity, in order to support and challenge the thinking of all students.

**Karen Economopoulos**

Investigations Center for Curriculum and Professional Development@TERC, Cambridge, Massachusetts

**Grand Ballroom A, East Tower, Gold Level**

22

## Mathematical Parts of Speech: Making Sense of Integer Operations

### 6–8 Workshop

Mathematics uses the same symbols (– and +) as adjectives and verbs. This use of symbols with multiple meanings requires learning experiences built around sense making. Learn how thinking grammatically can help students make sense of operations with integers and support productive struggle, which leads to deeper understanding.

**Sara Delano Moore**

SDM Learning, Kent, Ohio

**Grand Ballroom B, East Tower, Gold Level**



**23****Putting the 8 Standards for Mathematical Practice into Action****Coaches/Leaders/Teacher Educators Workshop**

This session will focus on developing an understanding of the eight standards for mathematical practice and how they assist in developing the content standards. Participants will engage in and explore instructional strategies and mathematical tasks that use the math practice standards as a vehicle to develop the Common Core content standards.

**Nicole Briatta**

Zion-Benton Township High School, Illinois

**Melissa DiGangi**

Zion-Benton Township High School, Illinois

**Comiskey, West Tower, Bronze Level****24 TOOLS****Using Desmos in Calculus Class****10–12 Workshop**

After teaching and tinkering with the teaching of calculus for over ten years, I have found ways to use Desmos.com to facilitate the learning of various topics in AP Calculus. I'll share some of the activities I've used and when I use them in the sequence of topics for the class. Come prepared with an Internet connection to do them yourselves!

**Martha Mulligan**

Northside College Prep High School, Chicago Public Schools, Illinois

**Regency Ballroom D, West Tower, Gold Level****25****Worthwhile Tasks Hit the Mark with THOSE KIDS!****3–5 Workshop**

Learning experiences should address mathematical goals, provide accessibility and encourage engagement. Experience a few tasks and analyze the varied characteristics of these experiences. All tasks have been implemented with diverse learners, including ELLs, students with special needs, and other students who have been traditionally marginalized.

**Nora Ramirez**

TODOS Mathematics for ALL, Tempe, Arizona

**Columbus Hall GH, East Tower, Gold Level****26 EQUITY****Bridging the Parent Math Gap: Engaging Mathematics Education for Parents****Pre-K–2 Session**

Mathematics teaching has changed since your students' parents were in school. And parents are integral to student success. Put these together and you have a high need for parent math education. Help your parents bridge their math gaps to better support their children. Join this session to plan impactful parent math education for your campus.

**Maria Franshaw**

@mfranshawftk

River Oaks Baptist School, Houston, Texas

**Columbus Hall IJ, East Tower, Gold Level****27 EQUITY****Bringing ELL Students into the Math Conversation****Pre-K–2 Session**

English language learners sometimes struggle in math because the scaffolds that teachers use during reading instruction seem out of place next to math content. In this session, participants will learn strategies that build a culture of discourse in math class by scaffolding lessons using a variety of means of entry and previewing vocabulary.

**Jan Scott**

Houghton Mifflin Harcourt, Boston, Massachusetts

**Dennis Ortman**

Houghton Mifflin Harcourt, Boston, Massachusetts

**Regency Ballroom C, West Tower, Gold Level**

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**28** **JRNY****Conversations That Matter: Applying Math to Explore Important Real-World Issues with Middle School Statistics****6–8 Session**

How can we use math to better understand the world, and what conversations are possible in a middle school math class? In this presentation, we'll distinguish between conceptual understanding tasks and authentic applications. We'll then use statistics to explore a relevant social question: How is wealth distributed in the United States?

**Karim Ani**

Mathalicious, Austin, Texas

**Regency Ballroom A, West Tower, Gold Level**

**29** **TOOLS****Desmos Updates****10–12 Session**

Desmos is possibly the best (free) online graphing tool for middle through high school mathematics. We will look at techniques for using Desmos, some ready-to-use activities from teacher.desmos.com, and the activity builder, which teachers can use to create activities to help students explore, visualize, and understand mathematics. Bring a device.

**James Olsen**

Western Illinois University, Macomb, Illinois

**Grand Ballroom EF, East Tower, Gold Level**

**30****ELL Students and Strategies: Enhancing Learning in Traditional Math Classrooms****3–5 Session**

This session will share how an urban elementary school transformed its mathematics classrooms using strategies developed for English language learners. Regular classroom teachers, through working with an ELL teacher, were able to enhance mathematics lessons in a way that benefited both ELLs and native English speakers.

**Rita Barger**

University of Missouri–Kansas City

**HeeYoung Song**

Hickman Mills School District, Kansas City, Missouri

**Regency Ballroom B, West Tower, Gold Level**

**31****Fostering “Aha” Moments in the Math Classroom****10–12 Session**

For many students, math and science are simply viewed as formulas and calculations. In this session, we will discuss how to create lessons by sequencing problems and ideas to foster a more conceptual understanding of topics. Participants will examine sample lessons as well as have the opportunity to create their own.

**Christina Pawlowski**

Commack High School, New York

**Lawrence Maggio**

Plainedge High School, North Massapequa, New York

**Michigan 1, East Tower, Bronze Level**

**32****Identities—Not Just for Trig Any More****10–12 Session**

The mathematical concept of an identity can be used throughout the curriculum, from prealgebra to calculus. We'll look at ways to introduce the idea of an identity to prealgebra and algebra, and then how identities can be used through advanced algebra and trig and beyond. Even the idea of proof can be made more accessible.

**Richard Rukin**

Retired, Evanston Township High School, Illinois

**Plaza Ballroom, East Tower, Green Level**

**33****CCL****MET Grants and Scholarships: What They Are, How to Apply****General Interest Session**

Don't Miss the Chance! The Mathematics Education Trust (MET) supports teachers with grant funds for materials, collaboration, lessons, lesson development, conferences, professional development, action research, and in-services. Learn what is available and how to apply. MET is a wonderful resource for teachers.

**Richard Seitz**

Trustee, MET Board of Trustees, Reston, Virginia

**Acapulco, West Tower, Gold Level**



**34 EQUITY****Promoting Equity and Access for Every Student in Middle School Mathematics****General Interest Session**

I will describe the importance of diverse students having time and support to learn challenging mathematics. Videos will be shown of my students solving problems. Participants will have opportunities to discuss the videos with regard to specific practices related to equity and student access to challenging mathematical concepts.

**Richard Kitchen**  
University of Denver, Colorado

**Michigan 2, East Tower, Bronze Level**

**34.1 EW JRNY****Advanced Algebra With Financial Applications—The Perfect 3rd/4th-Year Math Course for All Students****10–12 Exhibitor Workshop**

Hear the author Rich Sgroi speak about the new 2nd Edition of *Financial Algebra*. Topics from algebra 2, trig, statistics, probability, geometry and precalculus are used to explore spending, banking, credit, autos, investing, mortgages, retirement, budgeting, and much more. A complementary copy of the textbook will be distributed to all attendees.

**National Geographic Learning/Cengage Learning**  
Boston, Massachusetts

**Michigan 3, East Tower, Bronze Level**

**34.2 EW DLE****Embracing Principles to Actions****8–10 Exhibitor Workshop**

Wondering how to incorporate *Principles to Actions* in your school? Let CPM show you! For over 25 years CPM has provided rich mathematics curricula that is student-centered and problem-based and that encourages thinking, persevering, and sense making. Experience the excitement students do when exploring CPM's curriculum. Receive free access to the curriculum.

**CPM Educational Program**  
Elk Grove, California

**Water Tower, West Tower, Bronze Level**

**34.3 EW DLE****Hands-on Learning: It's easy with the Right Tools****General Interest Exhibitor Workshop**

Do your K–5 students struggle with math fluency? Solving complex problems? Do you struggle with making center time valuable for all students? Knowing how to use the manipulatives you have? In this fast-paced session, you will learn strategies and find solutions to support your students. You will leave with goodies to use now!

**ETA hand2mind**  
Vernon Hills, Illinois

**EW Theater Riverside Center, East Tower, Purple Level**

**35 ASSESS****A Pleasure to Measure: CCSSM Activities for K–Grade 5****3–5 Workshop**

Join us for an exploration of multiple measurement activities for use in K–grade 5. Each activity is linked to a specific Common Core standard, highlights creative ways to engage students, and offers extensions to relevant children's literature or other enrichment ideas. Come prepared to participate, learn, and discuss this critical mathematical content.

**Craig Cullen**  
Illinois State University, Normal  
**David Klanderman**  
Trinity Christian College, Palos Heights, Illinois  
**Jeffrey Barrett**  
Illinois State University, Normal

**Columbus Hall EF, East Tower, Gold Level**

**36 EQUITY****Am I Hearing My Students?****6–8 Workshop**

NCTM's *Principles to Actions* advocates for teachers to facilitate meaningful mathematical discourse with their students. This session will create experiences for participants to reflect on whether math discussions are present or missing from their own math classrooms and how the conversations include or exclude the students' voices.

**Barbara Everhart**  
Educational Specialist, berealcoach.com, Minneapolis, Minnesota

**Columbus Hall AB, East Tower, Gold Level**



**37 TOOLS****Cipher Solvers: Breaking the Code! How to Integrate Algebra, Geometry, and Cryptography with Technology****8–10 Workshop**

Have your students creatively learn about encryption and decryption and use key concepts from algebra and geometry: slope, equations of lines, perpendicular bisectors, systems of equations, and interpretations of results. Solve algebraically, check geometrically. The session includes an engaging culmination activity done by hand or by using graphing calculator technology.

**Tom Reardon**

Youngstown State University/Fitch High School, Poland, Ohio  
**Toronto, West Tower, Gold Level**

**38****Your Mathematical Heartprint: Sustaining Student Effort and Perseverance Every Day!****General Interest Workshop**

In this inspirational session, Dr. Kanold explores the nature of your current heartprint and its impact on your students and colleagues. Is it good or bad, and how do you know? He describes five intentional research-affirmed teaching strategies you can use every day to help your students persevere and sustain their effort in the mathematics of the lesson.

**Timothy Kanold**

Center for Teaching and Learning, Northridge, California  
**Columbus Hall KL, East Tower, Gold Level**

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

**39****Eye the Prize****Pre-K–2 Workshop**

Experience the delight of math through a child's eyes using activities to develop conceptual and perceptual subitizing skills. Activities will focus on counting skills, operations and algebraic thinking, cardinality, and numbers and operations in base ten. The prize will be your students' understanding! Activities and website materials will be available.

**Denise McDowell**

Big Ideas Learning, Erie, Pennsylvania

**Grand Ballroom A, East Tower, Gold Level**

**40****Inquiring Minds Want to Know****10–12 Workshop**

Inquiry in the math classroom develops critical thinkers who can utilize math practices while completing engaging activities. The strategies explored in this workshop will help create an atmosphere of success, promote problem solving and teamwork, and lead to deeper levels of understanding.

**James Dobrzanski**

J. S. Morton East High School, Cicero, Illinois

**Mary Pat Anderson**

J. S. Morton East High School, Cicero, Illinois

**Regency Ballroom D, West Tower, Gold Level**

**41****Learning Experiences in Calculus: Integrate Fun over the Interval [struggle, learn].****10–12 Workshop**

We will look at some calculus activities that offer students a chance to struggle with problems that connect concepts across the calculus curriculum. Participants will wrestle with these problems and will discuss how these activities promote student learning (or not). We will also discuss how teachers can pose questions to enhance the activities.

**Steven Condie**

Illinois Mathematics and Science Academy, Naperville

**Comiskey, West Tower, Bronze Level**



# ORIGO STEPPING STONES 2.0

## COMPREHENSIVE MATHEMATICS

*New!* Pre-K through Grade 6 mathematics program takes flight from ORIGO Education.



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

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**Booth #432**



**42 STEM****Modeling with Mathematics in Science Class: Maximizing Opportunities to Enrich the STEM Experience****3–5 Workshop**

Come explore how to mathematize hands-on science as we launch rockets, mix chemicals, and program robots. Learn how science provides many opportunities for students to engage in meaningful mathematics through investigative tasks and how capitalizing on these moments helps students develop strong skills for mathematical modeling and problem solving.

**Mike Flynn**

Mount Holyoke College, South Hadley, Massachusetts

**Grand Ballroom B, East Tower, Gold Level**

**43 CCL****New and Preservice Teachers Workshop****Coaches/Leaders/Teacher Educators Workshop**

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

**David Barnes**

National Council of Teachers of Mathematics, Reston, Virginia

**Gold Coast, West Tower, Bronze Level**

**44 STEM****Solving Word Problems through Algebraic Programming with Bootstrap****6–8 Workshop**

Computer science is growing in states across the U.S., and some are beginning to offer it as a math credit. However, there is little evidence of transfer between programming and math. Come discover some of the latest research in the field and known best practices for instruction using an evidence-based curriculum.

**Emma Youndtsmith**

Bootstrap, Boston, Massachusetts

**Columbus Hall CD, East Tower, Gold Level**

**46****Designing Mathematical Provocations to Inspire Student Thinking****Pre-K–2 Session**

Mathematical provocations inspire students to make connections and think deeply about mathematical concepts. I will share how teachers in our district use provocations to design engaging learning experiences that embed the processes and practices of mathematics. Examples of inquiry questions and materials for K–3 provocations will be shared.

**Janice Novakowski**

Richmond School District, British Columbia, Canada

**Acapulco, West Tower, Gold Level**

**47****Making Sense of Solving Equations****8–10 Session**

Finding the solution to an equation or system of equations is central in algebra. The “what is the first” approach emphasizes rote procedures and does not help students develop flexible procedures for solving equations. Thinking about the mathematical structure of an equation aided by dynamic interactive visualization can make a difference.

**Gail Burrill**

Past President, National Council of Teachers of Mathematics;

Michigan State University, East Lansing

**Regency Ballroom B, West Tower, Gold Level**





**48 EQUITY**

## Motivating Meaningful Mathematics Connections in Social and Social Justice Contexts

### 10–12 Session

We will explore social and social justice contexts through activities designed to engage students in mathematics that is relevant and meaningful to them. Interactive technology is used to enhance engagement. Contexts may include inequality issues, living wage, and climate change. Participants are encouraged to share their own ideas and experiences.

**Tami Martin**

Illinois State University, Normal

**Roger Day**

McGraw-Hill Education, Bloomington, Illinois

**Amanda Miller**

McGraw-Hill Education, Bloomington, Illinois

**Regency Ballroom A, West Tower, Gold Level**

**49**

## Once, Twice, Three Times the Learning: Questioning & Conceptual Understanding

### 10–12 Session

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

**Kyle Eller**

Wheaton Warrenville South High School, Wheaton, Illinois

**Frederick Dillon**

Institute for Learning, Pittsburgh, Pennsylvania

**Plaza Ballroom, East Tower, Green Level**

**50 EQUITY**



## President's Address: Empowerment through Access and Equity

### General Interest Session

We have a long-standing and seemingly intractable problem in mathematics education: inequity.

Children of certain racial, ethnic, language, gender, ability, and socio-economic backgrounds experience mathematics education in school differently and many are disaffected by their mathematics education experience. This session will address why we teach mathematics and the actions educators can take to challenge structural obstacles and implement equity-based instructional practices.

**Matt Larson**

[@mlarson\\_math](https://twitter.com/mlarson_math)

President, National Council of Teachers of Mathematics, Reston, Virginia

**Grand Ballroom CD, East Tower, Gold Level**

**51 EQUITY**

## Singin' & Signin' Teaches the Way Kids Learn!

### 6–8 Session

Learn an engaging, kinesthetic, award-winning approach to teaching rigorous standards that invigorates and captures the energy of ALL the diverse students in your class! Leave with manipulatives and song lyrics to teach lessons including area, volume, and circumference to immediately impact and empower! Be ready for fun and be a student yourself!

**Siegrid Stillman**

Fallbrook Union Elementary School District, California

**Regency Ballroom C, West Tower, Gold Level**

Need funding for professional development? Check out grant opportunities from the **Mathematics Education Trust**. The next deadline to apply is May 5. Visit the MET area in **NCTM Central** to learn more.





**52 STEM****Step It Up with STEAM! Degrees, Rotations, and Spatial Reasoning with Stepper Motors****6–8 Session**

With minimal programming skills, a TI-Nspire graphing calculator, and TI-Innovator, you can transform your class into one where mathematical concepts can be explored from an intuitive and engaging perspective. In our programs we will use degrees, rotations, and proportional reasoning to perform engineering feats involving a pulley system.

**Michelle Goetz**

Parkway North High, Saint Louis, Missouri

**Ann Schlemper**

Columbia College, Missouri

**Kara Leaman**

Columbia College, Missouri

**Michigan 2, East Tower, Bronze Level**

**53 JRNY****Take the Number Sense Journey****Pre-K–2 Session**

Participants will identify, experience, assess, and reflect the interrelated aspects of early numerical knowledge, the learning trajectory for counting, and the number relationships that will establish a strong foundation for number operations through deep understanding not memorization.

**Lynn Rule**

Math Consultant, MathRack, Wheaton, Illinois

**Michigan 1, East Tower, Bronze Level**

**54 EQUITY****The Responsive Math Classroom****3–5 Session**

What exactly is a culturally responsive classroom? And what does it have to do with math? This important topic is a major focus of CCSSM as well as in the NCTM book *Principles to Actions*. Learn how to establish a culture in which students—and teachers—appreciate the meaningful math that comes from responsive teaching.

**Monica Tienda**

Oak Park School District, Michigan

**Grand Ballroom EF, East Tower, Gold Level**

**55 CCL****Using Generative Routines to Support Learning of Ambitious Mathematics Teaching****Coaches/Leaders/Teacher Educators Session**

This session will engage participants in the idea of generative routines and how they can mediate teacher learning of ambitious mathematics teaching. We will focus on a particular routine, a well-specified question sequence designed to support teachers in the work of eliciting and responding to multiple student strategies in mathematics discussion.

**Hala Ghouseini**

University of Wisconsin–Madison

**Columbus Hall IJ, East Tower, Gold Level**

**55.1 EW TOOLS****Making Algebra Child's Play® with Hands-On Equations® & HOE Fractions****6–8 Exhibitor Workshop**

Hands-On Equations can enable you to introduce algebraic concepts to ALL of your students in grades 4 & up, thereby enhancing their self-esteem and interest in mathematics. Equations such as  $4x + 3 = 3x + 9$  and  $2(2x + 1) = x + 14$  become child's play! Bonus: See Dr. Borenson's new program for concretely solving fractional linear equations.

**Borenson and Associates, Inc.**

Allentown, Pennsylvania

**Michigan 3, East Tower, Bronze Level**

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

Meet Mathspace. You've seen it all, right? Adaptive learning? Yep. Handwriting recognition? Hmm. Every math question graded line-by-line? Whoa, that's new! Students can finally show their work, and get feedback at every step: all auto-graded for you. Bye-bye, multiple choice! BYOD to try the award-winning Mathspace live, and ask about a trial!

**Mathspace**

New York, New York

**Water Tower, West Tower, Bronze Level**



11:00 A.M.–12:00 P.M.

55.3

EW

JRNY

## The Tools to Facilitate Rich Conversation

### 3–5 Exhibitor Workshop

This workshop will focus on ways to facilitate and enhance mathematical discussions in the classroom, based around content areas. Participants will be equipped with tools and techniques to plan and manage conversations, evaluate, select, and sequence student responses, and elevate the rigor of discourse in the mathematics classroom.

Curriculum Associates

North Billerica, Massachusetts

**EW Theater Riverside Center, East Tower, Purple Level**

11:30 A.M.–12:00 P.M.

56

STEM

## Building Coherency in STEM: Support for Learning Mathematics for Chemistry

### 10–12 Burst

This session will focus on ways to support the learning of algebra for use in chemistry applications. We report findings from an interdisciplinary project that integrated chemistry contexts into an undergraduate algebra course in an authentic and coherent way. Our findings have implications for STEM teaching at the secondary level.

Kristen Bieda

Michigan State University, East Lansing

Jennifer Nimitz

Michigan State University, East Lansing

**Columbus Hall EF, East Tower, Gold Level**

57

## Community Organizations as a Vehicle to Learn Advanced Algebra and Statistics

### 10–12 Burst

Participants will analyze and explore the ways in which a statistics class used the environmental concerns of a community organization to learn about linear regression, correlation coefficient, and standard deviation. Data collection procedures and sample student artifacts will be shared.

Salvador Venegas

Infinity Math, Science & Technology High School, Chicago, Illinois

**Grand Ballroom B, East Tower, Gold Level**

58

EQUITY

## Family Communication: Let the Students Contribute to the Process!

### General Interest Burst

Family communication is tough. There just isn't enough time in the day to reach every home . . . or is there? When you let students take part in this communication process, you can reach every family and give the students a voice. Come to this session and learn how I use Google and social media to accomplish every teacher's communication goals!

Marissa Walczak

Rock Island High School, Illinois

**Columbus Hall AB, East Tower, Gold Level**

59

## Interactive Notebooks: Tapping into Left-Brain and Right-Brain Thinking

### 6–8 Burst

Interactive notebooks appeal to right- and left-brain learners who crave organization. Students maintain these spirals with all their work inside. Left-hand pages are used for homework while right-hand pages are used for class notes. In a sense, they create their own "text" with everything they need at their fingertips.

Kristina Barnaby

Fairfield County Day School, Connecticut

**Toronto, West Tower, Gold Level**

60

ASSESS

## Making Effective Assessment Habits Routine: A Case Study of a Primary Classroom

### Pre-K–2 Burst

Teachers understand the importance of formative assessment and thoughtfully observe as students engage in math. However, without efficient ways to gather data, they may struggle to set a routine. We will explore a case study of a teacher who has routinized effective assessment practice for various formats, including games and small-group lessons.

Rachel Muren

UChicago STEM Education, Illinois

**Comiskey, West Tower, Bronze Level**

Thursday



61

**Mathematical Misconceptions****General Interest Burst**

What does it mean to be “good” at math? Have you ever dealt with the frustrated student who says, “I thought I knew math, but I guess I really don’t . . .” We will explore some of the erroneous assumptions people make about mathematics and its workings and discuss how to combat these misconceptions in the classroom.

**Carlo Ordonez**

Illinois Mathematics and Science Academy (IMSA), Aurora

**Columbus Hall KL, East Tower, Gold Level**

62

**JRNY****Minion Fair Share: Cutting the Cake and Maximizing the Mathematics****3–5 Burst**

A simple problem of cutting a cake into two equal pieces evolves into a valuable mathematical investigation of area, halves, symmetry, congruence, and proof. Students of all levels can engage in this task as they help the Minions solve this curious problem while journeying through the Common Core mathematical practice standards and the *Principles to Actions* Mathematics Teaching Practices.

**Robert Mann**

Western Illinois University, Macomb

**Anita Reid**

Lewistown High School, Illinois

**Regency Ballroom D, West Tower, Gold Level**

63

**EQUITY****Promoting Equity in Math Circles****General Interest Burst**

In six years, Math Circles of Chicago has grown to serve 500 grades 5–12 students in five locations across the city. We’ve expanded into communities which previously didn’t have access to quality math enrichment, and we’ve earned important lessons about how to meet the needs of children from many backgrounds and how to work effectively with local community centers.

**Douglas O’Roark**

Math Circles of Chicago, Illinois

**Gold Coast, West Tower, Bronze Level**

64

**EQUITY****Read + Read + Read = Access (We Hope!)****6–8 Burst**

“IDK” why my students leave word problems unattempted!! To address this age-old phenomenon, we will model the Three-Reads strategy, which helps provide students access to mathematical content and problem solving. Data collected at two different schools gauges the effectiveness of Three-Reads as a tool of access to challenging word problems.

**Casey McLeod**

Chicago Public Schools, Illinois

**Tun Bhothinard**

Chicago Public Schools, Illinois

**Grand Ballroom A, East Tower, Gold Level**

65

**EQUITY****Using Engaging Mathematics Lessons to Celebrate the Life and Accomplishments of Benjamin Banneker****General Interest Burst**

Participants will learn about the accomplishments of Benjamin Banneker who was a self-taught freeborn African American man of the 1700s. We will use his life as the backdrop for engaging mathematics lessons at the elementary, middle, and high school levels. We will share other ideas on implementing culturally relevant mathematics lessons.

**Shelly Jones**[@ShellyMJones1](#)

Central Connecticut State University, New Britain

**Natalie Holliman**

Little Rock School District, Arkansas

**Columbus Hall GH, East Tower, Gold Level**



**66**

## Using Lesson Study to Advance Students Mathematical Proficiency in Geometry

### 8–10 Burst

We will describe our grades 6–12 teacher learning community's lesson study project and key actions from Principles to Actions to support students' mathematical proficiency. Participants will be engaged in the lesson task and receive all the supporting materials needed to teach the lesson. We will also provide student work for community discussion.

**Gabriel Matney**

Bowling Green State University, Ohio

**Corrinne Sullivan**

Northmont Schools, Clayton, Ohio

**Columbus Hall CD, East Tower, Gold Level**

**68**

## Down with Retakes!

### 8–10 Session

What do you do when a student fails a test? Are you sick of retakes as the solution? We will outline alternative techniques to help students improve their learning process and become more self-directed before the test as well as effective strategies for retakes that have made them manageable.

**Jody Trapani**

Niles North High School, Skokie, Illinois

**Amy Koning**

Niles North High School, Skokie, Illinois

**Regency Ballroom C, West Tower, Gold Level**

# CPM EDUCATIONAL PROGRAM

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

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- + Student-centered and problem-based lessons
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## MORE MATH FOR MORE PEOPLE

CPM EDUCATIONAL PROGRAM



Thursday



**69 TOOLS****Engaging All Learners: Our Journey of Integrating Technology through Co-Teaching Math****3–5 Session**

Join our journey of incorporating technology into a math workshop model while also co-teaching. Learn how we use flexible scheduling and flexible grouping to meet the needs of all learners. Explore the technology tools used to create our flexible groups and to differentiate the learning.

**Tabitha Eutsler**

Springfield Public Schools, Missouri

**Julie Allen**

Springfield Public Schools, Missouri

**Regency Ballroom A, West Tower, Gold Level**

**70 TOOLS****How to Reinforce Mathematical Concepts by Creating a Video Library for Your Students****8–10 Session**

As a teacher, the ability to make your own videos on mathematical concepts is a powerful tool for student learning. In this session, we will demonstrate how easy it is to build a video library to share with your students. We use a variety of software and hardware to demonstrate some of the options teachers have.

**Michelle Hale**

Aqsa School, Bridgeview, Illinois

**Angela Thompson**

Crete, Illinois

**Acapulco, West Tower, Gold Level**

**Download speaker handouts!**

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

**71 EQUITY****Making Mistakes Public: Using Errors to Advance Learning at the NYC Math Lab****3–5 Session**

Students make mistakes; how teachers respond can influence how students experience math. In this session, we'll study video of teacher responses to student errors at the NYC Math Lab and the learning that resulted from exploring errors publicly. Together, we will construct a set of responses to student errors that value all students' ideas.

**Peter Cipparone**

University of Michigan, Ann Arbor

**Kim Van Duzer**

Public School 29, NYC Public Schools, New York City, New York

**Plaza Ballroom, East Tower, Green Level**

**72 EQUITY****Meaningful Practices to Meet the Needs of Every Learner: It's about the Process****6–8 Session**

"Everything I learned about teaching, I learned from teaching students with special needs." How do we implement a challenging curriculum with high expectations for every learner? This session will explore methods and resources for making math accessible to all, specifically for students with disabilities and emerging bilingual students.

**Bridget Dunbar**

St. Mary's Public Schools, Leonardtown, Maryland

**Regency Ballroom B, West Tower, Gold Level**

**73 STEM****Motivating Matrices with Cryptology****10–12 Session**

Introduce students to cryptology, the science of sending and receiving secret messages that is based in math. We will learn how to encrypt messages using matrix multiplication, calculate determinants, use the inverse of a matrix to decrypt messages, and learn how matrix inverses can help us crack the code even without a secret key.

**Frannie Worek**

Johns Hopkins Center for Talented Youth, Baltimore, Maryland

**Michigan 1, East Tower, Bronze Level**



**74 CCL**

## Preparing the Next Generation of Teachers of Mathematics: Setting Standards

### General Interest Session

Learn about the Association of Mathematics Teacher Educators' (AMTE) Standards for Preparing Teachers of Mathematics (2017) and discuss ways to support the next generation of teachers of mathematics in pre-K–12.

Jennifer Bay-Williams

@JBWilliams  
University of Louisville, Kentucky

Grand Ballroom CD, East Tower, Gold Level

**75 CCL**

## Math Tasks and Manipulatives: A Winning Combination

### General Interest Session

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

Kevin Dykema

Board of Directors, National Council of Teachers of Mathematics;  
Mattawan Middle School, Michigan

Michigan 2, East Tower, Bronze Level

**76 TOOLS**

## Using Tech Tools to Make Student Thinking Visible

### 6–8 Session

Do you have access technology in your classroom? Interested to find out how to go beyond using it as a digital worksheet or for skill and drill type practice? The real power of having technology in the math classroom is in using it for students to show their thinking to their teachers, peers, and beyond.

Annie Forest

Berwyn South District 100, Illinois

Grand Ballroom EF, East Tower, Gold Level

**77**

## Why Students Fail Algebra—And What K–2 Teachers Can Do to Prevent It

### Pre-K–2 Session

Success in algebra opens doors and expands opportunities in many professions and careers. Unfortunately many students just “don’t get it.” I believe the reason lies in early math instruction, which is where K–2 children fail to build foundations that support algebraic thinking.

Angela Andrews

Retired, National Louis University, Chicago, Illinois

Crystal Ballroom, West Tower, Green Level

**77.1 ew**

## Crazy 8s Club Gets Kids Fired Up About Math!

### Exhibitor Workshop

Crazy 8s is a high-energy afterschool club for K–5 kids with off-the-wall activities like Glow-in-the-Dark Geometry and Toilet Paper Olympics. Bedtime Math provides free kits including directions and materials. Schools provide a coach and minimal additional supplies. Workshop participants will get hands-on experience running the club’s activities.

Bedtime Math Foundation

Summit, New Jersey

Michigan 3, East Tower, Bronze Level

**77.2 ew**

## Rethinking Expressions and Equations: Implications for Teachers

### Exhibitor Workshop

An interactive discussion will focus on a technology-leveraged approach for teaching that brings coherence across grades for content that is tough to teach and tough to learn. The session will consider the shifts necessary to develop real understanding of this content, the research behind the shifts and teachers’ role in carrying out these shifts.

Texas Instruments

Dallas, Texas

Water Tower, West Tower, Bronze Level



78

## Buddy Teachers + Buddy Classrooms = Math Success

### Pre–K–2 Workshop

In this games workshop, participants will learn the best operational/place value games for cross-graded settings. Come with a teaching partner from grades 3–5 and learn games your students can do together one time a week. For older students it enhances and deepens their mathematical understanding as they teach their buddies. Primary students win too!

Jane Felling

Box Cars and One-Eyed Jacks, Edmonton, Alberta, Canada

**Regency Ballroom D, West Tower, Gold Level**

79 **EQUITY**

## Dismantling Barriers to Geometry by Constructing a Box from a Used Greeting Card

### 6–8 Workshop

By constructing a box from a greeting card, the barriers that students have with geometry will be lowered. Gain a better understanding of geometry terms and the nuances of definitions involved with quadrilaterals and polygons. Deliver an in-depth understanding of the relationships among perimeter, area, and volume-ratios and proportions, too!

Nicholas Restivo

Mathematical Olympiads for Elementary and Middle Schools, Bellmore, New York

**Columbus Hall GH, East Tower, Gold Level**

80

## Engaging Students in Meaningful Math through Games

### Pre–K–2 Workshop

Games are an effective way to engage students in learning. In this workshop, participants will experience how to support the development of pre–K–2 mathematicians through purposeful play. The focus will be on the CCSS Standards for Mathematical Practice and the content domain of Number and Operations.

David Coffey

Grand Valley State University, Allendale, Michigan

Kathy Coffey

Grand Valley State University, Allendale, Michigan

**Comiskey, West Tower, Bronze Level**

81

## Experiencing Instructional Routines That Engage ALL Learners

### 8–10 Workshop

Can we teach mathematics in ways that engage and support all learners and that build student capacity to have meaningful conversations about math while working together to understand multiple solution strategies? Yes, we can! Participants will experience and discuss an inquiry-oriented instructional routine called Contemplate then Calculate.

David Wees

New Visions for Public Schools, New York, New York

Sara Toguchi

New Visions for Public Schools, New York, New York

Elizabeth Ramirez

New Visions for Public Schools, New York, New York

**Grand Ballroom B, East Tower, Gold Level**

82

## Finding Paths to Math Understanding from Elementary to College: A Conversation for All Levels

### 3–5 Workshop

We will explore the journey of creating math learning experiences that challenge students and provide opportunities to provide deep learning. Are our students really understanding the math we are teaching? How do learning targets and the experiences we provide drive understanding? Does our instruction promote procedural or conceptual learning?

Mark White

Downers Grove Grade School District 58, Illinois

Christopher White

Illinois Institute of Technology, Chicago

**Toronto, West Tower, Gold Level**

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





**83**

### Getting 8th- to 10th-Grade Students Thinking about Calculus Concepts WITH NO CALCULUS REQUIRED!!!

#### 8–10 Workshop

We will walk through projectile motion tasks and a maximizing area of a polygon task. Your students will be able to derive projectile motion formulas (without calculus!) and the area of a circle formula! Not only will they see where these formulas actually come from, they will understand pi and see it's irrational characteristics like never before!

**Jess McMurray**

Soda Springs High School, Soda Springs, Idaho

**Columbus Hall AB, East Tower, Gold Level**

**84 ASSESS**

### Looking at Student Work: Insights into Learning and Teaching Mathematics

#### 3–5 Workshop

A close look at a single piece of student work reliably leads us to ideas and questions about teaching and learning mathematics. Using a descriptive process, we will use a structured protocol to give close attention to student thinking that provides insight into students' mathematical understandings as well as teaching practices.

**Janice Szymaszek**

Smith College, Northampton, Massachusetts

**Lara Ramsey**

Smith College, Northampton, Massachusetts

**Grand Ballroom A, East Tower, Gold Level**

**85 TOOLS**

### Probability, Polynomials, and CAS: Designing Dice

#### 10–12 Workshop

Participants will use the TI-Nspire CX CAS Computer Algebra System to multiply and factor polynomials used to model dice in order to redesign the standard dice to create a different pair of dice such that the sum of these two dice has the same distribution as the sum of the standard six-sided dice.

**Steve Phelps**

Madeira High School, University of Cincinnati, Ohio

**Columbus Hall CD, East Tower, Gold Level**

**86 JRNY**

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

#### 10–12 Workshop

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

**Joseph D'Agostino**

Freeport Public Schools, New York

**Kevin Harrison**

Freeport Public Schools, New York

**Columbus Hall EF, East Tower, Gold Level**

**87**

### Supporting High-Quality Math Instruction through Peer Collaboration

#### Coaches/Leaders/Teacher Educators Workshop

Peer collaboration is a strategy used to support high-quality math instruction in CPS. Peer collaboration gives teachers the opportunity to collaboratively plan, implement, and debrief a CCSSM-aligned lesson. Those who support teachers in grades 6–12 would benefit from this session.

**Elizabeth Buczkowski**

Chicago Public Schools, Illinois

**Ruth Haumersen**

DePaul University, Chicago, Illinois

**Gold Coast, West Tower, Bronze Level**

**88 TOOLS**

### Using Technology to Examine the Associations between Two Variables in Middle School Statistics

#### 6–8 Workshop

Examine the association between two variables using TI and Desmos graphing calculators. Input and analyze data, create scattergrams and lines of best fit, and learn how to interpolate and extrapolate with confidence while using social justice data.

**Samuel Yusim**

Carleton Washburne School, Winnetka, Illinois

**Columbus Hall KL, East Tower, Gold Level**



89

**Addressing Numeracy with the Struggling Learner****Pre-K–2 Session**

How do we begin supporting numeracy development? This session focuses on how students learn to compose and decompose whole numbers. We will view student video and discuss how to nudge their thinking towards fluent ways of computing, all while focusing on gate-keeping concepts that hold students back.

**Paula Muehler**

Math Learning Center, Sussex, Wisconsin

**Regency Ballroom B, West Tower, Gold Level**

90

**EQUITY****Algebra Project Youth Learning Cultures: Organizing through Knowledge, Power, and Relationship****Coaches/Leaders/Teacher Educators Session**

The Algebra Project sees young people as insurgent organizers using mathematics as an organizing tool. The typical classroom structure (“Teacher instructs students”) is too thin to support this work. Instead, we use paid peer and near-peer co-teachers in youth-controlled settings on and off campus to develop a culture of math as organizing work.

**Jay Gillen**

Baltimore City Schools/Algebra Project, Maryland

**Regency Ballroom A, West Tower, Gold Level**

91

**EQUITY****Bringing ELL Students Into the Math Conversation****3–5 Session**

English language learners sometimes struggle in math because the scaffolds that teachers use during reading instruction seem out of place next to math content. In this session, participants will learn strategies that build a culture of discourse in math class by scaffolding lessons using a variety of means of entry and previewing vocabulary.

**Jan Scott**

Houghton Mifflin Harcourt, Boston, Massachusetts

**Dennis Ortman**

Houghton Mifflin Harcourt, Boston, Massachusetts

**EW Theater Riverside Center, East Tower, Purple Level**

92

**EQUITY****Detracking, Differentiating Instruction, and Using Standards-Based Assessment to Help ALL Students****10–12 Session**

By eliminating tracking in honors geometry, I was able to break up cohorts of academically struggling students who had not previously been given the opportunity to take rigorous math classes. I will share the challenges and lessons learned as I used differentiation and standards-based assessment to help all students become metacognitive learners.

**Kristin Weller**

P. K. Yonge Developmental Research School at the University of Florida, Gainesville

**Plaza Ballroom, East Tower, Green Level**

93

**JRNY****Developing Essential Understandings of Addition & Subtraction****Pre-K–2 Session**

“If only my students knew their basic facts!” This is a common frustration of classroom teachers. Knowing doesn’t come from worksheets, flashcards, or timed tests; it comes from strong number sense. Participants will explore the essential understandings of addition and subtraction to build numerical literacy.

**Amy Schemmel Keller**

Grant Wood Area Education Agency, Cedar Rapids, Iowa

**Jeremiah McGraw**

Grant Wood Area Education Agency, Cedar Rapids, Iowa

**Acapulco, West Tower, Gold Level**

94

**CCL****Do the Math****General Interest Session**

Together we’ll engage in solving mathematically rich problems. We will use this shared experience as a vehicle to examine how to use mathematical problems to develop mathematical and pedagogical knowledge for teachers. We’ll also explore student work and video clips of students solving the same problems to connect our work to the classroom.

**Zachary Champagne**

Florida Center for Research in Science, Technology, Engineering, and Mathematics, Jacksonville, Florida

**Grand Ballroom CD, East Tower, Gold Level**



**95** **CCL****How I Developed as a Mathematics Teacher over 41 Years****10–12 Session**

I became a better teacher each of the 41 years of my career, largely because of the collaboration and interaction with other educators. I would like to discuss the impact these people had on my thoughts and actions as I learned to become a better mathematics teacher.

**John Benson**  
Evanston, Illinois

**Michigan 1, East Tower, Bronze Level****96****Mathematical Practices for Calculus****10–12 Session**

The new calculus framework describes Mathematical Practices for AP Calculus. Why are these important and what do they look like in classrooms? Participants will consider examples of how the MPACs can be implemented as well as suggestions for what preparation students might have for these in precalculus.

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

**Grand Ballroom EF, East Tower, Gold Level****97** **STEM****Mathematics Is the Language of STEM****General Interest Session**

Without mathematics, there would be no science, technology, or engineering! It is the last letter in the acronym, but it is also the most important. As many as five million jobs will become extinct in this digital age. Over two million new jobs will be created, many requiring mathematics. Are math educators poised to take advantage of this new reality?

**Linda Rosen**  
@changeequation  
Change the Equation, Washington, D.C.

**Crystal Ballroom, West Tower, Green Level****98****String Me A-Long (Rectangle): An Interactive Introduction to Quadratics in Algebra 1****8–10 Session**

Why do we teach quadratics? Why are quadratics so important for students' understanding? Our team wrestled with this and developed a student-centered, kinesthetic task that highlights the need for quadratics. Join us as we use regressions, data sets, Desmos, and Google suite to develop students' understanding with this foundational topic.

**Tina Nocella**  
Adlai E. Stevenson High School, Lincolnshire, Illinois  
**David Irsay**  
Adlai E. Stevenson High School, Lincolnshire, Illinois  
**Heather Nissenberg**  
Adlai E. Stevenson High School, Lincolnshire, Illinois

**Columbus Hall IJ, East Tower, Gold Level****99** **EQUITY****TeamASAP—Team Access & Success in Advanced Placement****General Interest Session**

Economically, racially, and ethnically diverse Evanston Township High School used student input and team drive to transform the makeup of Advanced Placement in their school. Discussion will focus on how a small team of committed teachers & students created teamASAP, focused on awareness, access, readiness, and success for all students in AP classes.

**Dale Leibforth**  
@DaleLeibforth  
Evanston Township High School District 202, Illinois  
**Michigan 2, East Tower, Bronze Level**



3:00 P.M.–4:00 P.M.

100

## Three Hurdles to Algebra Success!

3–5 Session

Help your students overcome the three main hurdles standing in their way to algebra success! Experience hands-on lessons that use manipulatives within the research-based, CRA approach to teaching that provides success for struggling learners. Lessons will develop students' conceptual understanding of subtraction, multiplication, and fractions.

Amy Johnson

Moving with Math, Math Teachers Press, Inc., Minneapolis, Minnesota

Caryl Pierson

Math Teachers Press, Inc., Minneapolis, Minnesota

Regency Ballroom C, West Tower, Gold Level

100.1

EW TOOLS

## How to Engage Your Reluctant Learners: The Power of Using Desmos in a Mathematics Classroom

8–10 Exhibitor Workshop

Dive into unique mathematical lessons that present engaging, high-interest activities with Desmos, a graphing software. Interactives powered by Desmos present students with exploration experiences through technology that builds deep conceptual understanding. Imagine having set lessons you can implement in your classroom tomorrow that encourage students to understand math on a deeper level!

Pearson

Chandler, Arizona

Michigan 3, East Tower, Bronze Level

100.2

EW TOOLS

## What Happens When Adaptive Learning Meets Great Storytelling? Students Want to Learn Fractions!

3–5 Exhibitor Workshop

Come see how we're solving the fractions gap with our digital tool, Amplify Fractions. Playful, quirky stories uniquely engage students, providing lessons with purpose. Adding in unlimited practice, Amplify Fractions helps students deeply understand fractions and sets them on the path to math success!

Amplify

Brooklyn, New York

Water Tower, West Tower, Bronze Level

3:15 P.M.–4:30 P.M.

101

## 11 Ways to Unfold a Cube, and Other Mental Gymnastics

6–8 Workshop

Come explore a variety of hands-on tasks and activities designed to develop students' spatial reasoning skills.

Hannah Ross

Milwaukee Montessori School, Wisconsin

Columbus Hall CD, East Tower, Gold Level

102

EQUITY

## Let's Talk Fractions! An Introduction to Fraction Number Talks

3–5 Workshop

Learn and practice the art of number talks to develop flexible thinking about fractions! Number talks facilitate discussion and support students as they gain confidence in sharing their thinking, learning from their peers and having fun! At the same time, you focus on developing the important conceptual understandings of fractions.

Bethann Wiley

University of Minnesota Twin Cities

Christy Pettis

University of Minnesota Twin Cities

Gold Coast, West Tower, Bronze Level

103

CCL

## Being Intentional in K–2 Mathematics Classrooms: Navigating a Productive Journey during a Lesson

Coaches/Leaders/Teacher Educators Workshop

Often primary mathematics lessons depict a "show and tell" time with students sharing randomly. We will engage in activities to become more equipped to orchestrate meaningful learning opportunities. Participants will consider how to use similar tasks with others to promote this idea of purposefully guiding students toward deeper understanding.

Susie Katt

[@susiekatt](https://twitter.com/susiekatt)

Lincoln Public Schools, Nebraska

Regency Ballroom D, West Tower, Gold Level





Introducing

## A new K–5 intervention program



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

**Join our session about Bridges Intervention on Friday, December 1st at 11:00 in the Michigan 3 room or stop by booth 427 to learn more.**

[mathlearningcenter.org/intervention](http://mathlearningcenter.org/intervention)



**104** **TOOLS****Climb Aboard with Scratch Programming: An Engaging Way to Learn Coordinates****3–5 Workshop**

Experience an exciting way to incorporate Scratch programming into your classroom! You have probably heard about the incredible learning adventure Scratch programming can offer students. Participate in this hands-on session to discover a unique way for your students to learn about coordinates using Scratch. Engage them with a new technology!

**Megan Roeder**

Montclair State University, New Jersey

**Nicole Panorkou**

Montclair State University, New Jersey

**Columbus Hall AB, East Tower, Gold Level**

**105****Develop Meaning by Connecting Multiple Strategies****Pre-K–2 Workshop**

Students may have multiple strategies, but do they understand how various strategies relate or know when using each is best and most efficient? Learn how to support students in making connections among multiple addition and subtraction strategies so they become flexible, strategic problem solvers.

**Jennifer Leimberer**

University of Illinois at Chicago

**Columbus Hall EF, East Tower, Gold Level**

**106** **JRNY****Financial Literacy: Skills and Concepts at the Primary Level****Pre-K–2 Workshop**

Financial literacy is an important life skill, yet how are we fostering understanding in our youngest students? This workshop will give participants the opportunity to engage in tasks that help build a foundation for financial literacy in the primary classroom. Learn what materials and manipulatives are available to support our littlest consumers.

**Lindsay Gold**

University of Dayton, Ohio

**Michael Houston**

Riverside Beaver County School District, Ellwood City, Pennsylvania

**John Ashurst**

Riverside Beaver County School District, Ellwood City, Pennsylvania

**Columbus Hall KL, East Tower, Gold Level**

**107** **JRNY****Long Division: It's Not Synthetic Any More****10–12 Workshop**

Manipulatives in a secondary math classroom? You'll see how successful it can be. Participants will be actively engaged in using algebra tiles and the area model to multiply polynomials. Then we will do factoring and completing the square. Finally, we will use the area model to do polynomial long division.

**Christine Mikles**

Post Falls, Idaho

**Columbus Hall GH, East Tower, Gold Level**

**108****Modeling: Teaching It Right!****10–12 Workshop**

Modeling, if taught correctly, is one of the most effective tools in student learning. It requires creating "scenarios" that "beg" a problem-solving situation and just the right amount of teacher guidance for students to be successful. Learn, hands-on, the nuts-and-bolts of creating, using, and teaching with models that truly help students learn.

**David Ewing**

University of Central Missouri, Warrensburg, Missouri

**Grand Ballroom A, East Tower, Gold Level**

## The NCTM Annual Meeting & Exposition is coming up!

Washington D.C. | April 25–28, 2018





3:15 P.M.–4:30 P.M.

**110**

## **This Is Why We Play: Solving Problems with NBA Data**

**8–10 Workshop**

Will Steph Curry be the three-point king before the 2020 election? What formula can be used to predict players for the All-NBA Team? From where on the court are bank shots possible? Using NBA data and diagrams, we'll create models to answer these questions and others. You miss 100% of the shots you don't take—don't miss this one! #mathslamdunk

**Patrick Vennebush**

Discovery Education, Falls Church, Virginia

**Toronto, West Tower, Gold Level**

**111**

## **Unpacking Instructional Components That Engage ALL Learners**

**8–10 Workshop**

Come join us as we experience an instructional routine and unpack how the elements of the routine work together to improve ALL students' learning. We will explore all of the parts of Contemplate then Calculate, why they are important, and strategies for successfully enacting the routine to engage and support a diverse group of learners.

**Sara Toguchi**

New Visions for Public Schools, New York, New York

**Jennifer Lee Kim**

New Visions for Public Schools, New York, New York

**Elizabeth Ramirez**

New Visions for Public Schools, New York, New York

**Grand Ballroom B, East Tower, Gold Level**

4:30 P.M.–5:30 P.M.

**112**

**JRNY**

## **Breaking the Rules (Expiring Ones That Is) and Cleaning Up Your Language!**

**General Interest Session**

We will engage participants in a discussion of common rules and vocabulary shared by K–12 teachers that students tend to overgeneralize, such as tricks and tips that do not promote conceptual understanding, rules that “expire” later in students' mathematics careers, and vocabulary that isn't precise. CCSSM “expiration dates” will be shared!

**Sarah Bush**

[@sarahbbush](#)

University of Central Florida, Orlando

**Karen Karp**

Johns Hopkins University, Baltimore, Maryland

**Barbara Dougherty**

University of Hawaii at Manoa

**Crystal Ballroom, West Tower, Green Level**

**113**

**EQUITY**

## **Bridging the Parent Math Gap: Engaging Mathematics Education for Parents**

**3–5 Session**

Mathematics teaching has changed since your students' parents were in school. And parents are integral to student success. Put these together and you have a high need for parent math education. Help your parents bridge their math gaps to better support their children. Join this session to plan impactful parent math education for your school.

**Maria Franshaw**

[@mfranshawftk](#)

River Oaks Baptist School, Houston, Texas

**Regency Ballroom A, West Tower, Gold Level**

Visit **NCTM Central**—connect with peers in the **Networking Lounge**, renew your **membership**, “do math” with **The Math Forum**, and shop for the latest titles at the **Bookstore**.



Thursday



**114 ASSESS****Conferring with Mathematicians: Teaching and Assessing for Sense Making and Agency****General Interest Session**

How can we broaden our notion assessment to focus on sense making and nurturing students' agency as mathematicians? This session explores how teachers can utilize conferring to more deeply understand and respond to student thinking and build communities of mathematicians.

**Kassia Omohundro Wedekind**

Belvedere Elementary School, Falls Church, Virginia

**Grand Ballroom CD, East Tower, Gold Level**

**115 TOOLS****Engaging Activities That Emphasize the FUN in FUNctions****8–10 Session**

Participants will be provided with classroom-ready hands-on lessons that utilize handheld technology to enable students to examine functional behavior and discover FUN ways to make sense of transformations. Emphasis will be placed on connecting multiple mathematical representations to help students develop conceptual understanding.

**Thomas Beatini**

Union City Public Schools, New Jersey

**Regency Ballroom C, West Tower, Gold Level**

**116 JRNY****Number Talks: Building Computational Fluency****Pre-K–2 Session**

This workshop will focus on how to develop computational fluency through daily number talks. Common Core standards place emphasis on student strategies for solving problems, rather than automaticity. This workshop will give participants tools to bring back to the classroom to enhance student strategies.

**Sara Cabreda**

Joliet Public Schools District 86, Illinois

**Karina Zurita**

Joliet Public Schools District 86, Illinois

**Michigan 1, East Tower, Bronze Level**

**117****SmudgedMath: Blurring Tasks Sparks Mathematical Curiosity, Conversation, and Critique****6–8 Session**

SmudgedMath, launched by Dr. Peter Liljedahl, transforms tasks by “smudging” components, thereby increasing ambiguity and opening the mathematical process thought space. Sparking curiosity creates opportunities for students to consider tasks critically, creatively, and conceptually. Join in the experience of implementing and designing SmudgedMath tasks.

**Norma Gordon**

Public Schools of Brookline, Massachusetts

**Peter Liljedahl**

Simon Fraser University, Burnaby, British Columbia, Canada

**Judy Larsen**

Simon Fraser University, Burnaby, British Columbia, Canada

**Regency Ballroom B, West Tower, Gold Level**

**118****So . . . You Have to Teach a Gifted and Talented Class?****6–8 Session**

Using STEAM-based activities in alignment with Common Core standards, we invite you to explore strategies to identify and teach gifted and talented students. Together, we will investigate research-based methods to motivate, inspire, and differentiate instruction in a gifted and talented class to help our students develop into a growth mindset.

**Anju Thalla**

MS 216 George J. Ryan, Fresh Meadows, New York

**Tatiana Etienne**

MS 216 George J. Ryan, Fresh Meadows, New York

**Acapulco, West Tower, Gold Level**



**119 STEM****STEM 4 ALL! Mathematical Practices and Design Process as a Framework to Engage All Learners****8–10 Session**

STEM can be a buzzword or can open a door for a student. This presentation will highlight how we can create and evaluate high-quality STEM lessons in our classroom through focusing on mathematical practices and the engineering design process. It will also explain how the application of current research can incorporate a more diverse set of learners.

**Brett Doudican**

Dayton Early College Academy/University of Dayton, Ohio

**Plaza Ballroom, East Tower, Green Level**

**120 ASSESS****Universal Design in Geometry through Project-Based Assessment****10–12 Session**

Students do not have the opportunity to demonstrate their understanding of geometry through traditional assessments. The project-based assessments demonstrated in this session include art, transformations (such as translations, reflections, and rotations), and mathematical reasoning through writing.

**Michelle Hale**

Aqsa School, Bridgeview, Illinois

**Monica King**

Crete-Monee High School, Crete, Illinois

**Grand Ballroom EF, East Tower, Gold Level**

**121 ASSESS****We Can Rebuild It, We Have the Technology: How Rich Tasks Can Make Assessment Better, Stronger****Coaches/Leaders/Teacher Educators Session**

Thanks to the ubiquity of rich mathematical tasks available through curricula and teacher websites, we have the ability like never before to radically rebuild student mindsets in math. In this session, we will explore concrete examples of tasks and systems of assessment that encourage student growth and promote teacher improvement.

**Geoff Krall**

New Tech Network, Fort Collins, Colorado

**Michigan 2, East Tower, Bronze Level**

**122 ASSESS****Why Do We Keep Talking about Data-Driven Math Instruction?****3–5 Session**

Teachers who use data-driven math instruction are highly effective. In this session, you will learn an easy-to-implement comprehensive assessment plan that combines a traditional approach with innovative authentic assessment that provides relevant data to inform instruction. Explore the roles of writing and exit tickets in driving math instruction.

**Ellen Edmonds**

W. H. Sadlier, Charlotte, North Carolina

**Columbus Hall JJ, East Tower, Gold Level**

**122.1 EW ASSESS****What it Takes to Make It Really Happen—Formative Assessment****3–5 Exhibitor Workshop**

Join this exciting workshop to learn and engage with ideas to make formative assessment real, in real classrooms, and in real time through the lens of the mathematical practices. We will look at technology to make this easier and more efficient. You'll walk away with increased knowledge and confidence to effect change.

**Pearson**

Chandler, Arizona

**Michigan 3, East Tower, Bronze Level**

**123 TOOLS****3D Printers in the Classroom: Instructional STEM Options for Elementary Students****Pre-K–2 Burst**

While 3D printers have existed in research laboratories, design studios, and other industries for several years, they are now becoming popular in K–12 classrooms as well. This session will share results from 3D printing design workshops for elementary students and the STEM concepts introduced as a result of these experiences.

**Candace Barriteau Phaire**

The College of New Rochelle, New York

**Columbus Hall EF, East Tower, Gold Level**



**124 STEM****A Mathematical Tour of the Grand Piano****General Interest Burst**

We've all heard that the piano is mathematical. But where, exactly is all that math? In this burst, a piano technician/math teacher will take you through algebra, geometry, algebra 2, trigonometry, and even math on the complex plane involved in creating the most extensively engineered acoustic musical instrument in common worldwide production.

**Vin Urbanowski**

Academy of Information Technology & Engineering, Stamford, Connecticut

**Columbus Hall GH, East Tower, Gold Level**

**125 CCL****Lessons from Singapore: What I Learned during My Fulbright Fellowship****General Interest Burst**

From January to June 2017, I learned in three Singaporean schools how they teach and learn algebra. I also attended class at the National Institute of Education in Singapore. Through my Fulbright Fellowship, I created a summer school algebra curriculum, heavily influenced by what I learned there. In this session, I'll share key components of what I discovered.

**Martha Mulligan**

Northside College Prep High School, Chicago Public Schools, Illinois

**Columbus Hall CD, East Tower, Gold Level**

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**126 JRNY****Making Math Relevant: Reflections from a Career Changer****10–12 Burst**

I am a new math teacher, having recently changed careers. I previously worked as an engineer and as a patent attorney, and I often reflect on how I can use my prior work experience to help students see how relevant mathematical skills and thinking are in a variety of disciplines. I'll share key aspects of what I have found.

**Eric George**

Chicago, Illinois

**Comiskey, West Tower, Bronze Level**

**127****Making Mathematics Accessible for All****General Interest Burst**

Accessibility is an essential component in creating equitable opportunities for students learning mathematics in self-contained, resource, and inclusion classrooms. Come explore lesson-planning protocols for creating access while maintaining appropriately high expectations and cognitive demands for all learners, including students with disabilities.

**Andrew Gael**

Cooke Center Academy, Manhattan, New York

**Grand Ballroom A, East Tower, Gold Level**

**128 CCL****Park City Math Institute Teacher Leadership Program: Come Join Us!****General Interest Burst**

The Teacher Leadership Program is a component of the Park City Math Institute. For more than 25 years this exceptional, three-week residential program, held in the beautiful mountains of Utah, has been enriching and inspiring teachers from all parts of the country. Come and learn from past participants how to become a part of this excellent PLC!

**Cindy Percival**

Roosevelt High School, Des Moines, Iowa

**Toronto, West Tower, Gold Level**



**130 TOOLS**

**scitsitatS PA—That's AP Statistics Flipped! How We Flipped Our Course and Doubled Our Enrollment**

**10–12 Burst**

Using Google Classroom, EdPuzzle, and YouTube, we created video lessons for our AP Statistics students to watch for homework. Students work collaboratively on problem sets or activities/simulations during the 48-minute class period. Course enrollment has more than doubled while AP test scores have increased. You too can flip your AP Stats class successfully!

**Candice Sagliano**

Lake Park High School, Roselle, Illinois

**Ben Bishop**

Lake Park High School, Roselle, Illinois

**Columbus Hall AB, East Tower, Gold Level**

**131 STEM**

**STEM Should Be STEAM: How to Bring Art into a Math Classroom**

**General Interest Burst**

Math is everywhere. Art is also everywhere. So why is it that mathematics and art are taught separately and are not incorporated together? How can one bring in art into a mathematics classroom? This talk will look at bringing art into a mathematics classroom through the use of constructions tools, tessellations, origami, and crochet.

**Kristine Dahlquist**

Hawaii Preparatory Academy, Kamuela

**Gold Coast, West Tower, Bronze Level**

**132**

**Teachers' Knowledge of Statistics**

**6–8 Burst**

In this session, I will discuss the findings of my dissertation study about teachers' pedagogical content knowledge in middle school as they are teaching measures of center. I will give examples of what teachers' knowledge of content, students, and teaching looks like, and I will discuss the implications for teaching.

**Dhimitraq Duni**

Illinois State University, Normal

**Grand Ballroom B, East Tower, Gold Level**

**133 CCL**

**What Can MTMS Do for You, and What Can You Do for MTMS?**

**6–8 Burst**

In this session, we will highlight some of the classroom-ready ideas that can be found in *Mathematics Teaching in the Middle School (MTMS)*, both from feature articles and regular departments. We will also discuss how you can share your own ideas with the journal. Work with the Editorial Panel to develop those ideas for articles or departments.

**Peter Wiles**

Eastern Illinois University, Charleston

**Columbus Hall KL, East Tower, Gold Level**





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## REGISTRATION HOURS

7:00 a.m.–12:00 p.m.

## EXHIBIT HOURS

8:00 a.m.–2:00 p.m.

## NCTM CENTRAL HOURS

8:00 a.m.–2:00 p.m.

## FIRE CODES

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



7:15 A.M.–7:45 A.M.

**134**

## **Regional Conference Overview & Orientation**

### **Workshop**

Hosted by members of the Board of Directors, this session will show you how to maximize your overall conference experience. Learn what's new or discover something you've missed in the past, find out how to navigate presentations, learn how to use the Conference App, and network with other attendees.

#### **Board of Directors**

National Council of Teachers of Mathematics, Reston, Virginia

**Grand Ballroom A, East Tower, Gold Level**

8:00 A.M.–9:00 A.M.

**135**

**ASSESS**

## **Creating Standards-Based Items for Common Assessments in Mathematics**

### **General Interest Session**

Common assessments are a vital component of the learning process. High-quality mathematics assessment items have specific characteristics and types. Come learn to identify and write these problem types, see how to create a standards-based testing blueprint, and learn a method for validating the items.

#### **Tyrone Martinez**

[@teachnext\\_tmb](#)

Education Consultant, Oak Lawn, Illinois

#### **Carol Larson**

Community Consolidated School District 181, Clarendon Hills, Illinois

**Michigan 2, East Tower, Bronze Level**

**136**

**CCL**

## **Elevating Teacher Knowledge and Student Discourse with Number Talks and Teacher Collaboration**

### **Pre-K–2 Session**

Learn how collaboration with number talks can change teacher practice and elevate student learning. We will discuss how developing a core group of leaders has a cascading effect to improve student learning. Participants will learn how to utilize number talks to improve teacher content knowledge and elevate the mathematical discourse among students.

#### **Pam Smith**

Webster Central School District, New York

#### **Brenda Ehinger**

Webster Central School District, New York

#### **Eric Blask**

Webster Central School District, New York

**Regency Ballroom A, West Tower, Gold Level**

**137**

**ASSESS**

## **Engaging and Inspiring Assessment Strategies to Promote Student Learning**

### **6–8 Session**

How can assessments motivate and engage each and every learner? How can they be used for learning? High-quality assessments, which include content and process standards, inform both teachers and students about what has been learned and what has not been learned yet. Come experience four actions needed to create a meaningful assessment process.

#### **Mona Toncheff**

Arizona Mathematics Partnership, Phoenix

#### **Sarah Schuh**

Consultant, Gresham, Oregon

**Grand Ballroom EF, East Tower, Gold Level**

**Thank you**  
to all of the volunteers  
who have helped  
make this conference a success!



**DLE** Design Learning Experiences

**EQUITY** Dismantling Barriers: Promoting Equity and Access

**EW** Exhibitor Workshop

**JRNY** A Student's Journey In Mathematics

**ASSESS** Assessment



**138 EQUITY****Extreme Equality in the Math Classroom****3–5 Session**

During the session, two proven math programs involving students of color will be introduced: Jump Math: an international curriculum founded by John Mighton, that focuses on avoiding cognitive overload and breaking challenges into manageable steps. And URock Math: an after-school tutoring program in Brooklyn that has produced remarkable results.

**Daryl Rock**

Rock Academic Services, Brooklyn, New York

**Columbus Hall IJ, East Tower, Gold Level**

**139 JRNY****From Counting to Calculus: What Stays the Same?****General Interest Session**

We tend to think of the work of calculus students as being very different from that of kindergarteners, but it really shouldn't be so. All learners can function as mathematicians. We'll examine this claim through tasks and student ideas across the K–12 curriculum.

**Christopher Danielson**

Saint Paul, Minnesota

**Grand Ballroom CD, East Tower, Gold Level**

**140 ASSESS****Gradient Assessment! Taking Your Students Where They Have Never Been Before!****8–10 Session**

Too many students are not proficient on high-stakes assessments because we have not prepared them sufficiently with assessments in the classroom. Gradient assessment will not only bridge this gap, but it will motivate your students to ask more “Why?”/“What if?” questions than you ever thought possible. Deep conceptual understanding is a test away.

**Jess McMurray**

Soda Springs High School, Idaho

**Regency Ballroom C, West Tower, Gold Level**

**141****Implementing Strategy Instruction to Improve the Problem-Solving Process for Struggling Students****3–5 Session**

Participants will learn how to incorporate cognitive strategy instruction for improving the learning and performance of math problem solving and reasoning skills by facilitating information processing through the use of graphic organizers. Participants will also learn how to embed self-regulated strategies to teach students self-monitoring.

**Jennifer Bond**

Ferguson-Florissant School District, Saint Louis, Missouri

**Joseph Sencibaugh**

Webster University, Saint Louis, Missouri

**Regency Ballroom B, West Tower, Gold Level**

**142 TOOLS****Math Modeling Comes Alive: Using Videos to Capture Data****10–12 Session**

Engage your students with real-world modeling problems. Collecting data from videos offers hands-on experiences that can deepen student knowledge of quadratic, exponential, and sinusoidal functions. We'll create models for water flow, ball bounce, and swing data. I will demonstrate the use of LoggerPro, share data sets, and provide classroom-ready handouts.

**Maria Hernandez**

North Carolina School of Science and Mathematics, Durham

**Plaza Ballroom, East Tower, Green Level**

**143 EQUITY****Mathematicians: Not Just “White Dudes”—Helping Students See Themselves as Mathematicians****General Interest Session**

Most of the mathematicians we speak about in class: Euler, Gauss, Pythagoras . . . are white men. Most of my students don't look like that, and as such, my students struggle to see themselves as mathematicians. Come hear about how I am changing that in my classroom. It is my students' favorite part of math class.

**Annie Perkins**

[@anniekperkins](https://twitter.com/anniekperkins)

Southwest High School, Minneapolis Public Schools, Minnesota

**Crystal Ballroom, West Tower, Green Level**



8:00 A.M.–9:00 A.M.

**144** **ASSESS**

## Understanding RtI in Mathematics

### Pre-K–2 Session

Response to instruction . . . What do we know? Why does it work? Entering first grade with weak knowledge of number concepts and operations is a sign that early intervention is necessary. The foundational building block of RtI is screening for at-risk status, particularly in the primary grades.

**Amy Schemmel Keller**

Grant Wood Area Education Agency, Cedar Rapids, Iowa

**Jeremiah McGraw**

Grant Wood Area Education Agency, Cedar Rapids, Iowa

**Acapulco, West Tower, Gold Level**

**145**

## Using the Mathematical Practices to Help All Students Gain Entry into SAT-Style Questions

### 10–12 Session

This session will provide teachers with strategies that can help all students gain entry into SAT-style problems. After our session, you will be able to naturally incorporate Standards for Mathematical Practice 2, 7, and 8 into your daily lessons. These tools will provide your students' with critical thinking skills, which will allow them to be successful.

**Sue Ellen Vozza**

Adlai E. Stevenson High School, District 125, Lincolnshire, Illinois

**Jennifer Parisi**

Adlai E. Stevenson High School, District 125, Lincolnshire, Illinois

**Valerie Tomkiel**

Adlai E. Stevenson High School, District 125, Lincolnshire, Illinois

**Michigan 1, East Tower, Bronze Level**

8:00 A.M.–9:00 A.M.

**145.1** **ew** **DLE**

## MYTH: "Build It and They Will Come."

## Truth: How Reality-Based Scenarios Can Attract Students to Mathematical Modeling

### 8–10 Exhibitor Workshop

Dive into unique modeling lessons that present engaging, high interest situations. Unlike traditional real-world problems, reality-based Mathematical Modeling lessons present students with the modeling conceptual category. You will engage in reality-based mathematical modeling that is more challenging and closely mirrors the work of STEM professionals.

**Pearson**

Chandler, Arizona

**Water Tower, West Tower, Bronze Level**

8:00 A.M.–9:15 A.M.

**146**

## 3-Act Tasks: Filling the Void of Mathematical Modeling in the Elementary Grades

### Pre-K–2 Workshop

As elementary educators we've misinterpreted the term "model" as simply the use of manipulatives. This is causing our students to miss the mark when it comes to modeling with mathematics. Through the use of 3-act tasks, we will explore what mathematical modeling is, what it looks like, and how we can support this work in our elementary classrooms.

**Graham Fletcher**

[@gfletchy](#)

Griffin-Spalding Schools, Griffin, Georgia

**Columbus Hall AB, East Tower, Gold Level**


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**147****CCL****Complex Instruction Consortium****10–12 Workshop**

The Complex Instruction Consortium (CIC) is a collaborative network of math educators dedicated to improving the quality of tasks and instruction in math classrooms. We focus on creating rich, meaningful, complex, and mathematically important tasks. Come learn more about the CIC and experience tasks firsthand.

**Gary Chu**
 @mrgarychu

Niles North High School, Skokie, Illinois

**Tina Nocella**

Adlai E. Stevenson High School, Lincolnshire, Illinois

**Jeff Harding**

Mundelein High School, Illinois

**Gold Coast, West Tower, Bronze Level****148****ASSESS****Developing Standards-Based Grading within Mathematics Classrooms****Coaches/Leaders/Teacher Educators Workshop**

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

**Darshan Jain**

Adlai E. Stevenson High School, Lincolnshire, Illinois

**Comiskey, West Tower, Bronze Level****149****Lesson Planning In Response to Student Thinking****3–5 Workshop**

Where does great lesson planning begin? It begins with looking at student work. Yesterday’s work, with its mathematical successes and struggles, can spark today’s learning experiences. In this session, we will share strategies we have used for eliciting ideas, analyzing student work, and purposefully planning lessons in response to student thinking.

**Kristin Gray**

Cape Henlopen School District, Lewes, Delaware

**Michael Pershan**

Saint Ann’s School, New York, New York

**Columbus Hall GH, East Tower, Gold Level****150****Let’s Help More Kids Understand If Relationships between Variables Are Proportional****6–8 Workshop**

We will experience two situations involving linear relationships between variables. Participants will use multiple representations (stories, tables, graphs, and equations) to justify which situations model proportional relationships between the variables. We will focus on ways to help kids develop this knowledge versus giving them rules.

**Jim Mamer**

Shawnee Middle School, Springfield, Ohio

**Columbus Hall CD, East Tower, Gold Level****Download speaker handouts!**

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



Friday



**151****Preparing and Planning for Instructional Routines That Engage All Learners****8–10 Workshop**

How does one plan to enact rich tasks with students? In this workshop, participants will experience an instructional routine called Contemplate then Calculate, and then select and plan a task to use with the routine. Participants will then practice using their task at their table groups and share how and why they selected this particular task.

**Jennifer Lee Kim**

New Visions for Public Schools, New York, New York

**Elizabeth Ramirez**

New Visions for Public Schools, New York, New York

**David Wees**

New Visions for Public Schools, New York, New York

**Grand Ballroom B, East Tower, Gold Level****152****Solving the Mysteries of Rational Number Division (One Example: Why Do We Invert and Multiply?)****3–5 Workshop**

Frequently, students learn an algorithm “just because” that’s how it’s done. When dividing fractions, why do we invert and multiply, or why is the quotient sometimes larger than the divisor? We’ll resolve these and other mysteries as we incorporate various models.

**John Ashurst**

@kiltedcyclist

T3 National Instructor, Baxter, Kentucky

**Lindsay Gold**

University of Dayton, Ohio

**Regency Ballroom D, West Tower, Gold Level****153****Teaching Geometry through Play in the Primary Grades****Pre-K–2 Workshop**

Participants will discuss key ideas in the geometry standards for prekindergarten to grade 2 and will engage in activities with a variety of materials, including puzzles and blocks, to develop skills for increasing the level of math talk in their classrooms and for increasing the complexity of children’s mathematical play over time.

**Amy Parks**

Michigan State University, East Lansing

**Columbus Hall EF, East Tower, Gold Level****154 TOOLS****Technology for the Math Classroom: How Should I Choose the One That Fits My Goals?****6–8 Workshop**

Which technology should I use with my students and why? Participants will use various types of technology, explore their pedagogical potential, and characterize them based on different factors. The session will help make informed decisions about selecting technology to support different learning goals. Bring your tablet/laptop to the session.

**Karina Hensberry**

University of South Florida, St. Petersburg

**Hagit Sela**

University of Florida, Gainesville

**Phil Vahey**

University of Florida, Gainesville

**Columbus Hall KL, East Tower, Gold Level**

Mingle, explore, and learn in the  
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8:00 A.M.–9:15 A.M.

**155 ASSESS**

## The Mathematics Classroom: What Are Our Goals and Are We Meeting Them?

8–10 Workshop

Preparing students to be 21st-century thinkers requires innovative learning environments. What does that look like in the mathematics classroom? Explore lessons from the field on how the OECD report “Ten Questions for Mathematics Teachers—and How PISA Can Help Answer Them” can expand teaching practices to facilitate an understanding of learning.

**Robin White**

Howard County Public Schools, Ellicott City, Maryland

**Toronto, West Tower, Gold Level**

**156 TOOLS**

## Trigonometry: Moving from SOHCAHTOA to a Functional Understanding Using GeoGebra

10–12 Workshop

This presentation will introduce participants to interactive activities that begin with a SOHCAHTOA understanding of trigonometry, and guide students to create the unit circle. Then we find all six trig functions on the circle and explore them as dynamic, periodic functions. All the activities use GeoGebra, so bring a laptop or tablet!

**Jenna Van Sickle**

Cleveland State University, Ohio

**Grand Ballroom A, East Tower, Gold Level**

9:30 A.M.–10:30 A.M.

**157 ASSESS**

## Assessing to Inform Teaching and Learning: Formative Assessment Techniques for EVERY Classroom!

General Interest Session

Math specialist and teacher participants will participate in activities which engage classroom-based formative assessment. These classroom-validated techniques are used to guide planning and teaching as well as monitor and assess learning. Everyday use of observations, interviews, Show Me, hinge questions, and exit tasks make a difference!

**Francis (Skip) Fennell**

Elementary Mathematics Specialists and Teacher Leaders Project, McDaniel College, Westminster, Maryland

**Beth Kobett**

Stevenson University, Baltimore, Maryland

**Jon Wray**

Stevenson University, Baltimore, Maryland

**Crystal Ballroom, West Tower, Green Level**

9:30 A.M.–10:30 A.M.

**158 STEM**

## Authentically and Meaningfully Integrating the “M” in STEAM: The Mathematics Matters!

3–5 Session

In this session, we will share three concrete examples of classroom-tested inquiries that meaningfully integrate all areas of STEAM: designing a prosthetic arm for a kindergartner, a paleontology investigation, and roller coaster engineering. Our discussion will focus on specific alignment to grades 3 through 5 CCSSM content and practices.

**Sarah Bush**

[@sarahbbush](https://twitter.com/sarahbbush)

University of Central Florida, Orlando

**Kristin Cook**

Bellarmine University, Louisville, Kentucky

**Richard Cox**

Bellarmine University, Louisville, Kentucky

**Michigan 1, East Tower, Bronze Level**

Friday



159

**Classroom Conversations to Support Geometric Reasoning**

3–5 Session

You may be familiar with number talks as a way to develop number sense, but how can this lesson structure be used to develop geometric thinking? Engage with tasks that help students to visualize shapes and reason about their properties. Learn about strategies to implement meaningful classroom discussions about geometric ideas.

**Rick Anderson**

Eastern Illinois University, Charleston

**Peter Wiles**

Eastern Illinois University, Charleston

Plaza Ballroom, East Tower, Green Level

160 **EQUITY****Differences in Language and Culture Impact Equity and Access—Right?**

Coaches/Leaders/Teacher Educators Session

Join us for a game that explores the relationship between communication and cultures. Experience challenges faced by individuals from a non-dominant culture. Reflect and discuss the impact that these differences have on learning mathematics. Use this game as a tool to begin discussions with colleagues about equity, access, and empowerment.

**Bob McDonald**

TODOS Mathematics for ALL, Tempe, Arizona

**Nora Ramirez**

TODOS Mathematics for ALL, Tempe, Arizona

Acapulco, West Tower, Gold Level

161 **ASSESS****Encouraging Mathematical Self-Reflection: Making Tutorials for Cryptoclub or Math Class**

6–8 Session

Making tutorials about solving problems or explaining procedures can help students become more self-reflective, build connections, and identify relationships, while teachers get assessment data. Learn how to develop students' abilities to make tutorials and self-assess using Cryptoclub materials designed to apply mathematics within cryptography.

**Catherine Kaduk**

Maplebrook, Naperville, Illinois

Michigan 2, East Tower, Bronze Level

162 **JRNY****Every Operation Tells a Story**

Pre-K–2 Session

When teachers expose children to a range of problem situations without prescribing strategies, children are able to build on what they have learned and apply it to more difficult problems. This session will investigate the early development of strategies for number operations using a variety of problem structures and literature.

**Lynn Rule**

MathRack, Wheaton, Illinois

EW Theater Riverside Center, East Tower, Purple Level

163

**Neighborhood Shapes: A K–2 Geometry Exploration**

Pre-K–2 Session

How can children construct a deep understanding of geometric concepts? Experience how students can develop big ideas around shapes and their attributes in ways that are meaningful, relevant, and fun. Through the lens of their neighborhood, students will study shapes, objects, and their attributes in order to create their own buildings.

**Yojairy Sands**

The Cathedral School, New York, New York

**Michael Demianiuk**

The Cathedral School, New York, New York

**Maria Peneda**

The Cathedral School, New York, New York

Regency Ballroom C, West Tower, Gold Level

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**164 EQUITY****Our Algebra 1 Gradebooks Hold the Key to Equity & Access: Assessing Proficiency without Percentages****8–10 Session**

Grading policies are overlooked as a leading cause of inequity because the ways they disadvantage students are unintentional and hard to detect. Especially in a gatekeeper course like algebra 1, the design of an assessment system can limit students' educational opportunities. Hear how teachers developed policies that removed barriers to success.

**Timothy Hudson**

DreamBox Learning, Bellevue, Washington

**Columbus Hall IJ, East Tower, Gold Level**

**165 ASSESS****Reflections on the PSAT/NMSQT and the SAT from the College Board Math Test Development Committee****10–12 Session**

The College Board administered a fully redesigned PSAT in October 2015 and a fully redesigned SAT in March 2016. Selected members of the SAT Test Development Committee will share experiences and impressions from their participation as SAT question reviewers for the College Board. Additionally, the Committee members will reflect on test data.

**Bill Trapp**

College Board, New York, New York

**Grand Ballroom EF, East Tower, Gold Level**

**166 EQUITY****Using the Concrete-Representational-Abstract Technique to Teach Algebra to Struggling Students****8–10 Session**

Participants attending this session will learn how to teach introductory algebra to struggling students by implementing the concrete-representational-abstract technique. Specifically, individuals will learn how to use manipulatives and hands-on activities for teaching algebraic expressions and solving equations at the concrete and pictorial level.

**Joseph Sencibaugh**

Webster University, Saint Louis, Missouri

**Malayka Ferhi**

Webster University, Saint Louis, Missouri

**Elaina Heintz**

Webster University, Saint Louis, Missouri

**Regency Ballroom B, West Tower, Gold Level**

**167 EQUITY****What Kind of Mathematics Education Is Worthy of Black Children?****General Interest Session**

Promises of equity for black learners in mathematics education have not come to fruition because equity for black learners is a delusion rooted in white imaginaries. I examine mathematics education not only as a white space but as an anti-black space. Further, I engage in a radical (re)imagining of a mathematics education worthy of black learners.

**Danny Martin**

University of Illinois at Chicago

**Grand Ballroom CD, East Tower, Gold Level**

Learn more about **the Math Forum** resources—Ask Dr. Math, Teacher2Teacher, Problems of the Week, Math Tools, and more! Stop by **NCTM Central**.





**168 STEM****You'd Never Expect It: The Surprising Careers That Involve STEM****6–8 Session**

When we think about STEM careers, the standard scientist, engineer, and mathematician come to mind. But what about all of the other careers that our students aspire to have someday in the future? In this session, we will share activities focused on authentic STEM experiences through exploring career applications that emphasize the M in STEM.

**Kathryn Rupe**

Illinois Institute of Technology, Chicago

**Judy Lederman**

Illinois Institute of Technology, Chicago

**Regency Ballroom A, West Tower, Gold Level**

**168.1 EW TOOLS****Overcoming the Relevance Barrier****6–8 Exhibitor Workshop**

If your kids are into it, STEM is in it too. Come explore a new lesson series on the STEM Behind Cool Careers. Learn how technology can be used to engage your students in challenging mathematics they experience every day. Get free resources for middle grades through pre-calculus you can use in your classroom right away.

**Texas Instruments**

Dallas, Texas

**Michigan 2, East Tower, Bronze Level**

**168.2 EW DLE****Closing the Gap: College and Career Readiness with MyMathLab for School****10–12 Exhibitor Workshop**

Are your high school students ready for their next step in life? With online assignments, individualized study plans, etext, and multimedia library, MyMathLab for School lets students grow and strengthen their math skills in a digital environment to prepare them for college, career, and life. We will dive into the unique features of MyMathLab for School, take a look at various implementation models, and explore course offerings available to you. You will also leave with an code to start your own real account!

**Pearson**

Chandler, Arizona

**Water Tower, West Tower, Bronze Level**

**169 ASSESS****Assessment and Feedback: Connecting the Two in a Practical Way****8–10 Workshop**

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

**Sharon Rendon**

[@srendon2](#)

CPM Educational Program, Summerset, South Dakota

**Karen Wootton**

CPM Educational Program, Odenton, Maryland

**Columbus Hall AB, East Tower, Gold Level**

**170 CCL****Coaching Practices to Build a Dynamic Learning Culture****3–5 Workshop**

How do coaches build effective relationships with teachers to promote high-quality mathematics instruction? Presenters will share tools and structures they have used in over 30 school districts in the Chicagoland area. We will highlight methods that advance generative reflection and discussions aimed at improving student engagement and learning.

**Margie Pligge**

[@Margie.Pligge](#)

Learning Science Research Institute, University of Illinois at Chicago

**Nancy Mueller**

Learning Science Research Institute, University of Illinois at Chicago

**Joanne Baker**

Learning Science Research Institute, University of Illinois at Chicago

**Columbus Hall CD, East Tower, Gold Level**



**171** **CCL**

### **Standing Up for ALL Students: Strategies for Creative Insubordination**

#### **8–10 Workshop**

Advocating for our students often requires understanding and responding to political situations at work. In this active workshop, we provide strategies to analyze the power dynamics in specific and real scenarios that can be generalized to other contexts. Be ready to role-play, reflect, and converse with others!

**Rochelle Gutiérrez**

University of Illinois at Urbana-Champaign

**Esther Song**

Lindblom Math & Science Academy, Chicago, Illinois

**Columbus Hall GH, East Tower, Gold Level**

**172** **JRNY**

### **Conceptualizing Surface Area Measurement in Middle School Classrooms: A Sequence of Tasks**

#### **6–8 Workshop**

Join in a discussion on student thinking about surface area. Participate in solving and see student work on surface area tasks designed to bring out students' conceptual understanding. Leave this session with tasks that can be used in your classroom immediately.

**Pamela Beck**

Illinois State University, Normal

**Grand Ballroom A, East Tower, Gold Level**

**173** **TOOLS**

### **Constructing Visions of Strategic Tool Use: The Equilateral Triangle Task**

#### **10–12 Workshop**

This workshop will engage participants in a task focused on using appropriate tools strategically. We will develop methods for constructing equilateral triangles using a range of tools from paper to electronic. We'll discuss strengths, limitations, and properties of tools as well as justify the methods developed. Laptops/tablets are encouraged.

**Joshua Hertel**

University of Wisconsin–La Crosse

**Toronto, West Tower, Gold Level**

**174**

### **Early Childhood Number Sense and Subitizing with Manipulatives**

#### **Pre-K–2 Workshop**

Overview the skill progression of early math from infancy through kindergarten while assessing the influence of manipulatives on development in pre-number activities, number sense, subitizing, and counting. Engage in hands-on manipulative based activities and develop plans for the use of board games in teaching early math as well.

**Leigh Kraemer-Naser**

[@CurrSolutionCtr](#)

Curriculum Solution Center, Erie, Pennsylvania

**Columbus Hall KL, East Tower, Gold Level**

**175**

### **Equity and Excellence: Fractions on the Number Line for ALL Students**

#### **3–5 Workshop**

This session will focus on increasing teachers' conceptual understanding of fractions on the number line to be more effective in designing learning experiences for students. Materials can be adapted to the classroom. Best practices to support English learners will be included. Have fun learning and interacting with others about fraction sense!

**Susie Hakansson**

Retired, Venice, California

**Columbus Hall EF, East Tower, Gold Level**

**176**

### **How Do We Get Them to Talk? Classroom Participation during Math Lessons**

#### **6–8 Workshop**

Many students find participation in class activities overwhelming due to, among other reasons, lack of mathematical language and right guidance. This workshop provides an impetus for helping such students to move from silent observers to active participants in the classroom. Focus will be on developing communication skills through mathematics activities.

**Janet Omitoyin**

University of Illinois at Chicago

**Comiskey, West Tower, Bronze Level**

Friday



**177** **CCL****New and Preservice Teachers Workshop****General Interest Session**

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

**David Barnes**

National Council of Teachers of Mathematics, Reston, Virginia

**Gold Coast, West Tower, Bronze Level****178****Rehearsing Instructional Routines That Engage All Learners****8–10 Workshop**

Have you ever rehearsed teaching with other teachers? Rehearsals are an ideal way for groups of teachers to build consensus around teaching and learning. In this workshop, we'll all participate in a rehearsal of an instructional routine called Contemplate then Calculate. We'll then discuss how rehearsal experiences can transform teaching practice.

**Liz Ramirez**

New Visions for Public Schools, New York, New York

**Sara Toguchi**

New Visions for Public Schools, New York, New York

**David Wees**

New Visions for Public Schools, New York, New York

**Grand Ballroom B, East Tower, Gold Level****179****Rethinking Review Day****6–8 Workshop**

Throw out those old, dull review worksheets. Our session will explain alternative protocols to shift how review of content is structured in your class. Using formative assessments in conjunction with high-interest activities, we will make review day a personalized learning experience for your students.

**Kelly Rooney**

Evanston/Skokie School District 65, Evanston, Illinois

**Tyrone Martinez**

Education Consultant, Oak Lawn, Illinois

**Regency Ballroom D, West Tower, Gold Level****180** **JRNY****Culture and Identity: Humanizing Mathematics****6–8 Session**

How does a student's culture and identity shape their journey in mathematics education? How does pedagogy impact a student's engagement and success in mathematics? I will share examples of how teachers embedded culturally relevant pedagogy, and I will share my own experiences and projects as a classroom teacher. Please share your experiences as well!

**Jennifer Dao**

Nichols Middle School/Northeastern University, Evanston, Illinois

**Plaza Ballroom, East Tower, Green Level****181** **TOOLS****Electronic vs. Paper Textbook Presentations of Various Aspects of Mathematics****General Interest Session**

Textbooks now appear in paper form; in electronic form for computers, tablets, or phones; and in hybrids. Some aspects of mathematics seem better suited for one form than another. This talk discusses the platforms with regard to teaching various aspects of mathematics: vocabulary and notation, deduction, modeling, algorithms, and representations.

**Zalman Usiskin**

University of Chicago, Illinois

**Grand Ballroom CD, East Tower, Gold Level****182****Evaluating Performance Tasks for Effectiveness****6–8 Session**

Performance tasks help students demonstrate the internalization of knowledge. Session participants will learn the key features of well-written performance tasks, how to quickly evaluate resources for effectiveness, and how to infuse their teaching with well-written performance tasks to create a culture of critical thinking in their classrooms.

**Jan Scott**

Houghton Mifflin Harcourt, Boston, Massachusetts

**Dennis Ortman**

Houghton Mifflin Harcourt, Boston, Massachusetts

**Regency Ballroom C, West Tower, Gold Level**



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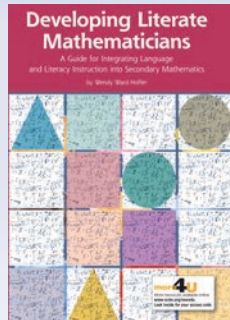
MATH IS ALL AROUND US

## Developing Literate Mathematicians: A Guide for Integrating Language and Literacy Instruction into Secondary Mathematics

BY WENDY WARD HOFFER

How can we integrate literacy instruction authentically into mathematics content to support mathematical understanding? Busy secondary mathematics teachers who seek to respond to the needs of their students and the demands of the Common Core State Standards will welcome this book, which offers lively classroom examples, usable research, and specific ideas and resources. Enrich your students' understanding of mathematics by attending to reading, vocabulary, discourse, and writing through a workshop model.

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## Putting Essential Understanding of Geometry and Measurement into Practice in Grades 3–5

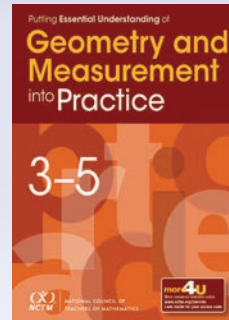
BY KATHRYN CHVAL,  
JOHN LANNIN, AND  
DUSTY JONES

KATHRYN CHVAL,  
VOLUME EDITOR

BARBARA J. DOUGHERTY,  
SERIES EDITOR

Do your students have “concept images” that limit their ideas of shapes to specific examples, oriented in particular ways? Do they confuse the size of an angle with the length of the rays in a drawing of an angle? This book demonstrates how to use multifaceted knowledge to address the big ideas and essential understandings that students must develop for success with geometry and measurement—not only in their current work, but also in higher-level mathematics and a myriad of real-world contexts.

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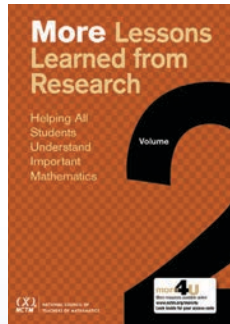
## More Lessons Learned from Research, Volume 2: Helping All Students Understand Important Mathematics

EDITED BY EDWARD A. SILVER  
AND PATRICIA ANN KENNEY

*Applying research to strengthen teaching practice and ensure students' success in mathematics*

More than seventy years of research point to the importance of teaching mathematics for understanding. Successful students actively construct understanding rather than passively receive knowledge. Implications of this fundamental lesson from research are explored in different ways through twenty-four chapters presented in this book. Chapters cover investigations of a wide range of topics, approaches, and settings, and mathematics teachers at all levels will find examples of research that are relevant to the challenges they face.

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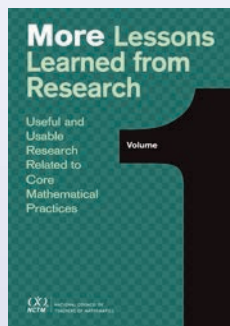


## DON'T MISS! More Lessons Learned from Research, Volume 1

EDITED BY EDWARD A. SILVER

*Helps to link classroom teachers to all that original research has to offer*

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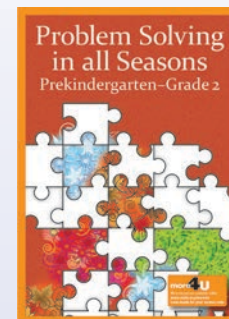


## Problem Solving in All Seasons, Grades 3–5

BY KIM MARKWORTH, JENNI MCCOOL,  
AND JENNIFER KOSIAK

Holidays and seasonal activities offer perfect backdrops for mathematical tasks that can be related to other topics and themes in the classroom. This book delivers thirty-six appealing, real-world mathematical tasks, arranged in grade-level order, to engage young learners in problems tied to the Common Core and designed to allow children to participate in the Common Core Standards for Mathematical Practice. Each task includes a complete implementation guide, and handouts and ancillary materials can be accessed online. This is your all-in-one practical handbook for problem solving in the primary years.

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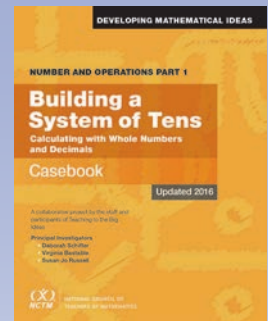


## DON'T MISS! Problem Solving in All Seasons, Pre-K–Grade 2

BY KIM MARKWORTH,  
JENNI MCCOOL, AND  
JENNIFER KOSIAK

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## ADDITIONAL NEW TITLES

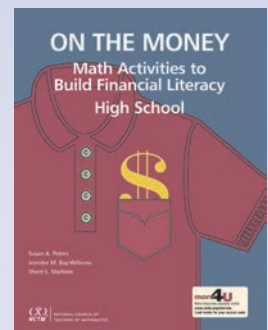


## Developing Mathematical Ideas: Building a System of Tens, Casebook and Facilitators Guide

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## On the Money: Math Activities to Build Financial Literacy in High School

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## Annual Perspectives in Mathematics Education 2016

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## Discovering Lessons for the Common Core Standards in Grades 9–12

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**183 EQUITY****Examining Tier 1 and Tier 2 Mathematics Instruction: Supporting Students Who Struggle****3–5 Session**

When focusing on Multi-Tiered Systems of Support, a goal is to develop highly engaging Tier 1 instruction and Tier 2 Interventions for students who struggle—particularly students with disabilities. This session considers interventions and assessments using multiple strategies for learning number, operations, and algebraic thinking.

**Karen Karp**

Johns Hopkins University, Baltimore, Maryland

**Crystal Ballroom, West Tower, Green Level**

**184 EQUITY****I Know, You Know, We All Know—Access for All (to Math Content)****Pre-K–2 Session**

As educators, it is our responsibility to provide equitable access to math content for ALL students. The Three Reads Strategy will be introduced as a tool to provide such access. Participants will learn how to implement this strategy in their classrooms and see how it has supported students in accessing mathematically rich word problems in CPS.

**Karen Hicks**

Chicago Public Schools, Illinois

**Sharonda Thomas**

Chicago Public Schools, Illinois

**Acapulco, West Tower, Gold Level**

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

**185 CCL****Learning Labs: Coaching, Collaborating, and Building Capacity within a PLC****Coaches/Leaders/Teacher Educators Session**

Do you feel as if teaching and learning happen in isolation? Come explore a professional learning model, Learning Labs, where coaches and teachers across all content areas learn together. This model empowers teachers in their learning, creates a collaborative coaching culture, and puts students at the forefront of all instructional decision making.

**Kristin Gray**

Cape Henlopen School District, Lewes, Delaware

**Erin Gannon**

Cape Henlopen School District, Lewes, Delaware

**Regency Ballroom B, West Tower, Gold Level**

**186****Talking with Our Hands: Exploring Gesture in the Mathematical Learning****Pre-K–2 Session**

Gesture provides teachers and students with an additional, nonverbal layer to engage and communicate mathematically. Such gestures may, alternately, enhance, or confound key ideas in a lesson. In this presentation, participants will explore, via video recordings, both teachers' and students' use of gesture in varying mathematical contexts.

**Jonathan Thomas**

University of Kentucky, Lexington

**Columbus Hall II, East Tower, Gold Level**

**187 TOOLS****The Hybrid Flipped Math Classroom: Increasing Discourse and Solving Problems****8–10 Session**

As the flipped model grows increasingly popular, teachers are met with new challenges. These include promoting classroom discourse and fostering rich exploration and problem-solving experiences for their students. Bill will discuss the many structures and technology tools teachers can use to create these important experiences for their students.

**William Tozzo**

Bedford Schools, New York

**Grand Ballroom EF, East Tower, Gold Level**



188

## Transdisciplinary Learning: Making Academics Relevant for All Students

### General Interest Session

Economically, racially, and ethnically diverse Evanston Township High School has used out-of-the-box thinking to create transdisciplinary innovation in their school. Administrators and teachers will discuss their innovative courses, Geometry in Construction and Algebra in Entrepreneurship, as well as glimpses of new ideas on the horizon.

Dale Leibforth

[@DaleLeibforth](#)

Evanston Township High School, Illinois

Maryjoy Heineman

Evanston Township High School, Illinois

Erin Mancini

Evanston Township High School, Illinois

Michigan 1, East Tower, Bronze Level

189

STEM

## Uncovering the Mathematics in Art Sculpture: A STEAM Activity in Your Community

### 10–12 Session

STEAM is a hot topic in education. Students and teachers can engage in applications of mathematics through study of art sculpture. We share learning activities using sculptures from the Nathan Manilow Sculpture Park, and connect these activities to standards. We also offer suggestions for finding sculptures to mathematize in your own neighborhood.

Angela Thompson

Governors State University, University Park, Illinois

Anthony Barajas

Governors State University, University Park, Illinois

Stanislava Marrs

Governors State University, University Park, Illinois

Regency Ballroom A, West Tower, Gold Level

190 EQUITY

## What Does It Mean to Be “Disabled”?—Insights about Special Learners from ICME 13

### General Interest Session

We will share insights on special education from a global perspective gained from attending the 13th International Congress on Mathematics Education. We will share strategies for effective teaching, pose questions dismantling the notion of mathematics “disability,” and explore ways in which environments themselves may disable learners.

Rebecca Borowski

Indiana University, Bloomington

Amber Candela

University of Missouri–St. Louis

Shawna Veit

University of Missouri–St. Louis

Michigan 2, East Tower, Bronze Level

190.1

EW

## Bridges Intervention: A New Elementary Math Intervention Program

### 3–5 Exhibitor Workshop

Learn about Bridges Intervention, offering targeted, high-quality instruction matched to student needs. Tier 2 and 3 students in K–5 work with models that spur thinking and engagement—starting with manipulatives, moving to two-dimensional representations and then mental images. Organized by content, progress monitoring is key to the program.

The Math Learning Center

Salem, Oregon

Michigan 3, East Tower, Bronze Level

190.2

EW

JRNY

## What Does a Coherent Curriculum Really Look Like?

### Coaches/Leaders/Teacher Educators Exhibitor Workshop

Quality curriculum shouldn’t just say it’s coherent, it should feel coherent. Join Great Minds for an interactive workshop where you’ll see and feel the coherence in our comprehensive PK–12 Eureka Math curriculum. Discover how students benefit from expertly crafted learning experiences, from whole number addition to polynomial multiplication.

Eureka Math/Great Minds

Washington, D.C.

EW Theater Riverside Center, East Tower, Purple Level

Friday



191

**Designing Differentiated Mathematics Lessons****General Interest Burst**

As our nation grows increasingly diverse, the culture of classrooms also become highly diverse. As a result, classroom teachers are challenged with meeting the needs of each and every learner. This session will provide participants with ideas for differentiating mathematics lessons and activities by scaffolding standards to the needs of learners.

**Tashana Howse**

Georgia Gwinnett College, Lawrenceville, Georgia

**Regency Ballroom D, West Tower, Gold Level**192 **EQUITY****Discrete Math—  
An Option for All Seniors!****10–12 Burst**

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

**Nicole Flores**

Chicago Public Schools, Illinois

**Beth Runkel**

Chicago Public Schools, Illinois

**Toronto, West Tower, Gold Level**192.1 **JRNY****Quantitative Analysis: An Alternative to Calculus and Statistics****10–12 Burst**

Two years ago, our school met with community leaders to learn about the mathematical skills that their employees need regardless of their direct connection to math. This burst will outline our senior-level math course, quantitative analysis, and how the course was created to build a rigorous curriculum that is focused on real-world community needs.

**Brett Doudican**

Dayton Early College Academy, Ohio

**Grand Ballroom B, East Tower, Gold Level**193 **STEM****Finding the Math Models in Model Rocketry: Building, Calculating, and Flying****10–12 Burst**

For physics teachers, model rocketry is a demonstration of Newton's laws. For the math teacher, model rocketry is a font of rigorous modeling opportunities for teaching and contextualizing algebra 1, geometry, algebra 2, and precalculus skills and concepts. Find the hidden mathematics of model rocketry in this burst.

**Vin Urbanowski**

Academy of Information Technology &amp; Engineering, Stamford, Connecticut

**Columbus Hall EF, East Tower, Gold Level**194 **ASSESS****Harnessing the Power of Student Reflection to Increase Learning****3–5 Burst**

Dewey said, "We do not learn from experience; we learn from reflecting on experience." Having students reflect on assessments encourages true understanding. Reflection helps to set goals and to guide instruction and student growth. Reflection makes learning stick. When students learn how to and have time to reflect, student achievement increases.

**Rachel Manjarres**

@Rachel6325

Woodridge School District 68, Illinois

**Diana Parker**

Woodridge School District 68, Illinois

**Grand Ballroom A, East Tower, Gold Level**

195

**Increasing Discourse in the Math Classroom****6–8 Burst**

We know that dialogue in the mathematics classroom is essential to engage each and every student and develop their understanding of concepts. Hear some easy-to-implement ways to increase the level of dialogue in your class!

**Kevin Dykema**

Board of Directors, National Council of Teachers of Mathematics; Mattawan Middle School, Michigan

**Comiskey, West Tower, Bronze Level**



**196**

## Is the Success of Gestured Instruction Affected by Students' Preexisting Incorrect Math Strategies?

**Pre-K–2 Burst**

This study seeks to explain the interaction of internal and external factors in children's math learning. We do so by analyzing the effect of math instruction with or without gesture, and how incorrect strategies that children use to solve unfamiliar math problems may influence the effectiveness of instructor techniques for learning math concepts.

**Theodora Koumoutsakis**

University of Chicago, Illinois

**Andrew Mistak**

Northeastern Illinois University, Chicago

**Amena Khan**

Northeastern Illinois University, Chicago

**Columbus Hall KL, East Tower, Gold Level**

**197****STEM**

## K–2 Science Technology Engineering and Mathematics Activities for Understanding Wind Turbines

**Pre-K–2 Burst**

K–2 STEM concepts using wind turbine curriculum materials and online resources will be shared. These tasks are appropriate for schools with or without an on-site wind turbine.

**Kim Hartweg**

Western Illinois University, Macomb

**Abha Singh**

Western Illinois University, Macomb

**Gold Coast, West Tower, Bronze Level**

**198****ASSESS**

## Quick and Effective Formative Assessment Strategies

**General Interest Burst**

Do you want to use daily formative assessment, but feel like you struggle to implement it effectively? We will present practical strategies for utilizing formative assessment in the math classroom that are easy to plan and can be quickly analyzed to have an immediate impact on your instruction.

**Pauline Zdonek**

School District 89, Melrose Park, Illinois

**Scott Wold**

School District 89, Melrose Park, Illinois

**Columbus Hall AB, East Tower, Gold Level**

**199****JRNY**

## The Tyranny of the Axes, or, Lost on the Coordinate Plane

**General Interest Burst**

Many students have difficulty understanding graphs on the coordinate plane. One source of this difficulty may be that students understand coordinates in terms of a path from the origin as opposed to a general understanding of left-right, down-up. Explore ways to help students develop a better sense of graphs on coordinates.

**Steven Starr**

Retired, Chicago Public Schools, Illinois

**Columbus Hall CD, East Tower, Gold Level**

12:15 P.M.–1:15 P.M.

**199.1****EW****TOOLS**

## Hands-On Operations: Using Manipulatives for Understanding of ALL Four Operations

**3–5 Exhibitor Workshop**

Come use place-value manipulatives to understand and practice addition, subtraction, multi-digit multiplication, and long division algorithms for whole numbers and decimals. Learn how to help all learners master the move from concrete to the representation to the ultimate abstract algorithm with a deep understanding of regrouping and place value.

**Singapore Math**

Tualatin, Oregon

**EW Theater Riverside Center, East Tower, Purple Level**

**TOOLS**

Intentional, Effective Use  
Of Tools And Technology

**CCL**

Professionalism: Building Capacity,  
Collaboration, and Leadership

**STEM**

Stem: Where's The M?

Friday



**200 EQUITY****Black (Math) Lives Matter: Four Ways Math Reform Fails Black Communities and What to Do about It!****General Interest Session**

We can create communities of competent, creative, and engaged black students of mathematics when we are honest about the four prevailing forces that challenge mathematics teachers, leaders and reformers. We acknowledge that the boldness of 21st-century math reform has sputtered in black communities and present ways the movement can be refitted.

**Lou Matthews**

Bermuda Public Schools, St. David's, Bermuda

**Rebeka Matthews Sousa**

Bermuda Public Schools, St. David's, Bermuda

**Crystal Ballroom, West Tower, Green Level**

**201 CCL****Building Capacity by Coaching Coaches****Coaches/Leaders/Teacher Educators Session**

Math coaches often do not receive the training that they need to do their job. Come learn from our work coaching coaches in urban middle schools. We will discuss specific ways we helped coaches develop their skills in leading learning walks, giving feedback, fostering professional learning cycles, implementing lesson study, and more.

**Nicora Placa**

Hunter College, New York, New York

**Michigan 2, East Tower, Bronze Level**

**203 TOOLS****Create Visible Learners in the Mathematics Classroom Using Technology****6–8 Session**

This session will emphasize how to transform a math classroom from compliant teenagers to students who own their learning using technology. Participants will gain tools and strategies to create visible learners while engaging in talk about learning. Through videos, student work samples, and pictures, participants will take away useful tools.

**Christy Vehe**

[@Vehemath](https://twitter.com/Vehemath)

Valley View School District 365U, Romeoville, Illinois

**Nicole Sangpeal**

Valley View School District 365U, Romeoville, Illinois

**Regency Ballroom B, West Tower, Gold Level**

**204 JRNY****From Counting to Problem Solving: Supporting the Development of Understanding for Each Student****Pre-K–2 Session**

Beginning problem solving can seem challenging for students and teachers. This session will focus on how to use students' ideas of counting (including partial ideas) to support their problem solving. Video examples of how to support the connection between counting collections and problem solving will be provided and discussed.

**Megan Franke**

University of California, Los Angeles

**Grand Ballroom CD, East Tower, Gold Level**

**205****Let Us Teach Wondering****8–10 Session**

Progressive math curricula see math as about persevering in solving problems, making connections, and thinking through complex tasks. These are important, but they miss a fundamental mathematical activity that ties them: wondering. When students extend, generalize, and make conjectures, they own the mathematics, becoming mathematicians themselves.

**Paul Karafiol**

Lake View High School, Chicago, Illinois

**Michigan 1, East Tower, Bronze Level**

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**206****Math Games: No Seriously . . . These Are Games—Winners and Learners****6–8 Session**

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

**Susan Chadaz**

Garland Elementary School, Tremonton, Utah

**Acapulco, West Tower, Gold Level****207****CCL****Professional Learning Communities (PLCs): Teacher Collaboration Strategies for Student Success****General Interest Session**

Learn about productive ways to utilize student work, video of lessons, assessment data, and PLC protocols to improve teaching practices and increase student achievement in mathematics. Strategies included in this presentation are the product of a successful three-year school improvement grant at Peoria High School in Peoria, Illinois.

**Kelsey Clarkson**

Peoria High School, Illinois

**Regency Ballroom A, West Tower, Gold Level****208****TOOLS****Ready, Set, Code!—Integrating Computer Programming into Your Math Curriculum****3–5 Session**

Curious how computer programming fits into your classroom? Learn how to incorporate coding into daily lesson plans, starting with mini challenges for fourth graders and building into full-scale projects for middle schoolers and beyond. We will even play with writing a bit of code ourselves, so make sure to bring a device!

**Hannah Ross**

Milwaukee Montessori School, Wisconsin

**Plaza Ballroom, East Tower, Green Level****209****ASSESS****Rethinking Assessment: A Skill We Develop with Our Students, and a Responsibility We Share****10–12 Session**

Quizzes, tests, and assignments . . . how can we foster students' capacity to assess their understanding? How do we give students feedback on their learning process and on how they convey their understanding? We will share strategies that guide our next actions as teachers—and students' next actions as engaged learners—before and after an assessment.

**Scott Galson**

Walter Payton College Prep High School, Chicago, Illinois

**Benjamin Walker**

Walter Payton College Prep High School, Chicago, Illinois

**Grand Ballroom EF, East Tower, Gold Level**



**211**

## Comparing Use of Structure (SMP 7) in Mathematical and Statistical Tasks

**6–8 Workshop**

Standard for Mathematical Practice 7 calls for students to look for and make use of structure, but structure in math tasks has important differences from structure in statistical tasks. Compare and contrast SMP 7 in math and statistical tasks. Learn how to support students' use of structure in both settings. Walk away with SMP 7–focused tasks you can use tomorrow!

**Stephanie Casey**

Eastern Michigan University, Ypsilanti, Michigan

**Jonathan Bostic**

Bowling Green State University, Ohio

**Gold Coast, West Tower, Bronze Level**

**212**

**JRNY**

## Developing a Deeper Understanding of Mathematical Modeling in K–Grade 5

**Coaches/Leaders/Teacher Educators Workshop**

Join us as we explore Standard for Mathematical Practice 4 (Model with mathematics) across K–grade 5 through tasks that require students to use models to solve challenging tasks. We will examine student work samples and create a display to better understand how mathematical modeling progresses across the elementary grades.

**Mary Ellen Dairyko**

UChicago STEM Education, Illinois

**Rachel Muren**

UChicago STEM Education, Illinois

**Amanda Zimolzak**

UChicago STEM Education, Illinois

**Toronto, West Tower, Gold Level**

**213**

## Developing Algebraic Thinking and Problem Solving without the "X's"

**Pre-K–2 Workshop**

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

**Donna Knoell**

Consultant, Shawnee Mission, Kansas

**Columbus Hall AB, East Tower, Gold Level**

**214**

**TOOLS**

## Facilitating Mathematical Conversations with Desmos Activities

**8–10 Workshop**

Teachers can use Desmos activities to facilitate mathematical conversations between students. These conversations can help guide learning, clarify understandings, and encourage precise communication. The use of teacher tools, such as the dashboard, pacing, and anonymity will be modeled and discussed. All Desmos activities and tools are free!

**Adam Poetzel**

[@AdamPoetzel](https://twitter.com/AdamPoetzel)

University of Illinois at Urbana-Champaign

**Anna Scholl**

Xavier High School, Cedar Rapids, Iowa

**Columbus Hall EF, East Tower, Gold Level**

## The NCTM Annual Meeting & Exposition is coming up!

Washington D.C. | April 25–28, 2018



Friday



**216****Hanging Out on a Number Line: You're on the Spot!****3–5 Workshop**

Get up and move as you physically demonstrate your understanding of numbers, operations, and algebraic reasoning. This powerful workshop helps students see and feel position on a number line. Number sense and reasoning are needed to locate your spot! Answer the following: The endpoints are  $\frac{3}{4}$  and  $1\frac{3}{4}$ . Where are you located if you are  $1\frac{1}{3}$ ?

**Laurie Boswell**

The Riverside School, Franconia, New Hampshire

**Columbus Hall GH, East Tower, Gold Level****217****Math and Art Integration for Engagement and Enrichment****3–5 Workshop**

Participants will engage in two different math lessons revolving around art. One will focus on making art inspired by mathematical structure and one on doing mathematics inspired by a piece of art. We will discuss the use of art to create engaging problems, to lower barriers to participation, and to increase student ownership of results.

**John Golden**

Grand Valley State University, Allendale, Michigan

**Heather Minnebo**

West Michigan Academy of Arts and Academics, Spring Lake

**Columbus Hall KL, East Tower, Gold Level****218 ASSESS****Maximum Info in Minimum Time: Grading and Scoring Strategies That Help You Work Smarter, Not Harder****6–8 Workshop**

Grading with checks and x's takes minimum time. Reading, digesting, and giving meaningful feedback on student responses gives maximum info, but is time consuming and not always possible. I'll share strategies to spend as much time on "grading" as it took students to produce the work. You can reclaim your time and have formative data. Win-win!

**Belinda Thompson**

LearnZillion, Washington, D.C.

**Grand Ballroom B, East Tower, Gold Level****219 TOOLS****The Struggle Is Real: Anticipating Student Misconceptions****6–8 Workshop**

How do you respond to student misconceptions in your classroom? Often we fail to actively envision how our students might approach and reason through a given task. Participants will anticipate student responses before engaging with a virtual student group in a live classroom.

**Derek Pipkorn**

Mequon-Thiensville School District, Mequon, Wisconsin

**Katelyn Albright**

Mequon-Thiensville School District, Mequon, Wisconsin

**Comiskey, West Tower, Bronze Level****220 EQUITY****Stats Trumps Hate****10–12 Workshop**

We will explore how to engage statistics learners in topics of social justice. You will learn how to find resources, discuss strategies to have conversations with your student population, and discover how to incorporate these ideas of justice into the classroom and curriculum in a way that empowers students to use math to change the world.

**Megan Schmidt**

St. Francis High School, Minnesota

**Carl Oliver**

City-As-School, Brooklyn, New York

**Grand Ballroom A, East Tower, Gold Level**

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1:30 P.M.–2:45 P.M.

## 221 **STEM**

### STEM Storytelling: Using Picture Books to Integrate Mathematics

#### Pre-K–2 Workshop

Join us for two integrative STEM activities based upon the picture books “Listen to Our World” and “The Most Magnificent Thing.” Participants will engage in hands-on activities using manipulatives to classify animals into “habitats” and then design and build a pet transport. Counting, graphing, working with money, and measuring length will be emphasized.

**Lindsey Herlehy**

Illinois Mathematics and Science Academy, Aurora

**Karen Togliatti**

Illinois Mathematics and Science Academy, Aurora

**Columbus Hall CD, East Tower, Gold Level**

3:00 P.M.–4:00 P.M.

## 222 **TOOLS**

### “Who Wants to Be a Millionaire”: A Contestant’s (Mathematical) Perspective

#### General Interest Session

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

**Mike Reiners**

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

**Grand Ballroom CD, East Tower, Gold Level**

## 223

### Creating and Using Truly “Groupworthy” Mathematics Tasks

#### 6–8 Session

Group work should be about students relying on each others’ ideas and insights to solve a puzzle or problem. Many tasks that claim to be groupworthy could be accomplished independently. We will engage two fun, rigorous, and challenging mathematics tasks designed specifically to require input from all participants before the task can be completed.

**Matthew McLeod**

Education Development Center, Inc., Chicago, Illinois

**Eden Badertscher**

Education Development Center, Inc., Waltham, Massachusetts

**Mary Wedow**

Education Development Center, Inc., Waltham, Massachusetts

**Grand Ballroom EF, East Tower, Gold Level**

## 224 **JRNY**

### Curriculum with a Message

#### 10–12 Session

High school courses often lack meaningful flow or themes that are obvious to students. What if students could see the entire scope of algebra 2 in four weeks? Or learn the language of calculus in five? We will explore how you can take standards and craft a message that makes your curriculum more meaningful and more than a random set of tasks.

**Jonathan Claydon**

Houston, Texas

**Regency Ballroom B, West Tower, Gold Level**

## 225 **ASSESS**

### Differentiating Assessments with a Growth Mindset

#### 8–10 Session

Have you been redesigning lessons with a growth mindset? Are you dissatisfied with your fixed mindset assessments? Come learn how to create assessments that give student choice, have open-ended questions, utilize technology, and allow for differentiation.

**Scott Miller**

Naperville Central High School, Illinois

**David Sladkey**

Naperville Central High School, Illinois

**Rachel Fruin**

Naperville Central High School, Illinois

**Acapulco, West Tower, Gold Level**

Friday



**226 JRNY****Engaging Struggling Students with Social Justice Mathematics****10–12 Session**

To achieve equity in mathematics education, it's not enough for students to play the game—we have to help them change the game. Hear how one district designed a “game changing” third-year high school math course to engage underprepared students in rigorous mathematics through financial and social justice topics using a wide variety of resources.

**Jennifer Lawler**

Kenosha Unified School District, Wisconsin

**Steven Gorski**

Kenosha Unified School District, Wisconsin

**Plaza Ballroom, East Tower, Green Level**

**227****I Have Selected a Challenging, Open-Ended Math Task—Now What?****3–5 Session**

Join us as we explore ways to support productive struggle with open-response tasks. We will plan a task by previewing content and practices and identifying students' strategies and misconceptions. We will discuss grouping students to promote discourse and examine ways to support students in the productive struggle of solving open-response tasks.

**Katie Flores**

UChicago STEM Education, Illinois

**Regency Ballroom A, West Tower, Gold Level**

**228 JRNY****In 1st Grade It's Called Missing Addend, in 7th Grade It's Called Algebra!****Pre-K–2 Session**

Participants will learn how much of what students are required to learn in upper elementary and junior high math is rooted in the math for kindergarten and first grade. Participants will take part in a variety of math games and activities that will demonstrate the relationships between worthwhile early math learning and later math success.

**John Felling**

Retired, Black Gold Regional Schools, Edmonton, Alberta, Canada

**Michigan 1, East Tower, Bronze Level**

**229 TOOLS****Lesson Planning for a 1:1 Classroom: What Do We Need to Consider? What Is Different?****General Interest Session**

Your students have devices, now what? We will engage in a discussion on lesson planning for 1:1 classrooms. We will look at how to plan for integrating technology in ways that will allow students to develop conceptual understanding. Devices have added a new complexity to math classrooms, and questions on when and how to use it must be considered.

**Joshua Males**

Lincoln Public Schools, Nebraska

**Michigan 2, East Tower, Bronze Level**

**230 EQUITY****Native American–Based Mathematics Materials for the Classroom****General Interest Session**

This session presents mathematics materials based in the culture and mathematics of Native American Peoples for integration into K–12 or undergraduate courses. These materials—both paper and electronic—are classroom ready, and they are developed and piloted in consultation with Tribes throughout the West.

**Charles Funkhouser**

California State University Fullerton

**Miles Pfahl**

Turtle Mountain Community College, St. John, North Dakota

**Columbus Hall 1J, East Tower, Gold Level**

**231 TOOLS****Teaching Algebra in a 1:1 Math Classroom****8–10 Session**

Have you ever thought about implementing new ways to keep your student's engaged? This session will focus on taking the attention off the teacher and holding students accountable for their own learning with the use of technology. Topics included will be technology applications, student self-assessment ideas, and the flipped classroom model.

**Kim Magee**

Webster Central School District, New York

**Regency Ballroom C, West Tower, Gold Level**



3:00 P.M.–4:00 P.M.

## 232 **TOOLS**

### Using Technology to Increase Conceptual Understanding in Algebra and Geometry

8–10 Session

Many topics in algebra and geometry are difficult to address conceptually and tend to be taught procedurally. We'll explore interactive applets that let students "notice and wonder"; talk about mathematical situations; and develop conceptual understandings of triangle properties, linear equations, systems of equations, and factoring trinomials.

Annie Fetter

The Math Forum at NCTM, Reston, Virginia

**EW Theater Riverside Center, East Tower, Purple Level**

3:15 P.M.–4:30 P.M.

## 233

### A Look at Preschool Math: Conversations, Small Group Instruction, & Math Talks

Pre-K–2 Workshop

This interactive session focuses on planning for successful small-group math instruction. Participants try activities that ask them to consider the importance of mathematical language, questioning techniques, and the strategic use of math tools. It also includes beginning math talks and connecting conversations during small group, transitions, and play.

Cyndi Lopardo

Chicago Public Schools, Illinois

Jen Hetrick

Chicago Public Schools, Illinois

**Grand Ballroom A, East Tower, Gold Level**

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Friday

**TOOLS** Intentional, Effective Use  
Of Tools And Technology

**CCL** Professionalism: Building Capacity,  
Collaboration, and Leadership

**STEM** Stem: Where's The M?



**234** **STEM****Coding in Math Classes: How to Incorporate Easy Coding Projects in Existing Math Courses****8–10 Workshop**

Students have become familiar with basic coding techniques. In this workshop, we will explore ways to extend their understanding of coding using Scratch (or Snap) free coding software to create projects for current algebra, geometry, and precalculus classes. BYO computer (laptop, iPad, whatever) with Internet access or Scratch downloaded.

**Martin Funk**

New Trier High School, Winnetka, Illinois

**Julie Bar**

New Trier High School, Winnetka, Illinois

**Comiskey, West Tower, Bronze Level**

**235** **EQUITY****Crafting Creative Math Lessons for the Transitioning ELL Student****6–8 Workshop**

ELL students need special supports within the math classroom. In this interactive workshop, you will learn and engage in techniques that support ELL students and promote vocabulary acquisition, including the Three Reads strategy and other collaborative activities that increase student engagement, conceptual knowledge, and mathematical proficiency.

**Linda Lichter Sumita**

Chicago Public Schools, Illinois

**Marlene Collins**

North Palos School District, Palos Hills, Illinois

**Columbus Hall AB, East Tower, Gold Level**

**236** **JRNY****Developing and Assessing Addition Fact Fluency****Pre-K–2 Workshop**

What does it really mean to be fluent with addition facts, and how is this idea reflected in state and national standards? Come explore how we can use strategies, games, and activities in meaningful ways to develop a trajectory for helping all students become fluent with addition facts, and consider ways to authentically assess fact fluency.

**Gina Kling**

UChicago STEM Education/Western Michigan University, Kalamazoo

**Columbus Hall EF, East Tower, Gold Level**

**237****Facilitating Meaningful Mathematics Discourse and Productive Struggle in Middle School****6–8 Workshop**

The NCTM Effective Mathematics Teaching Practices provide a framework for high-quality instruction that promotes meaningful thinking and reasoning. In this workshop, we will analyze middle school classroom artifacts (narrative and video cases, student work) and identify teacher moves that support meaningful discourse and productive struggle.

**Mike Steele**

University of Wisconsin–Milwaukee

**Columbus Hall GH, East Tower, Gold Level**

**238** **STEM****Klein Bottles and Pottery: A STEAM Exploration****10–12 Workshop**

How do a mathematics teacher educator and an art teacher see a geometric form differently? How do they see that form in the same way? And how can geometry translate into pottery? We will explore these questions and more as we discuss the STEAM collaboration we did to lead to our cover story in the October 2016 issue of Mathematics Teacher.

**Christopher Smith**

Augsburg College, Minneapolis, Minnesota

**Jana Paré**

Chanhassen High School, Minnesota

**Columbus Hall CD, East Tower, Gold Level**



**239 EQUITY****Problem-Based, Enhanced-Language Learning: Providing Access to ELLs****3–5 Workshop**

Problem-Based, Enhanced-Language Learning (PBELL) is a model that provides access to rigorous content instruction and academic language to culturally and linguistically diverse learners in the math classroom. This workshop will provide ideas in problem-based instruction, content-language objectives, mathematics discourse, collaboration, and integration of reading, writing, listening, and speaking.

**Silvia Aparicio**

Arizona State University, Tempe

**Stephanie Lund**

Arizona State University, Tempe

**Jenni Birrell**

Arizona State University, Tempe

**Grand Ballroom B, East Tower, Gold Level**

**240****Supporting Productive Struggle in the Math Classroom 6–12****8–10 Workshop**

Students at the secondary level often have a belief that struggle is “bad” in math. Teachers need to help them see that while unproductive struggle leads to shutting down, productive struggle is HOW we learn best. Students should expect struggle/cognitive dissonance during math class and should have a set of strategies to employ to be productive.

**Amy Rybaczuk**

CPM/St. Charles East High School, Illinois

**Columbus Hall KL, East Tower, Gold Level**

**241 CCL****Widening Impact: Building District-Wide Leadership Capacity for Systemic and Coherent Change****Coaches/Leaders/Teacher Educators Workshop**

This session will highlight how the Chicago P12 Math Collaborative is using a multi-tiered, innovative approach to professional learning in order to build and sustain math leadership capacity in every Chicago public school. Participants will gain an understanding of this approach through active engagement, video observation, and discussion.

**Ruth Haumersen**

DePaul University, Chicago

**Lynn Narasimhan**

DePaul University, Chicago

**Jessica Mahon**

DePaul University, Chicago

**Gold Coast, West Tower, Bronze Level**

**242 ASSESS****You’ve Completed a Timely Formative Check—Now What Do You Do with the Information?****10–12 Workshop**

Formative data can be used to inform instruction in multiple “correct” ways. Using sets of data collected from an algebra class, we’ll discuss various ways it can inform and impact instruction. Lesson monitoring and various ways to form and use collaborative groups will be discussed. Tools to collect formative data quickly will also be presented.

**Allan Bellman**

University of Mississippi, Oxford

**Kayton Hosket**

University of Mississippi, Oxford

**Toronto, West Tower, Gold Level**

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A handwritten signature in blue ink, reading "Matt Larson", written over a horizontal blue line.

Matt Larson  
President, NCTM



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Ken Krehbiel  
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President, NCTM

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A list of Partner Affiliates in this conference's region and the Affiliates-at-Large appears on page 75. To join one of these organizations, email the Affiliate contact for membership information. NCTM has more than 200 Affiliates throughout the United States and Canada. For a list of all organizations affiliated with NCTM and information on how to join, visit the Affiliate Directory at [nctm.org/Affiliates/Directory](http://nctm.org/Affiliates/Directory).

## About the Host Organizations



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.



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.



MATHEMATICS  
EDUCATION TRUST

## Help NCTM Help Teachers

### SUPPORTING TEACHERS... REACHING STUDENTS... BUILDING FUTURES

NCTM's **Mathematics Education Trust (MET)** channels the generosity of contributors through the creation and funding of grants, awards, honors, and other projects that support the improvement of mathematics teaching and learning.

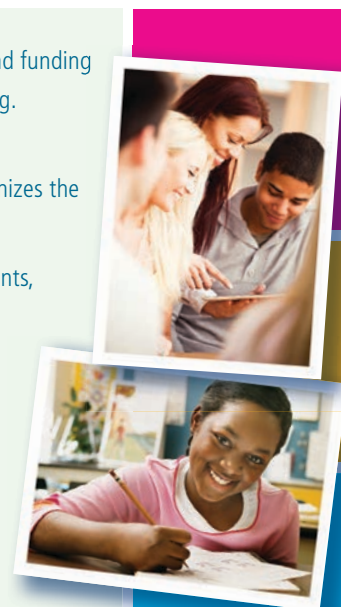
MET provides funds to support classroom teachers in the areas of improving classroom practices and increasing mathematical knowledge; offers funding opportunities for prospective teachers and NCTM's Affiliates; and recognizes the lifetime achievement of leaders in mathematics education.

If you are a teacher, prospective teacher, or school administrator and would like more information about MET grants, scholarships, and awards, please:

- Visit our website, [www.nctm.org/met](http://www.nctm.org/met)
- Call us at (703) 620-9840, ext. 2112
- Email us at [exec@nctm.org](mailto:exec@nctm.org)

Please help us help teachers! Send your tax-deductible gift to MET, c/o NCTM, P.O. Box 75842, Baltimore, MD 21275-5842. Online donations also are welcome at [www.nctm.org/donate](http://www.nctm.org/donate). Your gift, no matter its size, will help us reach our goal of providing a high-quality mathematics learning experience for all students.

*The Mathematics Education Trust was established in 1976 by the National Council of Teachers of Mathematics (NCTM).*





## Affiliate Information

### Illinois

#### Illinois Council of Teachers of Mathematics

Eric Bright, ericbright2002@yahoo.com

#### Metropolitan Mathematics Club of Chicago

Patricia Trafton, p.trafton@comcast.net

### Indiana

#### Indiana Council of Teachers of Mathematics

Gina Borgioli Yoder, gbyoder@iupui.edu

### Iowa

#### Iowa Council of Teachers of Mathematics

Lori Mueller, lori.mueller@gpaea.org

### Kansas

#### Kansas Association of Teachers of Mathematics

Betsy Wiens, betsy.wiens@gmail.com

### Missouri

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

Rita Barger, bargerr@umkc.edu

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

Dawn Lester, dlester@ladueschools.net

#### Missouri Council of Teachers of Mathematics

Cynthia Bryant, mo.mathgal@gmail.com

### Michigan

#### Michigan Council of Teachers of Mathematics

Chris Berry, techberry@mictm.org

### Minnesota

#### Minnesota Council of Teachers of Mathematics

Amy Wix, awix22@gmail.com

### Nebraska

#### Nebraska Association of Teachers of Mathematics

JaLena Slack, jalena.slack@gmail.com

### North Dakota

#### North Dakota Council of Teachers of Mathematics

Carla Crockett, carla.crockett@minot.k12.nd.us

### Ohio

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

Lynn Aring, Lynn.Aring@gmail.com

#### Ohio Council of Teachers of Mathematics

Mary Theresa Sharp, tsharp@ndec.org

### South Dakota

#### South Dakota Council of Teachers of Mathematics

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

### Wisconsin

#### Wisconsin Mathematics Council, Inc.

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

## Affiliates-at-Large

#### Adult Numeracy Network

Pam Meader, mdr151@aol.com

#### Association of Mathematics Teacher Educators

Maggie McGatha, maggie.mcgatha@louisville.edu

#### Association of State Supervisors of Mathematics

Charles Watson, chaswatson@sbcglobal.net

#### Benjamin Banneker Association, Inc.

Shelly Jones, jonessem@ccsu.edu

#### Council for Technology in Mathematics Education

David Wees, davidwees@gmail.com

#### Council of Presidential Awardees in Mathematics

Donald Scheuer, mathguy1@verizon.net

#### National Council of Supervisors of Mathematics

Jessica McIntyre, jkanoldmcintyre@gmail.com

#### North American Study Group on Ethnomathematics

Tod Shockey, todshockey@gmail.com

#### Society of Elementary Presidential Awardees

Timothy Dalby, tdalby@wilmingtonfriends.org

#### TODOS: Mathematics for ALL

Susie Hakansson, shakans@g.ucla.edu

#### Women and Mathematics Education

Andria Disney, andriadisney@live.com



# Officers and Committees

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NCTM wishes to thank our **2017 Chicago Regional Conference Committees** for their generous support and dedication planning this Regional Conference.

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Lincoln Public Schools, Nebraska

## PROFESSIONAL DEVELOPMENT GROUP

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West Ed, Redwood City, California

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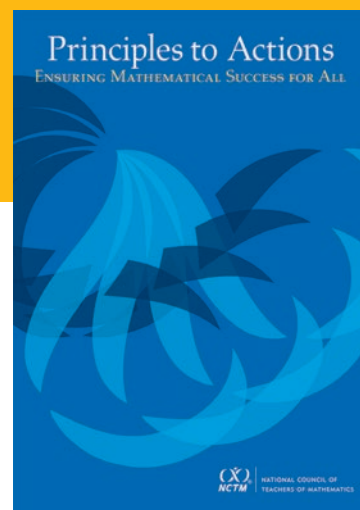
*Sendhil Revuluri*, Chair  
Director, Illinois Council of Teachers of Mathematics and Math  
Circles of Chicago

*Carly Morales*  
Math Specialist, St. Charles Community Unit School District  
303, Illinois

*Steven Shadel*  
Executive Director of STEM and Literacy, Niles Township High  
School District 219, Illinois



# Principles to Actions Professional Learning Toolkit



**N**CTM's *Principles to Actions* Professional Learning Toolkit provides grade-band-specific professional learning modules focused on the Effective Teaching Practices and Guiding Principles from *Principles to Actions: Ensuring Mathematical Success for All*—NCTM's landmark publication that connects research with practice. Specific research-based teaching practices that are essential for a high-quality mathematics education for each and every student are combined with core principles to build a successful mathematics program at all levels.

The *Principles to Actions* toolkit helps support professional learning with teachers by analyzing mathematical tasks, narrative and video cases, student work samples, vignettes, and more. Each module includes a presentation, presenter notes, and required materials. Teachers learn by abstracting general ideas from the specific examples about how to effectively support student learning.

The teaching and learning modules were developed in collaboration with the Institute for Learning at the University of Pittsburgh and are available exclusively to NCTM members. Limited modules are provided for each grade level.

## Building on *Principles to Actions*

Many related publications build on *Principles to Actions* and the toolkit.

*Principles to Actions*-related publications explore implementing the effective mathematics teaching practices; go in depth about the research behind *Principles to Actions*; and elaborate on such topics as access and equity, tools and technology, assessment, and more.

- ***Taking Action: Implementing Effective Mathematics Teaching Practices in—***
  - ***Grades Pre-K–5***
  - ***Grades 6–8***
  - ***Grades 9–12***

This set of grade-band books elaborates on the teaching and learning principles described in *Principles to Actions*. Each book provides examples and activities to help teachers develop their understanding of the eight effective

mathematics teaching practices and how they can be enacted in the classroom.

- ***Enhancing Classroom Practice with Research behind “Principles to Actions”***

This book summarizes and synthesizes the research behind each of the guiding principles and essential elements in *Principles to Actions*. It also provides examples of what this research might look like in classroom practice. This resource will provide readers with a sense of where the field stands in its knowledge and hypotheses about the big ideas put forth in *Principles to Actions*. In addition, it makes the principles and elements—as well as the research—concrete for readers by offering examples from classroom practice.



- ***Access and Equity: Promoting High-Quality Mathematics in—***
  - ***Grades Pre-K–2***
  - ***Grades 3–5***
  - ***Grades 6–8***
  - ***Grades 9–12***
- ***Principles to Actions Elaboration Series***
  - Access and Equity
  - Curriculum
  - Tools and Technology
  - Assessment
  - Professionalism



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

[nctm.org/PtAToolkit](https://nctm.org/PtAToolkit)

[f](#) [ig](#) [in](#) [p](#) [t](#) [y](#) [t](#) [u](#) [b](#) [e](#) [#NCTMp2a](#)



# Floor Plans

## HYATT REGENCY CHICAGO GUEST MAP



**WELCOME TO HYATT REGENCY CHICAGO.** Meeting rooms, ballrooms, restaurants and guest amenities are listed in alphabetical order and color coded by floor. For help, dial Guest Services at Extension 4460.

### EAST TOWER

### WEST TOWER

#### LOBBY LEVEL Green Level

PLAZA BALLROOM

EAST TOWER  
MAIN ENTRANCE

WEST TOWER  
MAIN ENTRANCE

CRYSTAL FOYER  
CRYSTAL BALLROOM

WACKER DRIVE

#### CONCOURSE LEVEL Bronze Level

LAKESHORE MEETING ROOMS

CONCOURSE  
BETWEEN  
TOWERS

LANDMARK SUITES

#### BALLROOM LEVEL Gold Level

COLUMBUS HALL  
GRAND BALLROOM  
REGISTRATION  
GRAND SUITES  
VALET

INTERNATIONAL  
AND CITY SUITES

REGENCY  
BALLROOM C  
REGISTRATION  
REGENCY  
BALLROOM A

#### RIVERSIDE EXHIBIT LEVEL Purple Level

RIVERSIDE  
ENTRANCE EAST  
RIVERSIDE CENTER  
RIVERSIDE  
ENTRANCE WEST  
BUSINESS CENTER  
PACKAGE PICK-UP

- ACAPULCO  
West Tower, Ballroom Level
- ATLANTA  
West Tower, Ballroom Level
- COLUMBIAN (Landmark Suites)  
West Tower, Concourse Level
- COLUMBUS HALL (ROOMS A-L)  
East Tower, Ballroom Level
- COMISKEY (Landmark Suites)  
West Tower, Concourse Level
- CONCERGE  
East Tower, Lobby Level
- CRYSTAL BALLROOM  
West Tower, Lobby Level
- EAST TOWER MAIN ENTRANCE  
East Tower, Lobby Level
- FRONT DESK  
East Tower, Skyway Level
- GOLD COAST (Landmark Suites)  
West Tower, Concourse Level
- GRAND BALLROOM  
East Tower, Ballroom Level
- GRAND SUITES  
East Tower, Ballroom Level
- HONG KONG  
West Tower, Ballroom Level
- MICHIGAN (Lakeshore Meeting Rooms)  
East Tower, Concourse Level
- NEW ORLEANS  
West Tower, Ballroom Level
- PLAZA BALLROOM  
East Tower, Lobby Level
- REGENCY BALLROOM  
West Tower, Ballroom Level
- RIVERSIDE CENTER  
East Tower, Exhibit Level
- SAN FRANCISCO  
West Tower, Ballroom Level
- TORONTO  
West Tower, Ballroom Level
- WATER TOWER (Landmark Suites)  
West Tower, Concourse Level
- WEST TOWER VALET  
West Tower, Exhibit Level

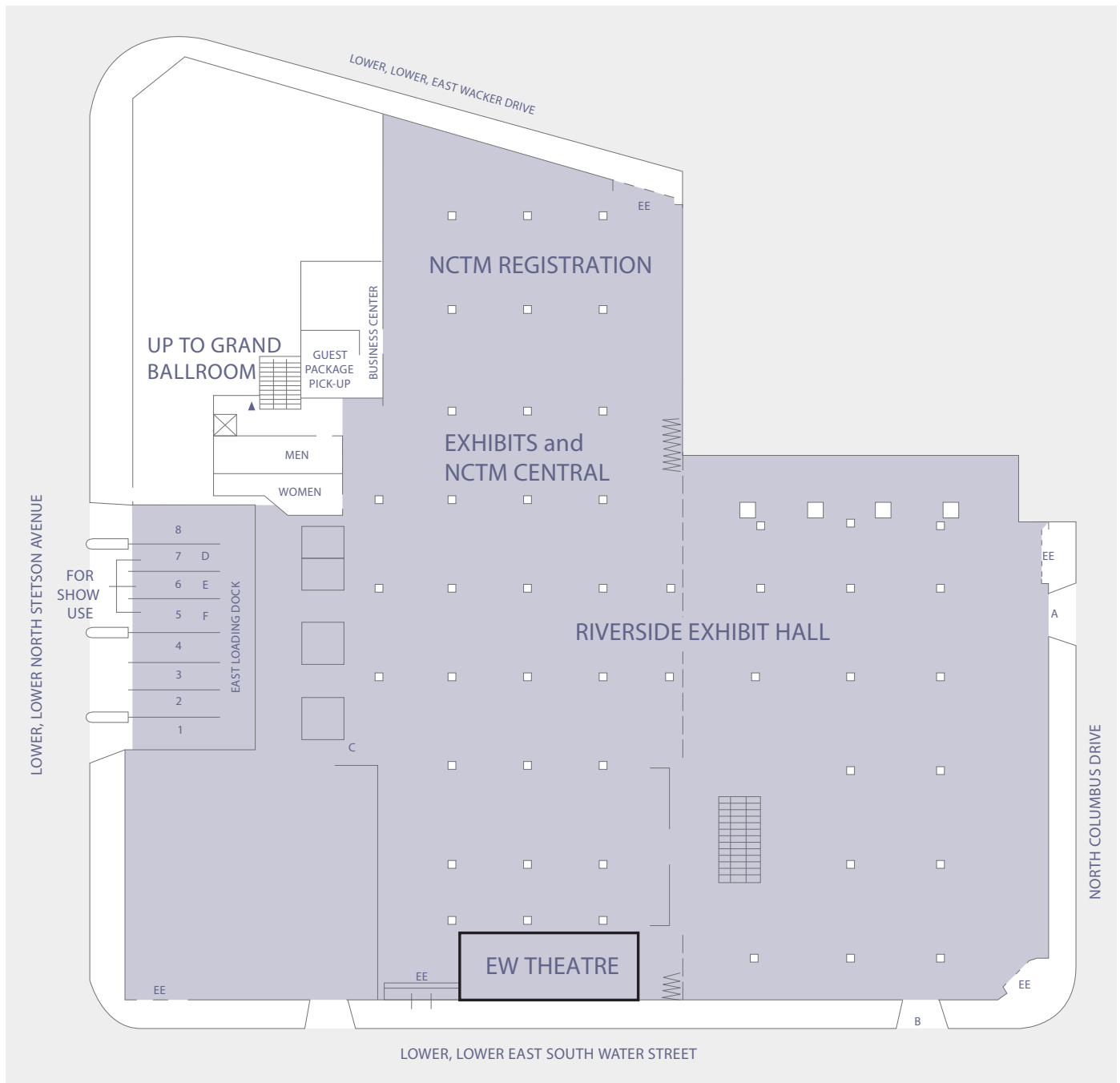
**ESCALATORS, ELEVATORS AND RESTROOMS** are indicated on each floor. Elevators are conveniently located throughout the hotel for guests with disabilities or where no escalator is present.

**CROSSING BETWEEN TOWERS:** Cross between towers via the Skybridge or the Concourse. You may also cross from the lobby level via the crosswalk on Statson Drive.





## Hyatt Regency Chicago Purple Level (East Tower)





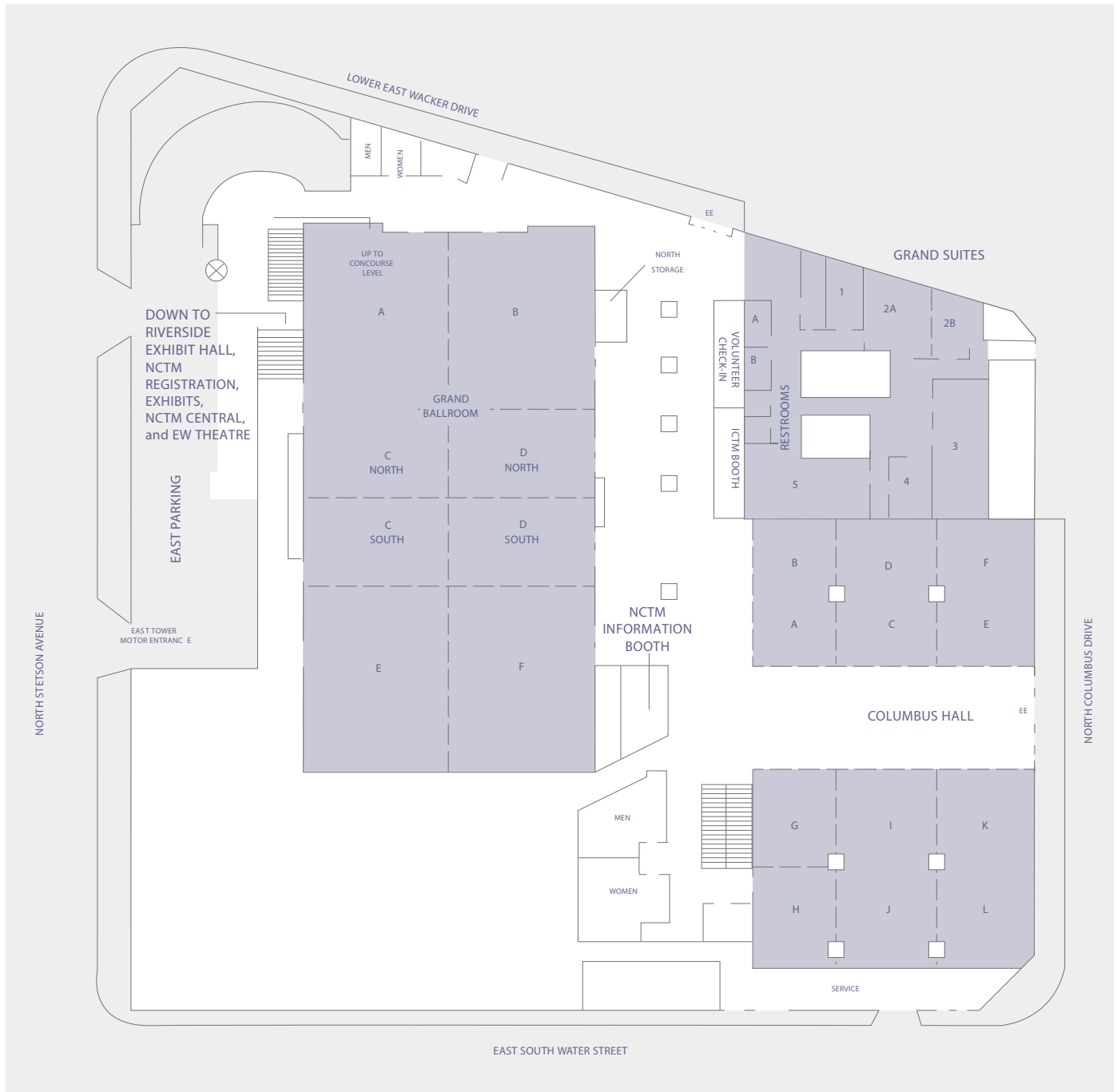
# Floor Plans

## Hyatt Regency Chicago Gold Level (West Tower)





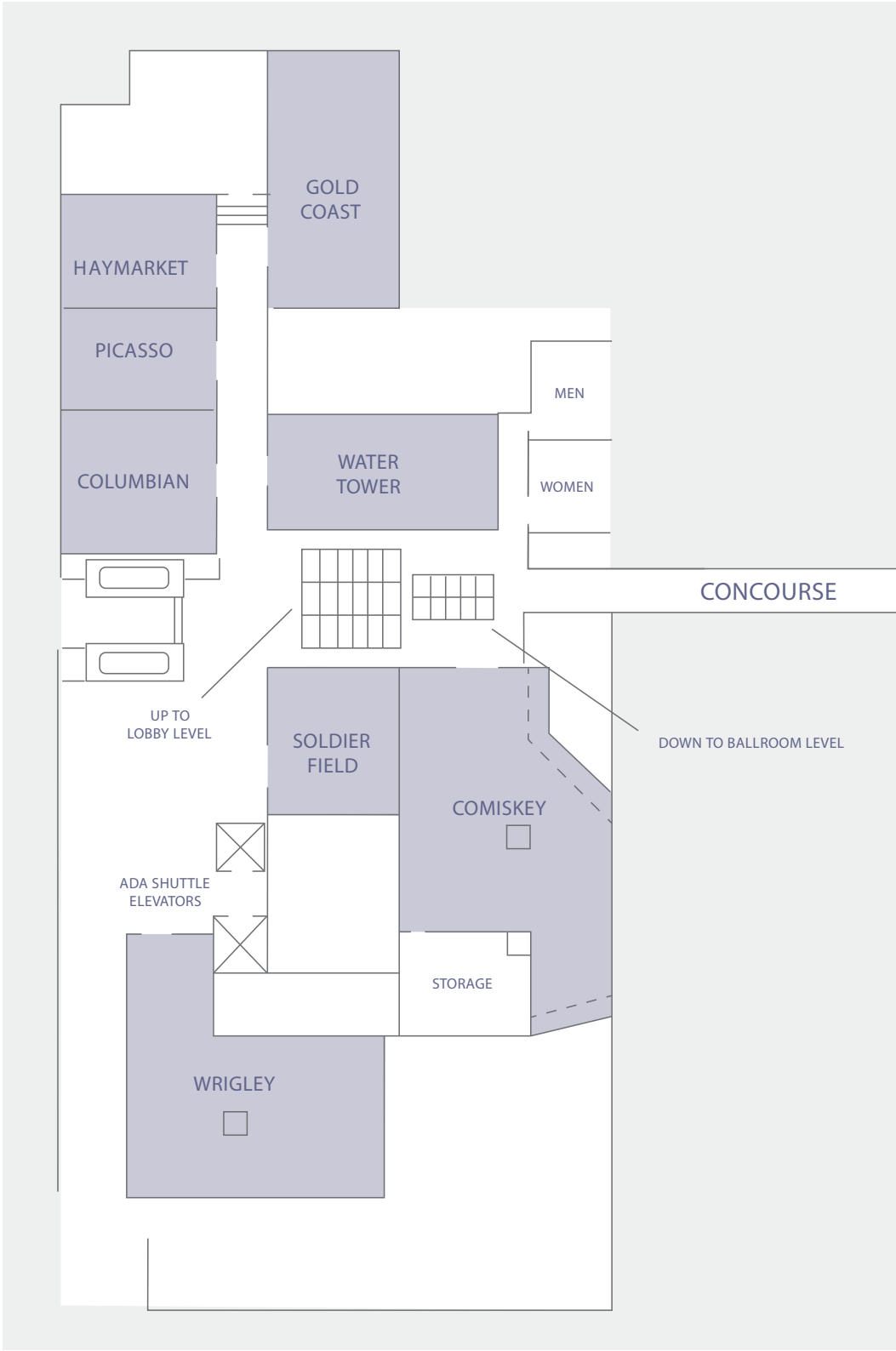
## Hyatt Regency Chicago Gold Level (East Tower)





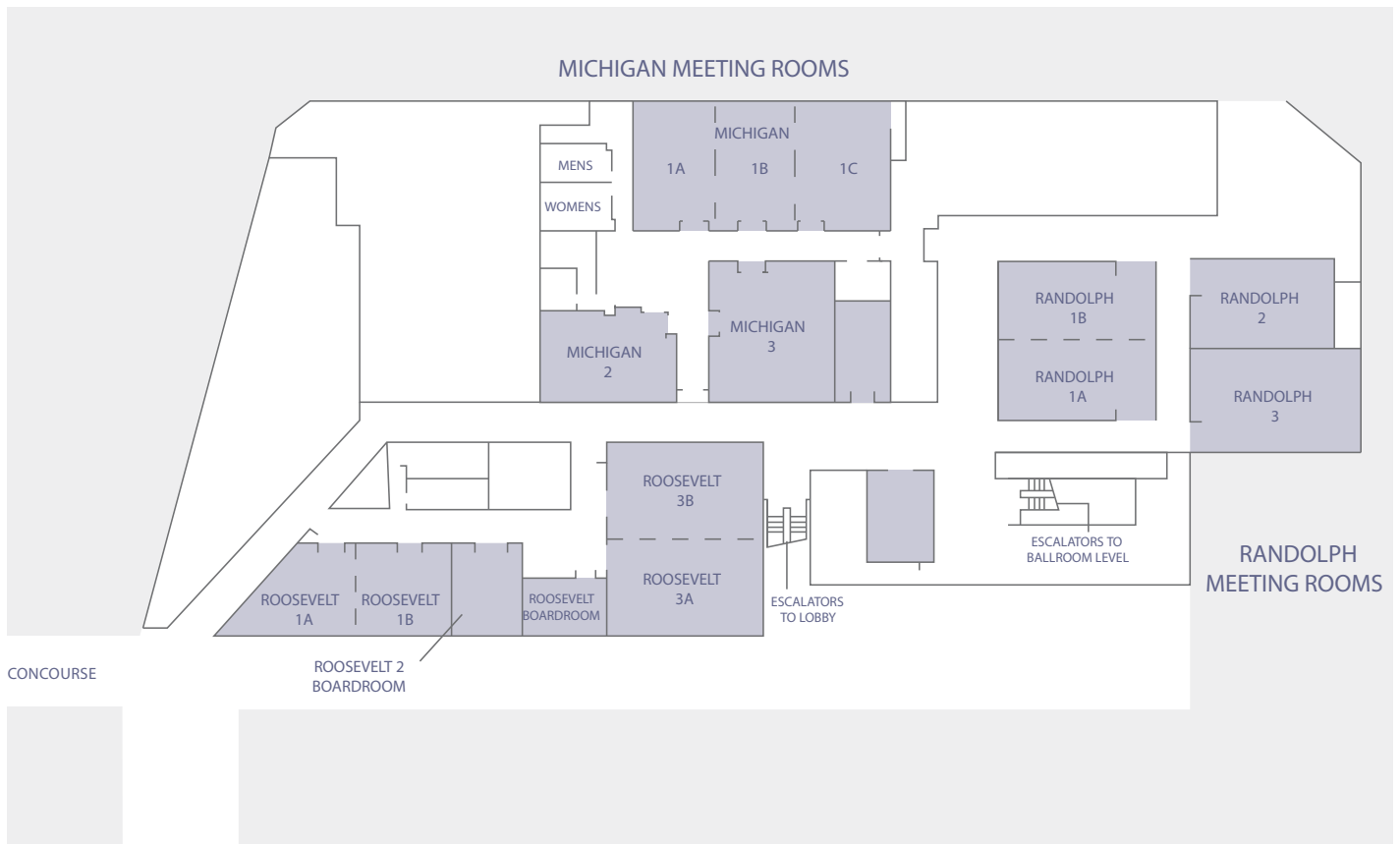
# Floor Plans

## Hyatt Regency Chicago Bronze Level (West Tower)





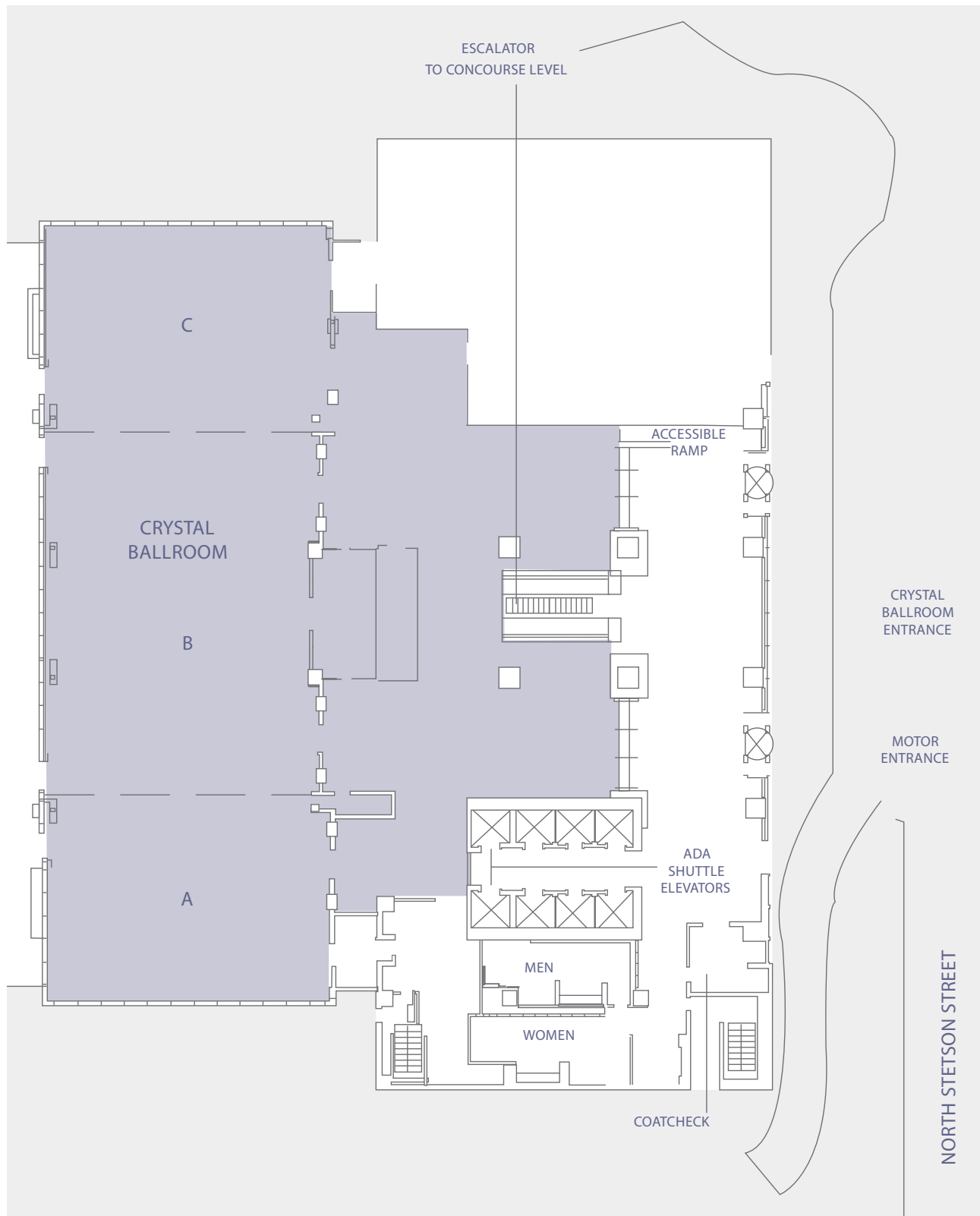
## Hyatt Regency Chicago Bronze Level (East Tower)





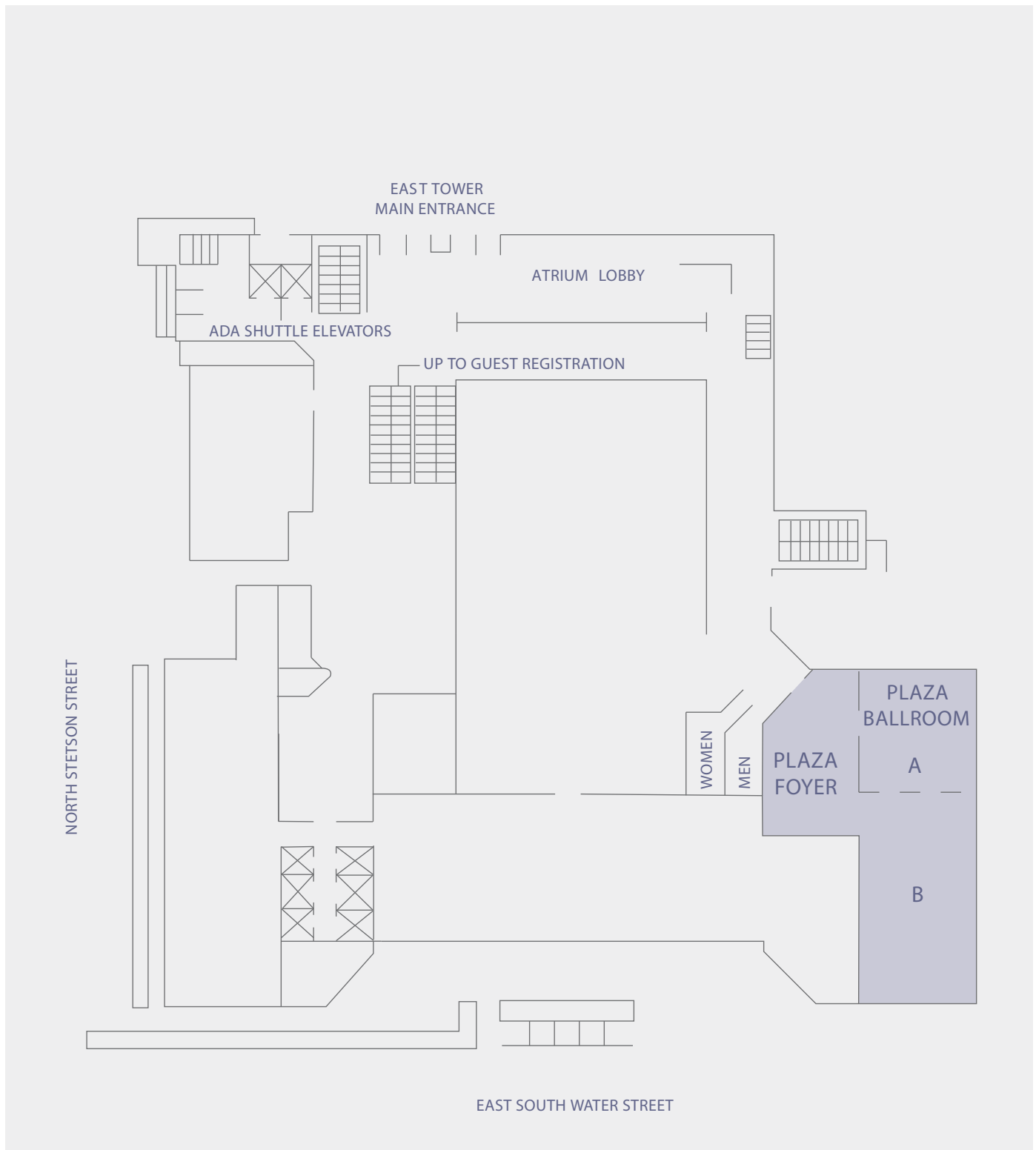
# Floor Plans

## Hyatt Regency Chicago Green Level (West Tower)





## Hyatt Regency Chicago Green Level (East Tower)





## Exhibit Hall Floor Plan





## A

### **Academics, Ltd.** **Booth 414**

Portsmouth, England, UK  
[quantum-scholars.com](http://quantum-scholars.com)

Teach math in England! Quantum Scholars is a project led by six South East Maths Hubs, supported by the UK Government to recruit high-quality, overseas-trained mathematics and physics teachers to give them the opportunity of working in England, gaining further professional qualifications and an in-depth knowledge and understanding of current pedagogy.

### **AEOP eCYBERMISSION** **Booth 418**

Arlington, Virginia  
703-312-9365  
[ecybermission.com](http://ecybermission.com)

eCYBERMISSION is a web-based STEM competition, free for students in grades 6-9. Students work in teams to identify a community-based problem and solve it by using either scientific practices or engineering design process. Students compete for state, regional, and national awards. The competition is one of the U.S. Army Educational Outreach Programs (AEOP) and is administered by the National Science Teachers Association (NSTA).

### **Amplify** **Booth 327**

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

Amplify is reimagining the way teachers teach and students learn. Our digital learning products for math—anchored by Amplify Math Projects and Amplify Fractions—engage and challenge students in unique ways, with college and career readiness in mind. Amplify Math Projects is project-based learning that is designed to make math creative and collaborative. Our new Amplify Fractions is an adaptive learning solution laser-focused on helping students master—and deeply understand—fractions.

### **Ascend Education** **Booth 525**

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

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

## B

### **Bedtime Math Foundation** **Booth 325**

Summit, New Jersey  
908-444-4522  
[bedtimemath.org](http://bedtimemath.org)

Bedtime Math is a nonprofit organization dedicated to helping kids love numbers so they can handle the math found in real life. For families, we offer a wacky nightly math problem on our website, our free app, and our daily email. For schools, we offer Crazy 8s, a hands-on after-school math club designed to get kids in K-grade 5 fired up about math with high-energy activities like Spy Training and Toilet Paper Olympics. Bring Crazy 8s to your school and help kids learn to love numbers!

### **Big Ideas Learning, LLC** **Booth 317**

Erie, Pennsylvania  
877-552-7766  
[bigideaslearning.com](http://bigideaslearning.com)

Big Ideas Math is a complete and continuous solution built for student success, with a variety of programs available from middle school to high school and a new K-8 program debuting at NCTM's 2018 Annual Meeting. The Dynamic Assessment System provides teachers and students an intuitive and state-of-the-art tool to help students effectively learn mathematics. The Dynamic Assessment System allows teachers to track and evaluate their students' advancement through the curriculum. Stop by booth 317 to learn more!

### **Borenson and Associates, Inc.** **Booth 532**

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

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

### **Box Cars & One-Eyed Jacks Inc** **Booth 415**

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

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

### **Bridge Education** **Booth 207**

Hoffman Estates, Illinois  
847-989-3556

## C

### **Casio America, Inc.** **Booth 421**

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

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

### **Continental** **Booth 305**

Elizabethtown, Pennsylvania  
800-233-0759  
[continentalpress.com](http://continentalpress.com)

Continental . . . quality and value for over 75 years. Let our experts help you find the right K-12 materials to support your lessons for the Common Core or other college- and career-ready standards. See our latest programs in print and digital formats for instruction, review, and assessment practice for this school year and beyond. Our brand-new *Finish Line Mathematics*, Third Edition books are packed full of Common Core lessons and are here for you to preview. Request a sample!



# Exhibitor Directory

## CPM Educational Program

### Booth 428

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

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

## Curriculum Associates

### Booth 206

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

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

## D

## Didax Inc

### Booth 521

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

Didax publishes supplemental resources for pre-K–grade 12, including books, games, interactive resources, manipulatives, and more. In addition, we partner with Math Perspectives to distribute Kathy Richardson's assessment and curriculum materials. Our materials provide teachers with innovative, hands-on ways to help students achieve the goals of the Common Core State Standards.

## DreamBox Learning

### Booth 517

Bellevue, Washington  
877-451-7845 ext. 509  
[dreambox.com](http://dreambox.com)

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

## E

## EAI Education

### Booth 528

Oakland, New Jersey  
800-770-8010  
[eaieducation.com](http://eaieducation.com)

Your one-stop source for math manipulatives, classroom resources, educational games, calculators, STEM products, and teaching aides for pre-K–grade 12. Stop by our booth to see our NEW products for 2017, watch exciting product demonstrations, enter to win prizes, and browse a selection of our most popular games and resources available for purchase. Come learn how EAI Education can create custom manipulative kits to complement your curriculum and SAVE your district funding.

## Empower Educational Consulting

### Booth 434

Chandler, Arizona  
480-347-5051  
[empowerec.com](http://empowerec.com)

Empower is a professional development company with an proven track record. Our approach is to build capacity within a school and work closely with school administrators and leaders to achieve school oriented results. The Empower approach operates off a unique model that provides both training and coaching. Listening to customers, Empower has also answered the call for effective math tools by publishing math fluency and center activities that engage and amaze. Let's get kids excited about math!

## ETA hand2mind

### Booth 426

Vernon Hills, Illinois  
847-968-5204  
[hand2mind.com](http://hand2mind.com)

We believe students learn best by doing. We offer over 8,000 educational and supplemental materials for math, science, reading/language arts, and STEM, including popular brands such as Hands-On Standards, Versa-Tiles, and Cuisenaire rods. Our instructional content, custom-kit options for content providers, manipulatives, interactive digital applications, and teacher coaching and development empower teachers and engage students.

## Eureka Math

### Booth 519

Washington, D.C.  
202-223-1854  
[eureka-math.org](http://eureka-math.org)

Eureka Math was built after the creation of the new standards, when a group of teachers came together to create a totally new, powerful pre-K–12 curriculum. Eureka wasn't retrofitted to meet the new standards, it was born from them. So the standards are seamlessly integrated, not shoved into old textbooks. Created by a nonprofit, Eureka offers basic curriculum at no charge along with customizable solutions to fit your needs. Learn more at [eureka-math.org](http://eureka-math.org) or call 844-853-1010.

## ExploreLearning

### Booth 302

Charlottesville, Virginia  
866-882-4141  
[explorelearning.com](http://explorelearning.com)

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

## G

## Geyer Instructional Products

### Booth 515

Cincinnati, Ohio  
513-527-2462  
[geyerinstructional.com](http://geyerinstructional.com)

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

## H

## Houghton Mifflin Harcourt/ Heinemann

### Booth 212

Austin, Texas  
212-343-6969  
[hnhco.com](http://hnhco.com)

Houghton Mifflin Harcourt is a global learning company with the mission of changing people's lives by fostering passionate, curious learners. Among the world's largest providers of pre-K–12 education solutions and one of its longest-established publishing houses, HMH combines cutting-edge research, editorial excellence, and technological innovation to improve teaching and learning environments and solve complex literacy and education challenges. For more information, visit [www.hmhco.com](http://www.hmhco.com).



## I

### **Imagine Learning Inc** **Booth 1220**

Provo, Utah  
801-377-5071 ext. 4434

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

### **IXL Learning** **Booth 419**

San Mateo, California  
650-436-5554  
[IXL.com](http://IXL.com)

IXL provides a standards-aligned immersive learning experience for all subjects in K–12. Come learn how IXL's carefully crafted content and direct instruction supports students as they build the foundational skills needed for success. With IXL Analytics, teachers have insights to help them drive gains in student performance and on high-stakes assessments.

## J

### **Japan Math Corp** **Booth 420**

Chicago, Illinois  
312-631-3750  
[japan-math.com/](http://japan-math.com/)

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

## K

### **Kendall Hunt Publishing Company** **Booth 518**

Dubuque, Iowa  
563-589-1075  
[k12.kendallhunt.com](http://k12.kendallhunt.com)

Kendall Hunt develops digital and print mathematics curriculum for pre-K–grade 12. Offering both complete grade-level and supplemental programs, we focus on helping all students become mathematically proficient and college- and career-ready.

## M

### **Math Kangaroo in USA** **Booth 534**

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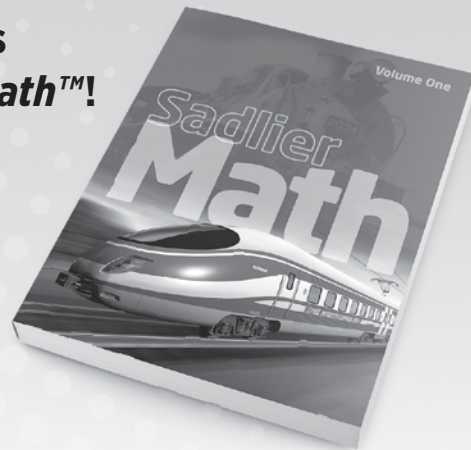
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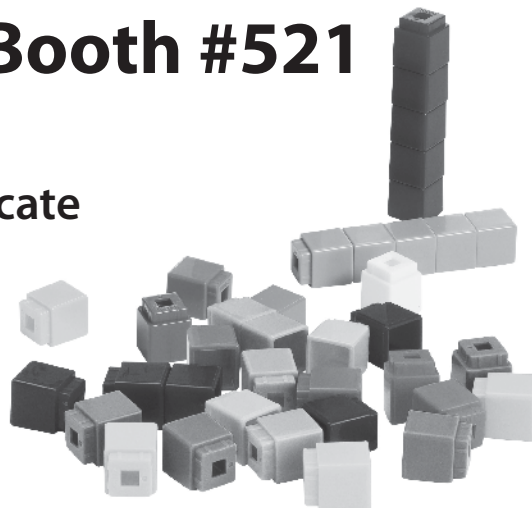
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Free kit ★ After school ★ 12-16 kids

## CHECK IT OUT!

Booth 325

Come see Crazy 8s in action

THUR 1:30PM ★ ROOM Michigan 3

