Want students to truly understand the math they’re learning?

Build your classroom community first.

In *Thinking Together*, veteran teachers Rozlynn Dance and Tessa Kaplan explore nine beliefs that lead to a powerful community of learners. This book doesn’t pretend teaching is simple—instead, it celebrates the potential in the everyday messiness of learning together. Each chapter includes:

- an exploration of beliefs such as “Mistakes are great!” and “It’s not just about the answer”
- guidance for building your classroom community through student-centered strategies
- “When Things Don’t Seem to Be Working” sections for troubleshooting common challenges

This book will help shape your beliefs about what being a learning community means and provide support for building those beliefs into your classroom.

Learn more at hein.pub/ThinkingTogether

Available at Heinemann booth #107

Also from Heinemann
NCTM Regional Conference & Exposition
SEATTLE | NOVEMBER 28-30

HOST
Washington State Mathematics Council (WSMC)

All Regional Conference presentations will be held at the Washington State Convention Center. See pages 73–75 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 & NCTM CENTRAL
Wednesday 4:00 p.m. – 6:00 p.m.
Thursday 9:00 a.m. – 5:00 p.m.
Friday 9:00 a.m. – 2:00 p.m.

nctm.org/seattle

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

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

Printed in the U.S.A.
Welcome to the NCTM Regional Conference and Exposition in Seattle, Washington! While at the conference you will have many opportunities to learn new ideas aimed at improving mathematics learning for all students. The workshops, sessions, bursts, and networking opportunities will energize you to implement—and share!—these innovative ideas back home.

The Program Committee has been working for nearly two years to make this an exciting program at all grade levels. Join us for our engaging opening session, Play is the Ninth Mathematical Practice!, with Christopher Danielson and Melissa Gresalfi. This theme of play and natural curiosity is further explored in sessions found in our Children Doing Mathematics strand. Our program also features presentations focused on helping students with disabilities learn mathematics to high levels; these workshops and sessions can be found in our strand Students with Disabilities: Challenging Assumptions and Fostering Personal Agency. There are more than 200 presentations covering a wide range of topics including student agency and identity, social justice, instructional routines, rich tasks, “Thinking Classrooms,” formative assessment, alternative grading practices, technology, and face-to-face and online professional development.

We encourage you to connect with familiar colleagues and meet new ones. We invite you to attend the NCTM Game Night, an informal drop-in event open to all, on Thursday evening. Extend your conference experience—and your learning—by reaching out to speakers and attendees through social media; use the conference’s hashtag #NCTMregionals.

While in Seattle be sure to enjoy this great city. Take in stunning views from Kerry Park, the Seattle Great Wheel on the waterfront, or the Space Needle. Go underground in Pioneer Square and view Seattle from a completely different vantage. Grab a coffee or a piroshki and check out the flying salmon at Pike Place Market. Shop indie boutiques or Nordstrom’s flagship department store in the downtown retail district. Enjoy Seattle’s many fantastic restaurants and craft breweries.

On behalf of the NCTM Board of Directors, the Program Committee, the NCTM staff, and the many volunteers who have worked countless hours to make this conference a reality, enjoy the conference!

Welcome to Seattle!

---

Chris Hunter
Program Committee Chair
Surrey School, British Columbia, Canada

Greta Bornemann
Volunteer Committee Chair
Puget Sound Educational Service District, Washington
The NCTM 2018 Regional Conference & Exposition officially begins on Wednesday with the Opening Session at 5:30 p.m. Presentations on Thursday and Friday begin at 8:00 a.m. and are scheduled concurrently throughout the day.

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

Please remember:

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

New and Preservice Teachers Workshop

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

Thursday and Friday, Presentations 40 and 168
9:45 a.m.–11:00 a.m.
Room: 401

Overview & Orientation

Whether you’re new to NCTM or a seasoned veteran, there is something new at the conference for everyone! Hosted by members of the Board of Directors, this session will show you how to maximize your overall conference experience. Learn all the new, innovative aspects this year’s meeting is showcasing or discover something you’ve missed in the past. Find out how to navigate presentations, learn how to use the conference app, and network with other attendees.

Thursday and Friday
7:15 a.m.–7:45 a.m.
Room: 609

Types of Presentations

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

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

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

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

Exhibitor Workshops (60 minutes) are opportunities for exhibitors to showcase their products and services away from the Exhibit Hall. Look for the symbol indicating exhibitor workshops in the program book.

Grade Bands

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

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

TEACHING PRACTICES THAT PROMOTE LEARNING
Presentations will provide opportunities for participants to identify, explore, and/or develop instructional strategies and mathematical tasks that foster curiosity, support sense-making and reasoning, and promote discourse.

EMPOWERING DIVERSE MATHEMATICAL LEARNERS: ACCESS AND EQUITY
Sessions in this strand will focus on equitable and responsive instructional practices in mathematics that empower diverse learners. Sessions will focus on issues related to student agency, identity, power, culture, and language within the mathematics classroom. In addition, participants will explore social justice mathematics lessons, tasks, and activities that facilitate deeper understandings of mathematics, promote critical questions, and provide rich and rigorous opportunities for diverse learners.

STUDENTS WITH DISABILITIES: CHALLENGING ASSUMPTIONS AND FOSTERING PERSONAL AGENCY
Sessions in this strand will challenge assumptions and deficit thinking around teaching students with disabilities. Sessions will highlight instructional practices and strategies that help students with disabilities learn math to high levels, develop a sense of personal agency, and build confidence as learners and doers of mathematics.

MAKING THE MATH CURRICULUM COME ALIVE
Examine instructional materials aligned to college- and career-ready standards with an eye toward mathematical practices. Sessions will stress the importance of clear learning progressions with high cognitive demand for all learners.

TECHNOLOGY AND TOOLS
In these sessions, presenters will address the purposeful implementation of technology using appropriate tools to help students experience, communicate, and generalize mathematical ideas.

ASSESSMENT: A TOOL FOR PURPOSEFUL PLANNING AND INSTRUCTION
The word “assessment” comes from the Latin word meaning “to sit by” which provides the image of educators sitting beside their students listening to their ideas. Presentations in this strand focus on assessment practices that provide and make use of evidence of student learning. Presentations demonstrate ways in which teachers use data to inform the design of future learning experiences based on evidence from a variety of sources.

PROFESSIONALISM: PERSONAL AND COLLECTIVE GROWTH
Sessions in this strand will focus on creating and promoting learning experiences for teachers to foster mathematical success for all students. Examples include professional development, coaching, virtual and face-to-face professional learning communities, lesson study, book circles, reflections, and writing.

CHILDREN DOING MATHEMATICS
This strand will explore the mathematics that children are inspired to engage in organically, often beyond the walls of the classroom. Presentations will focus on supporting teachers to connect those intuitive, mathematical learning experiences and empower teachers to leverage that joyful and natural engagement in their mathematics instruction.

Visit NCTM Central—connect with peers in the Networking Lounge, renew your membership, and shop the latest titles at the Bookstore.
Insightful Education Sessions, Dynamic Exhibits

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

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

What you’ll walk away with:

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

Tips for a Rewarding Regional Conference & Exposition

- Access the conference app for program and speaker information, to connect with other attendees, and to share your feedback. Visit nctm.org/confapp.
- Get available speaker handouts at nctm.org/planSeattle.
- Keep the conversations going, connect with other attendees and speakers, access and share session resources, ask questions, and more in the MyNCTM online community at my.nctm.org/Seattle18.
- If you’re experiencing the conference with your colleagues, attend different presentations and share your learnings with one another after the conference.
- Silence your cell phone during presentations.
- Be safe! Remove your name badge when you leave the conference facilities.

Registration and Access to Presentations

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

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

For Your Child’s Safety

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

Information Booth

The Information Booth will be in the Washington State Convention Center. Staff can answer your questions about Seattle 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 Washington State Convention Center Security.

First-Aid Station

There will be a first-aid station at the Washington State Convention Center during the conference. If you need medical services while in Seattle, 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/planSeattle. Handouts will be available one month after the conference.

Exhibits

Make time to visit the Exhibit Hall. The hours allow ample opportunity to explore, test, and purchase resources for your classroom. You’ll also be able to meet product specialists, get fresh ideas, and watch demonstrations on how products will help you in your classroom. We’ve provided dedicated time to visit the exhibits; no presentations will take place from 12:00 p.m. to 1:30 p.m. on Thursday and Friday. Check out the map of the Exhibit Hall on page 76 and the list of exhibits on pages 79–82.

Exhibitor Workshops

Do you want more in-depth, personal interaction with exhibitors? If so, plan to attend the Exhibitor Workshops. These workshops are held on Thursday and Friday and offer a wide variety of topics. For exhibitor workshop offerings, look for presentations in this program marked with the symbol or see the Program Updates.
NCTM App
Start planning early and stay connected throughout the event with the NCTM mobile app. Whether you have an iPhone, iPad, Android, or tablet, the app is your onsite sidekick! Get the app and select your event to access these features and more.

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

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

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

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

Username: NCTM  
Password: NCTM2018

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

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

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

*Note on sales tax exemptions: To be considered exempt from sales tax in the NCTM Bookstore, you must provide a copy of a Washington 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 Washington 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 Washington are not valid for this Regional Conference.*

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

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<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tr>
<td>Wednesday</td>
<td>4:00 p.m.–6:00 p.m.</td>
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<tr>
<td>Thursday</td>
<td>9:00 a.m.–5:00 p.m.</td>
</tr>
<tr>
<td>Friday</td>
<td>9:00 a.m.–2:00 p.m.</td>
</tr>
</tbody>
</table>

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

- Get free take-home activities, sample journals, and more at [Member Services](http://nctm.org/services). Take the opportunity to update your membership information and learn about your benefits.
- Discover available funding and resources to support you in your career and professional development through the [Mathematics Education Trust (MET)](http://met.nctm.org).
- Check out [Classroom Resources](http://nctm.org/resources) and learn about NCTM’s collection of lesson plans, problems, and more.
- The [Networking Lounge](http://nctm.org/networking) is a prime location to meet up with colleagues between presentations! Whether you want to make connections with fellow conference goers, exchange teaching tips, or catch up with friends, you’ll find a comfortable spot in the Networking Lounge. Relax and Recharge—make use of charging stations while you reflect with colleagues.
- Learn about NCTM’s [Professional Development](http://nctm.org/profdev) offerings. Information will be available about NCTM’s new Professional Learning Services and upcoming Regional Conferences and Annual Meetings.
HIGHLIGHTS
Opening Session: Play Is the Ninth Mathematical Practice!, 1

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

Conference App
nctm.org/confapp

Twitter
@NCTM

Instagram
@NCTM.math

Facebook
facebook.com/TeachersofMathematics

REGISTRATION HOURS
3:00 p.m.–7:00 p.m.

EXHIBIT & NCTM CENTRAL HOURS
4:00 p.m.–6:00 p.m.

FIRE CODES
We have made every attempt to provide adequate seating for participants at the conference, but for your safety and because of fire regulations, only those with seats will be allowed in meeting rooms. To comply with fire codes, we will have to ask persons sitting on the floor or standing to leave the room.
### Opening Session: Play Is the Ninth Mathematical Practice!

**General Interest Session**

We explain how mathematicians’ work and children’s mathematical play are connected through exploration guided by curiosity and a pursuit of something interesting and beautiful. We share several examples from our respective and shared work of children asking compelling “what if?” questions that create a meaningful context for their mathematical explorations. In turn, we ask, what does this mean for school mathematics?

**Christopher Danielson**  
Twitter: @trianglemancsd  
Desmos, Inc., St. Paul, Minnesota  
**Melissa Sommerfeld Gresalfi**  
Vanderbilt University, Peabody College, Nashville, Tennessee

*Ballroom 6ABC, Washington State Convention Center*

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**Big Ideas Math**

By Ron Larson and Laurie Boswell

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

- Learning Targets and Success Criteria
- Self-Assessment
- Spaced Practice
- In-Class Problem Solving

Visit us at Booth #101 to learn more!  
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GET SOCIAL
Stay informed and get connected with attendees by using #NCTMregionals on social media.

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REGISTRATION HOURS
7:00 a.m.–3:00 p.m.

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

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

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

DeAnn Huinker
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Wisconsin–Milwaukee
Daniel J. Teague
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; North Carolina School of Science and Mathematics, Durham

609, Washington State Convention Center

8:00 A.M.–9:00 A.M.

3  CURRIC
Advanced Algebra with Financial Applications: A Comprehensive, Full-Year, Junior/Senior Course
10–12 Session
A hybrid of topics from algebra 2, geometry, trig, probability, statistics, and precalculus are tapped to cover banking, credit, income taxes, auto insurance, mortgages, budgeting, investing, and more. This is a rigorous, rewarding math experience with only an algebra 1 prerequisite that is accessible to students needing a third or fourth credit.

Robert Gerver
North Shore Schools (Retired), Kings Park, New York

4 C3, Washington State Convention Center

4  AGENCY
An Insider’s View of a Mathematics Learning Disability: Compensating to Gain Access
6–8 Session
Prior research has framed mathematics learning disabilities as cognitive deficits and predominantly analyzed students’ errors on basic arithmetic problems. In this session, we explore how one student has compensated so effectively for her disability that she was able to major in statistics. This case study provides valuable insights for teachers.

Katherine Lewis
University of Washington, Seattle
Dylan Lynn
Unaffiliated, Seattle, Washington

Ballroom 6C, Washington State Convention Center

5  EMPOW
Challenging Eurocentrism in Mathematics Ed: A Vision for Indigenous Ways of Knowing in Mathematics
Research Session
Drawing from a participatory design project titled Native American STEAM camp, we forward a vision for conceptualizing Indigenous ways of knowing in mathematics education. In this session, we challenge Eurocentrism in mathematics education and make explicit the ways in which Indigenous communities continue to do mathematics in community contexts.

Filiberto Barajas-Lopez
Twitter: @DrBarajasLopez
University of Washington, Seattle
Megan Bang
University of Washington, Seattle

604, Washington State Convention Center
8:00 A.M.–9:00 A.M.

6  ASSESS
Drawing on Teacher Observations to Advance Young Mathematicians

3–5 Session
The power of thoughtful listening and careful observation can transform instruction. Through the use of videos and teacher notes, participants will investigate how intentional formative assessment techniques allow for strategic planning, with students working on the edge of their academic development and the structure of mathematics.

Tammy Schultz
Twitter: @mathin2ition
Monterey Bay Area Math Project, Santa Cruz, California
616/617, Washington State Convention Center

7  CURRIC
Engaging Tasks + Powerful Questions = Lesson Magic in the Form of +/- 8 Slide Lesson Guides

General Interest Session
Many of us struggle to craft and implement effective mathematics lesson that live up to the high expectations of the eight Mathematics Teaching Practices found in Principles to Actions. We’ll explore a process and some examples of +/- 8 slide lessons that that model the planning and implementation of great lessons.

Steven Leinwand
Twitter: @steve_leinwand
American Institutes for Research, Washington, D.C.
Ballroom 6B, Washington State Convention Center

8  PRAC
Engaging Young Learners in Mathematical Argumentation

Pre-K–2 Session
What does mathematical argumentation look like with very young children? In this session, we will share four instructional routines and examine how they can support K–2 students to engage in elements of argumentation, including making and evaluating claims and developing arguments about mathematical relationships.

Alison Fox
Twitter: @leaalison
University of Washington, Seattle
Kendra Lomax
University of Washington, Seattle
Emily Shahan
University of Washington, Seattle

Ballroom 6A, Washington State Convention Center

9  AGENCY
Ensure ALL Students Think like Mathematicians by Routinely Integrating 5 Crucial Supports

3–5 Session
Engaging ALL learners in conceptual understanding of operations is complex, yet critical. We need lesson designs that integrate research-based supports for struggling learners, including English learners and students with learning disabilities. Learn five crucial supports and how to make them routine for students and teachers!

Amy Lucenta
Twitter: @AmyLucenta
Fostering Math Practices, Natick, Massachusetts
Grace Kelemanik
Fostering Math Practices, Natick, Massachusetts

618/619, Washington State Convention Center

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

10 **GROWTH**
Growing Professionally in a Virtual Network of Innovation
8–10 Session
Learn how 34 prealgebra and algebra teachers from 18 rural Virginia school districts collaborate professionally in a virtual network. A lead teacher and two network facilitators will share first-year experiences in creating, videotaping, and sharing lesson plans with strategies for increasing student self-efficacy and growth mindset toward math.

Sandy Wilborn
Virginia Advanced Study Strategies (VASS), South Boston
Jennifer Stevens
Virginia Advanced Study Strategies (VASS), South Boston
Mike Lane
Appomattox County Middle School, Virginia

615, Washington State Convention Center

11 **CURRIC**
Let’s Teach Stats! Incorporate and Plan for the Statistics Progression in Your Class
8–10 Session
Do you need help teaching CCSS stats in grades 9–12? Would you like to see and participate in some activities that promote understanding of the statistics standards? Come spend an hour with us to see activities that truly follow the Statistics Progression. Are you teaching with the Traditional model? the Integrated model? Either way we can help!

Chad Shepherd
Twitter: @cshep75
Pontiac Township High School, Illinois

4 C2, Washington State Convention Center

12 **EMPOW**
Teaching Mathematics to English Language Learners in the General Education Classroom
General Interest Session
Participants will learn how to create differentiated lessons based on cognitive demand and contextual support that help ELLs acquire academic literacy in math, show how to reduce linguistic difficulties associated with mathematical discourse, and manage to avoid many pitfalls that can occur during any given instructional activity.

Darlyne De Haan
Twitter: @masplasmabotics
Egg Harbor Township Schools, New Jersey

620, Washington State Convention Center

12.1 **CDM**
K–5 Escape Room Workshop and Reality-Based Modeling Session
3–5 Exhibitor Workshop
Put your problem-solving and teamwork skills to the test to unlock the clues and solve the mystery to escape! Experience problem-solving and mathematical-modeling activities that can be used in the classroom in this lively and challenging Escape Room environment!

Pearson
Chandler, Arizona

612, Washington State Convention Center

12.2 **EW** **PRAC**
Take Action to Move Student Learning Forward Utilizing Science and Math Probes!
3–5 Exhibitor Workshop
This session will shine light on grade-level specific probes written by Page Keely and Cheryl R. Tobey to help educators uncover thinking needed to nudge learning toward science, math, and STEM learning targets. Probes are an instructional tool that coach us to listen to our students, foster uncontainable curiosity, and motivate students.

McGraw-Hill Education
Columbus, Ohio

310, Washington State Convention Center
13 GROWTH
Anxiety and Frustration in the Math Classroom: Struggle and Growth in Students and Teachers
8–10 Workshop
Math brings up a lot of feelings. We respond to students’ feelings daily, but what about our own? What can they tell us about our hidden assumptions about teaching, and how can we use their energy to improve our practice? We will explore activities that will help teachers support one another in accessing the emotional core of their work.

Patrick Higgiston
Twitter: @phiggiston
LREI, New York, New York

602/603, Washington State Convention Center

14 EMPOW
Empower Diverse Learners Using Accessible Yet Rigorous Tasks
3–5 Workshop
Learning experiences must address mathematical goals, provide accessibility, and encourage engagement. Experience a few tasks and analyze the characteristics that make them powerful. All tasks have been implemented with diverse learners, including emergent bilinguals, students with special needs, and others who have been traditionally marginalized.

Nora Ramirez
TODOS: Mathematics for ALL, Tempe, Arizona

605/610, Washington State Convention Center

15 GROWTH
Lesson Study: How to Build a Collaborative Culture That Inspires Purposeful Instructional Growth
Coaches/Leaders/Teacher Educators Workshop
Learn how to maximize the impact of lesson study by creating a collaborative culture of teacher-centered professional development that leads to meaningful instructional shifts. Attendees will participate in a sequence of activities that are useful for generating teacher buy-in and fostering the culture necessary for brave professional growth.

Chase Orton
Twitter: @mathgeek76
Self-employed, Venice, California

613/614, Washington State Convention Center

16 PRAC
Literacy in Mathematics: Reading and Writing in the Math Classroom
6–8 Workshop
Communication and literacy in math have never been more important than they are now, but how do we incorporate reading and writing into our classes? Using context-rich scenarios, we will focus on reading and writing strategies to develop a deeper understanding of math, engage in math practices, and provide optimal formative assessment.

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

608, Washington State Convention Center

17 CURRIC
Making Mathematics Meaningful through Modeling Problems
10–12 Workshop
Mathematical modeling involves students having choice and making assumptions about a real-life situation in which they present recommendations and a solution. We will engage the attendees in working on a modeling-based problem and then give examples of how traditional word problems can be converted to modeling-based problems.

Erick Hofacker
Twitter: @DrHofacker
University of Wisconsin–River Falls
Ashlee LeGear
University of Wisconsin–River Falls

609, Washington State Convention Center
18 **TOOLS**
Modeling Important Social Issues with Real-World Data: Opioid Overdose Deaths in the United States
10–12 Workshop
Have your students mathematically model this shocking real data. Create functions to model the data for interpolation/extrapolation and calculate and interpret percent change. Use any graphing technologies. Discover how this activity was created. Obtain all materials: data, student sheets, teacher notes, step-by-step blog. Applicable for grade 8 through college.

Tom Reardon
Twitter: @tomreardon3
Fitch High School / Youngstown State University, Poland, Ohio
606, Washington State Convention Center

19 **PRAC**
Necessary Conditions: Essential Elements for Secondary Math Learning
8–10 Workshop
In this session, we’ll examine the three crucial elements of a successful secondary classroom: quality tasks, effective facilitation, and academic safety. We’ll experience a classroom in the way a student does via simulation and zoom out to examine each of these three elements, and co-develop strategies when one of the elements is lagging behind.

Geoff Krall
Twitter: @geoffkrall
New Tech Network, Fort Collins, Colorado
4 C4, Washington State Convention Center

20 **CDM**
Play Is the Engine of Learning
Pre-K–2 Workshop
Children naturally play with mathematical ideas like number, shape, pattern, and structure. What does their play show us about how they learn? We’ll explore the rich world of children’s mathematical play, and how play can inspire and inform educational practice in and out of the classroom.

Katherine Cook
Math for Love, Seattle, Washington
Dan Finkel
Math for Love, Seattle, Washington
607, Washington State Convention Center

21 **PRAC**
Small Numbers, Big Ideas: How to Boost Student Understanding by Reducing Computational Load
3–5 Workshop
Can rich upper-elementary mathematics happen with numbers less than ten? This workshop explores an instructional model of shrinking the numbers to boost student understanding of big ideas in multiplication, division, and proportionality. Participants will explore the many benefits of inviting students into a world of minimal computational load.

Mike Pienciak
The School at Columbia University, New York, New York
307/308, Washington State Convention Center

22 **CURRIC**
Teaching Addition and Subtraction Fact Fluency—But with Understanding Rather Than Gimmicks!
Pre-K–2 Workshop
Fluency is more than memorization of isolated basic facts. Students need to see connections between facts. They need visual models to help form a ‘mind picture’ that connects to a thinking strategy. This session will utilize easy-to-make visual aids and games that help students master the basic addition and subtraction facts—with understanding!

James Burnett
Twitter: @jamesburnett69
ORIGO Education, Brendale, Queensland, Australia
401, Washington State Convention Center

22.1 **PRAC**
Math Games as the Way to Learn
6–8 Workshop
A game in a math classroom allows students of different backgrounds and levels to feel excitement while learning math. There are math classroom games suitable for different topics and goals of lessons, and for various teaching styles and class levels. During this workshop, participants will learn to choose and adjust games for their purposes and tastes.

Maryna Yeroshkina
Russian School of Mathematics, Newton, Massachusetts
Nina Dubinsky
Russian School of Mathematics, Newton, Massachusetts
Julia Turchaninova
Russian School of Mathematics, Newton, Massachusetts
4 C1, Washington State Convention Center
8:00 A.M.–9:15 A.M.

23  PRAC
Win Over Your Students Using Teaching Strategies They Will Love
8–10 Workshop
Join this energetic workshop and learn how to easily implement activities and instructional techniques that make teenagers think critically, develop skills, work collaboratively, and find joy in doing math! You will leave this workshop excited about sharing a collection of hands-on activities, games, and teaching gems with your students.

Jessica Heitfield
Loudoun County Public Schools, Leesburg, Virginia

303, Washington State Convention Center

9:30 A.M.–10:30 A.M.

24  EMPOW
Beyond Front-Loading: Supporting Students to Communicate Mathematical Ideas
3–5 Session
All students, including those with expressive language difficulties and those who are second-language learners, need the opportunity to communicate mathematically. Too often the emphasis is on “front-loading” vocabulary. This session focuses on strategies and structures that foster a culture to support these students to discuss mathematical ideas.

Judy Storeygard
TERC, Cambridge, Massachusetts
Nicole Feret
Teachers Development Group, West Linn, Oregon

615, Washington State Convention Center

25  ASSESS
Blur the Lines between Assessments and Instruction
6–8 Session
Data from assessments rarely guides instruction. Data is seldom used to differentiate because it is a difficult process and time consuming. In this session, you will learn how to gather evidence from assessment data to create a personalized learning experience for all students including those with disabilities and English-language learners.

Anecca Robinson
Paul PCS, Washington, D.C.

618/619, Washington State Convention Center

26  PRAC
Building Diagram Sense: Using Diagrams as a Tool for Increasing Student Communication
3–5 Session
In this session, we will show how diagrams are powerful tools supporting students to meaningfully participate in mathematical discussions. In particular, we will explore instructional strategies that support students’ in becoming adept at creating and analyzing their own (and others’) visual representations in ways that support all students.

Melinda Knapp
Twitter: @KnappMelinda
Oregon State University–Cascades, Bend

27  PRAC
Building Thinking Classrooms
8–10 Session
In this session, I look at a series of practices, emerging from research, that can help to build an environment conducive to problem-based learning. I will unpack the research that has demonstrates that with these practices a problem-based culture and learning environment can quickly be established, even in classrooms where students resist change.

Peter Liljedahl
Twitter: @pgliljedahl
Simon Fraser University, Burnaby, British Columbia, Canada

Ballroom 6A, Washington State Convention Center
28  
Catalyzing Change in High School Mathematics: Initiating Critical Conversations  
Session  
Catalyzing Change in High School Mathematics: Initiating Critical Conversations identifies and addresses critical challenges in high school mathematics to ensure that each and every student has the mathematical experiences necessary for his or her future personal and professional success. This session provides an overview of Catalyzing Change and initiates critical conversations centering on the following serious challenges: explicitly broadening the purposes for teaching high school mathematics beyond a focus on college and career readiness; dismantling structural obstacles that stand in the way of mathematics working for each and every student; implementing equitable instructional practices; identifying Essential Concepts that all high school students should learn and understand at a deep level; and organizing the high school curriculum around these Essential Concepts in order to support students’ future personal and professional goals. Catalyzing Change is written to engage all individuals with a stake in high school mathematics in the serious conversations that must take place to bring about and give support to necessary changes in high school mathematics.  
Robert Q. Berry, III  
President, National Council of Teachers of Mathematics, Reston, Virginia; University of Virginia, Charlottesville  
Ballroom 6B, Washington State Convention Center

29  
Deepening Math Understanding: Discourse Moves to Engage All Students in Collaborative Sense Making  
3–5 Session  
Deep understanding happens when students share their thinking and reasoning, not just the answer and the steps they took. Learn an instructional routine that leverages deliberate discourse moves to ensure all students—including English learners and students with learning disabilities—are talking together to make sense of important mathematics.  
Grace Kelemanik  
Twitter: @GraceKelemanik  
Fostering Math Practices, Natick, Massachusetts  
Amy Lucenta  
Fostering Math Practices, Natick, Massachusetts  
4 C3, Washington State Convention Center

30  
Empower Teacher Leaders: Using Personalized Learning and Data to Build Instructional Capacity  
General Interest Session  
Learn how to develop and use innovative strategies to build teacher capacity and increase achievement for diverse learners. Gain a deeper knowledge around the anatomy of a successful personalized learning implementation, best practices for scaling effective instruction, and proven ways to help educators prepare students to meet their goals.  
Sarah Brewer  
Twitter: @brewersa10  
Bellevue School District, Washington  
Dylan Sweeney  
Bellevue School District, Washington  
Kelly Urlacher  
Senior Curriculum Designer, DreamBox Learning, Bellevue, Washington  
620, Washington State Convention Center

Download Speaker Handouts!  
View sessions in the mobile app or visit nctm.org/planseattle to access available presentation handouts.
9:30 A.M.–10:30 A.M.

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

**Coaches/Leaders/Teacher Educators Session**

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

**Darshan Jain**
Twitter: @djain2718
Adlai E. Stevenson High School, Lincolnshire, Illinois

**Sue Ellen Vozza**
Adlai E Stevenson High School, Lincolnshire, Illinois

604, Washington State Convention Center

32 **CDM**
Is This a Good Idea? Decision Making and the Game Theory behind It

**10–12 Session**

Whether it be deciding to raise their hand in class or trading lunch items, our students make choices every day. In this session, we will discuss the mathematical methods of making good decisions and will discuss ideas such as expected value, zero-sum games, and the prisoner's dilemma. Examples and methods to engage students will also be discussed.

**Tim Tennant**
Johns Hopkins University Center for Talented Youth, Baltimore, Maryland

4 C2, Washington State Convention Center

33 **PRAC**
Nine Beliefs for Building a Mathematical Community

**Pre-K–2 Session**

For students to believe in themselves as mathematicians, they need a classroom community where they feel safe to persevere, and where they construct knowledge through cooperative learning and discourse. Participants will learn about nine beliefs that support building this classroom community along with some strategies for classroom implementation.

**Tessa Kaplan**
Twitter: @tessakaplan84
Shoreline School District, Washington

**Rozlynn Dance**
Federal Way Public Schools, Washington

616/617, Washington State Convention Center

33.1 **PRAC**
Making Principles to Actions Come Alive with CPM Mathematics

**8–10 Workshop**

Let CPM show you how we incorporate the eight Mathematics Teaching Practices in your classroom. CPM provides rich mathematics curricula that are student-centered and problem-solving-based. Experience multiple rich tasks, opportunities for student discourse, and concrete ways to build fluency from conceptual understanding that are embedded within the materials.

**CPM Educational**
Elk Grove, California

612, Washington State Convention Center

33.2 **CURRIC**
How Student Learning Progresses with Coherent Curricula

**General Interest Exhibitor Workshop**

What does a coherent curriculum really feel like? Join Great Minds as we discuss how students and teachers benefit from the expertly crafted learning experiences found in the comprehensive PK-12 Eureka Math curriculum. Participants will discover how instruction and student learning progress from number sense, to fractions, to algebra, and beyond.

**Eureka Math/Great Minds**
Washington, D.C.

611, Washington State Convention Center
**33.3 PRAC**

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

Coaches/Leaders/Teacher Educators Exhibitor Workshop

Develop teacher habits for orchestrating a discourse-driven classroom by exploring effective “selecting and sequencing” student solutions. Participants will analyze student work, practice selecting and sequencing students’ solutions, including English Learners, and discuss their decisions with their peers.

Curriculum Associates
North Billerica, Massachusetts

310, Washington State Convention Center

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**34 CURRIC**

**Amazing Math: How to Improve Your Odds of Winning the Locker Game**

10–12 Workshop

The Locker Game is one of the most astonishing math activities your students will ever experience. Develop strategies for “winning” the game and then use probability, combinatorial reasoning, and calculus to analyze these strategies. The results are stunning! This two- or three-day activity is great anytime but especially after an AP exam.

James Matthews
Siena College, Loudonville, New York

4 C1, Washington State Convention Center

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**35 EMPOW**

**Challenge Accepted! Use Project-Based Learning to Finally Explore Social Justice in Algebra Class**

8–10 Workshop

Good projects combine 21st-century skills and rich mathematics, but they can also explore ideas of social justice. Learn how to explore history, inequality, and current events while kids make mathematical models, think critically, and develop mathematical practices. Bring your ideas and we’ll start creating new projects.

Carl Oliver
Twitter: carloliwitter
City-As-School, New York, New York

606, Washington State Convention Center

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**36 PRAC**

**Empowering Your Students through Productive Mathematical Discourse**

6–8 Workshop

We will discuss how we use the concepts in 5 Practices for Orchestrating Productive Math Discussions with teachers and students. We will first engage the audience in a rich mathematical task and role play how to implement the 5 Practices. Teams will then be provided a rich math task and student work in order to participate in using the 5 Practices themselves.

Kathryn Ernie
University of Wisconsin–River Falls
Erick Hofacker
University of Wisconsin–River Falls

609, Washington State Convention Center

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**37 PRAC**

**Fraction Success for Every Child: Conceptual Understanding, Fluency, and Real-Life Problem Solving**

3–5 Workshop

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

Donna Knoell
Self employed, Shawnee Mission, Kansas

303, Washington State Convention Center

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**38 PRAC**

**Inspiring Growth Mindset in Middle School Students through High-Quality Geometry Tasks**

6–8 Workshop

During this engaging hands-on session, participants will experience geometry inquiry tasks related to polygons and polyhedrons all designed to inspire growth mindset among middle school learners. Discussion among colleagues will also focus on attributes of high-quality tasks and their potential impact on the development of mindset.

Martha Parrott
Northeastern State University, Broken Arrow, Oklahoma

607, Washington State Convention Center
9:45 A.M.–11:00 A.M.

39 ASSESS
It’s Not That You Gave a Formative Assessment, It’s What You Did with the Information That Counts

8–10 Workshop

Formative data can be used to inform instruction in multiple “correct” ways. Using assessment data from algebra classes, we’ll discuss various ways it can inform and impact instruction. Lesson monitoring, various ways to form and use collaborative groups, and differentiation will be discussed. Tools to collect formative data will be presented.

Allan Bellman
Twitter: abellman17
University of Mississippi
Kayton Hosket
University of Mississippi

307/308, Washington State Convention Center

40 GROWTH
New and Preservice Teachers Workshop

Pre-K–12 Early Career 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

401, Washington State Convention Center

41 AGENCY
Oh, the Math That They Will Know! Math Games for All Learners

Pre-K–2 Workshop

Come prepared to play games that use large format cards, dice, human number lines, dominoes, and easy-to-find dollar store items that meet the needs of our special ed students. Regardless of age and ability, students love games that help them learn counting, patterns, and early operations. Participants will receive games and see student samples.

Jane Felling
Twitter: @Boxcarseduc
Box Cars and One-Eyed Jacks, Edmonton, Alberta, Canada

605/610, Washington State Convention Center

42 EMPOW
Promoting Equity & Access in Mathematics through Discourse

3–5 Workshop

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

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

4 C4, Washington State Convention Center

43 PRAC
Story Time STEM: Engaging Students in Sense-Making Discussion through Children’s Literature

Pre-K–2 Workshop

Within the pages of a children’s book lie vibrant opportunities to think like a mathematician! Reading aloud with children is joyful, but we rarely view shared reading as a time to think mathematically. Join us to think about how to approach literature with a mathematical lens and support students’ sense making through discussion of stories.

Allison Hintz
Twitter: @allisonhintz124
University of Washington, Bothell
Kristin Gray
Illustrative Math, Lewes, Delaware
Antony Smith
University of Washington, Bothell

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

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

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

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

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

Professional Development Your Way! NCTM also provides customizable professional development related to Catalyzing Change for leaders, schools, and districts.
9:45 A.M.—11:00 A.M.

44
The Hierarchy of Hexagons: An Example of Geometry Inquiry
General Interest Session
The hierarchy of quadrilaterals is standard fare in geometry courses at many levels. But what about hexagons? Come join a genuine inquiry session in which we will develop hexagon classification schemes, ask about relationships, and maybe even prove a few new theorems! Modifications for middle and high school classrooms will be discussed.

Christopher Danielson
Twitter: @trianglemancsd
Desmos, Inc., St. Paul, Minnesota
602/603, Washington State Convention Center

45
Trigonometry: A Modeling Approach
10–12 Workshop
The Common Core State Standards incorporate modeling as a major theme. This presentation will focus on the use of modeling, classroom discourse, hands-on activities, and technology to develop the traditional topics of trigonometry in a nontraditional manner.

Greta Mills
Oxbridge Academy, West Palm Beach, Florida
613/614, Washington State Convention Center

11:00 A.M.—12:00 P.M.

46
Creating a Classroom of Inquiry and Collaboration
6–8 Session
Transform your math classroom into a place of inquiry where students make sense through investigation and discussion. Join us as we explore where to find rich tasks that will engage your students and inspire them to appreciate the beauty of mathematics and problem-solving. Strategies for promoting collaboration and cooperative learning through teams.

Heather Wukelich
Twitter: @WukelichMath
Austintown Local Schools, Ohio
4 C3, Washington State Convention Center

47
Hands-On Calculus
Higher Education Session
Water flow through funnels is analyzed and validated with live demonstrations. Mathematics is used to predict the future, just like scientists and engineers use mathematics. “Listening” to dimensionality, drain rate as a function of water height, drain times of complex shapes, and drain volume between arbitrary time limits are discussed.

Peter Graube
Consultant, Sunnyvale, California
616/617, Washington State Convention Center

48
Hanging Math Out to Dry: Using Upper Elementary Clotheslines to Build Number Sense
3–5 Session
Do you know that “number line” appears in the standards more than 26 times? This workshop is designed to explore how the clothesline (an open number line) creates the opportunity for all students to engage in discourse that promotes the development of number sense. Participants will investigate how this tool is utilized in grades 3–5.

Kristen Acosta
Twitter: @aprilf4175
Merinda Elementary School, West Covina Unified School District, Upland, California
Judy Keeney
Central Unified School District, Rancho Cucamonga, California
Stacy Zagurski
West Covina United School District, California
604, Washington State Convention Center

49
My Favorite Middle School Contest Problems Are for All Students
6–8 Session
Problem solving is central for all and yet math contests are frequently seen as an activity for the gifted. Challenge your students with these classic middle school contest problems and let them discover multiple solutions that enrich understanding. Teaching problem solving will be modeled as you contribute solutions.

Dennis Mulhearn
Valley Stream South High School, New York
615, Washington State Convention Center
11:00 A.M.–12:00 P.M.

51 President’s Address: Catalyzing Change: Identity, Agency, Positionality, and Equitable Instructional Practices

General Interest Session

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

Robert Q. Berry, III
President, National Council of Teachers of Mathematics, Reston, Virginia; University of Virginia, Charlottesville

Ballroom 6B, Washington State Convention Center

52 Taking Action: Implementing the NCTM Effective Mathematics Teaching Practices

Session

Gain a deeper understanding of the eight Mathematics Teaching Practices from Principles to Actions and how they form a framework for teaching mathematics. This session will engage participants in analyzing and discussing artifacts of teaching taken from NCTM’s Taking Action series.

DeAnn Huinker
Twitter: dh11235
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Wisconsin–Milwaukee

618/619, Washington State Convention Center

53 CDM
Teaching Geometry to Young Children: From Parts to Properties

Pre-K–2 Session

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

Douglas Clements
Twitter: dhclements
University of Denver, Colorado

Julie Sarama
University of Denver, Colorado

4 C2, Washington State Convention Center

54 PRAC
The Productive Struggle Is Real

8–10 Session

Work through a task that promotes productive struggle. Following the task, we will analyze how productive struggle is encouraged in the task so that you can then work in a small team to create a task that can be used to promote productive struggle in your classroom.

Brock Strickland
Denver Public Schools, Colorado

Frederick Dillon
Educational Coach, Strongsville, Ohio

Ballroom 6C, Washington State Convention Center

Stop by NCTM Central to ask questions and learn about the new NCTM journal!
11:00 A.M.–12:00 P.M.

55  PRAC  Using Literacy Strategies to Teach Precalculus and Calculus Concepts
10–12 Session
In this session, the presenter will share ideas for adapting common reading and writing instructional strategies to the high school mathematics classroom. Graphic organizers, categorization tables, active comprehension activities, anticipation guides, and other strategies can all be used to build students’ conceptual understanding of mathematics.

Tena Roepke
Ohio Northern University, Ada
Ballroom 6A, Washington State Convention Center

55.1  EW  PRAC  Creating Mathematical Understanding through Hands-On Activities with EAI Education Manipulatives
3–5 Exhibitor Workshop
How can I help my students better understand math, rather than trying to memorize a series of steps or rules? Manipulatives help your students better understand concepts through hands-on learning. Come discover these powerful tools in developing conceptual understanding, including sample manipulatives to take back to your school and use next week.

EAI Education
Oakland, New Jersey
612, Washington State Convention Center

55.2  EW  CURRIC  Walk the Number Line for Research-Based Results for K–5!
3–5 Exhibitor Workshop
Elementary learners need a number line for powerful math concepts like skip counting, adding on, alternative algorithms for regrouping, making change, elapsed time, rounding, factoring, and fractions! You will be amazed at the unique strategies that Kim Sutton of Creative Mathematics will use with this tool! You will be ready for action on Monday.

Creative Mathematics
Washington, D.C.
611, Washington State Convention Center

55.3  EW  CURRIC  Investigating the Arc of Arithmetic to Algebra
6–8 Exhibitor Workshop
How is “subitizing” connected to algebra? Join us to investigate the coherence in the K–9 progression that links decomposition of number with area models and algebraic expressions. Participants will use a variety of manipulatives and tools and will receive math lessons showcasing the connections.

Curriculum Associates
North Billerica, Massachusetts
310, Washington State Convention Center

11:30 A.M.–12:00 P.M.

56  ASSESS  Assessment of Students Classifying Symmetrical Patterns
General Interest Burst
Project-based learning focuses on not only learning outcomes but also on learning process. When it is implemented, different kinds of assessment should be employed to assess learning process. This presentation will illustrate how students were able to track their progress during a given project and show what they achieved in their products.

Soo Yeon Shin
Minnesota State University, Mankato
4 C1, Washington State Convention Center

58  PRAC  Let’s Have Fun Using Hands-On Activities to Generate Linear Functions
8–10 Burst
Participants will do a “water dripping” experiment using a graduated cylinder and foam cup with a hole in the bottom. Time is the independent variable and volume is the dependent. The second activity demonstrated will use a damp tennis ball rolled on grid easel paper. A worksheet for each activity will be provided.

Kathleen Mittag
University of Texas at San Antonio
Sharon Taylor
Georgia Southern University, Statesboro
613/614, Washington State Convention Center
11:30 A.M.–12:00 P.M.

59  CDM  
Math and Wood Shop: The Makerspaces You Already Have

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

Justin Aion
Twitter: @JustinAion
Leechburg Area School District, Pennsylvania
605/610, Washington State Convention Center

60  PRAC
Rich Tasks That Promote Critical Thinking, Coherent Discourse, and Classroom Community

6–8 Burst
Participants will receive a packet of challenging problems that have proven effective at winning student interest, developing critical thinking, and encouraging student discourse. Participants will learn from the experiences of one school how to introduce and use these problems with students. One student group will share their work and experience.

Hoyun Cho
Capital University, Columbus, Ohio
Gary Lawrence
Mustard Seed School, Hoboken, New Jersey
609, Washington State Convention Center

61  PRAC
Sequencing Series in Calculus

10–12 Burst
Often times student miss connections that can lead to understanding series more fully. Building on tangent line approximations, students can calculate quadratic approximations, laying the groundwork for higher order Taylor polynomial approximations. Investigating approximations early and often can be integral in providing a framework for success.

Josh Berberian
The Shipley School, Bryn Mawr, Pennsylvania
608, Washington State Convention Center

62  PRAC
Statistics Teacher Journal: A Resource for Teachers and an Opportunity for Authors

General Interest Burst
Statistics Teacher is a free, online journal for K–12 and postsecondary teachers of statistics and probability. Come learn about the resources provided by the journal, and about opportunities to write for it.

Jessica Cohen
Western Washington University, Bellingham
606, Washington State Convention Center

63  PRAC
Two Math Practices at the Same Time: Making Connections through Making Viable Arguments

3–5 Burst
Viable arguments build on prior knowledge, but students often leave connections to prior knowledge unstated in their arguments. This session presents a framework to make an argument’s connections more explicit. Using this framework, we will analyze student arguments from the upper-elementary level for the explicitness of their connections.

Peter Klosterman
Central Washington University, Ellensburg
4 C4, Washington State Convention Center

64  PRAC
Using Visible Thinking Routines to Capture Preservice Teacher (and Student) Knowledge

Burst
Visible thinking routines can be a powerful formative assessment tool for the learner to reflect and the instructor to gauge what the learner knows. We will explore several visible thinking routines used in preservice teacher mathematics pedagogy courses and discuss how they have impacted learning and instruction and how they can be used in K–12 classrooms.

Daniel Ilaria
West Chester University, Pennsylvania
401, Washington State Convention Center
11:30 A.M.–12:00 P.M.

**65** 📈 **TOOLS**

**What Do You Mean 10 + 14 = 20?**

8–10 Burst

MP: Attend to precision. What exactly does this mean when expressing measurements? Participants will gain an understanding of significant figures, why they are so important, and how to help students understand the communication of precision. If you don’t know what significant figures are, this is the burst for you!

Holly Crowson
Twitter: @HCrowsonBIL
Big Ideas Learning, Erie, Pennsylvania

303, Washington State Convention Center

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1:30 P.M.–2:30 P.M.

**67** 📈 **CURRIC**

**“Got Milk?”—Learn the Math behind Perfect Tasting Milk**

10–12 Session

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

Tracey Zak-Johnson
Twitter: @traceylovesmath
Consultant, Aledo, Texas

Denise Young
Blue Valley School District, Stilwell, Kansas

615, Washington State Convention Center

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Gain more from your conference experience—continue the conversation in the NCTM app! Learn more at nctm.org/confapp.
1:30 P.M.–2:30 P.M.

69 AGENCY
Creating a Culture Where All Students Succeed & Develop Confidence in Math
6–8 Session
Learn how we create a culture that fosters student agency and confidence through instructional routines in summer math camps. See how middle school students from a variety of backgrounds (special education, English language learners, Alaska Native, migrant, and homeless) visualize numbers, shapes, and patterns while developing confidence in their thinking.

Samantha Wuttig
Twitter: swuttig
Fairbanks North Star Borough School District, Alaska
Tara Devaughn
Fairbanks North Star Borough School District, Alaska
Benedict Cabasal
Fairbanks North Star Borough School District, Alaska
Ballroom 6A, Washington State Convention Center

70 PRAC
Developing Multiplication and Division with Manipulatives
3–5 Session
How can I help my students better understand multiplication and division, rather than trying to memorize a series of steps? See how using manipulatives can help your students better understand these important concepts. Discover why manipulatives are a powerful tool in developing conceptual understanding that leads to procedural fluency.

Kevin Dykema
Twitter: @kdykema
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Mattawan Consolidated Schools, Michigan
Ballroom 6C, Washington State Convention Center

71 CURRIC
Growing CARE—Conceptual Algebra Readiness for Everyone
3–5 Session
This session will focus strategies to develop problem solving and generalization skills to prepare the early algebraic thinker conceptually for algebra. Weekly algebra-readiness, problem-solving activities will be shared. We will model the classroom climate and discuss strategies to implement these algebraic reasoning activities.

David Feikes
Purdue University Northwest, Westville, Indiana
604, Washington State Convention Center

72 PRAC
Hanging Math Out to Dry: Using Primary Clotheslines to Build Number Sense
Pre-K–2 Session
Do you know that number line appears in the standards more than 26 times? This workshop is designed to explore how the clothesline (an open number line) creates the opportunity for all students to engage in discourse that promotes the development of number sense. Participants will investigate how this tool is utilized in K–grade 2.

Stacy Zagurski
West Covina United School District, California
Kristen Acosta
Merlinda Elementary School, West Covina Unified School District, Upland, California
Judy Keeney
Consultant, Rancho Cucamonga, California
616/617, Washington State Convention Center

73 PRAC
Recipes for Mathematical Surprise
General Interest Session
If our students wrote down adjectives to describe math class, “surprising” might not make the Top 10. And yet surprise is an emotion that makes us interested, prepares us to learn, and prepares us to prove. We’ll experience mathematical surprise and discuss three recipes for creating surprise throughout K–12 mathematics.

Dan Meyer
Twitter: ddmeyer
Desmos, San Francisco, California
Ballroom 6B, Washington State Convention Center
1:30 P.M.–2:30 P.M.

74 **EMPOW**
Reframing the Conversation: Supporting Academic Language and Mathematics Learning
10–12 Session

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

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

4 C3, Washington State Convention Center

75 **GROWTH**
Teachers Leading Math Professional Learning through Teacher Rounds to Improve Student Learning
General Interest Session

Teachers from the two K–8 vertical teams of teachers will present the process of collaborative professional learning used at PS397 to investigate the jointly developed problem of practices in mathematics learning, focused on differentiation and engagement/motivation to improve teaching and learning and to maximize outcomes for all students.

Elizabeth Irwin
Spruce Street School, New York, New York
Stefanie Erickson
Spruce Street School, New York, New York
Meryl Glicksman
Spruce Street School, New York, New York

620, Washington State Convention Center

76 **ASSESS**
Using Assessments to Drive Our Instruction
Pre-K–2 Session

We often use assessments to find out if students can get right answers. But what we need to know is what mathematical concepts students understand and what they still need to learn. We can then use the assessment data to provide the most effective instruction that meets the needs of all students and provides the foundation for future success.

Kathleen Richardson
Math Perspectives Teacher Development Center, Bellingham, Washington

4 C2, Washington State Convention Center

76.1 **EW**
**TOOLS**
Driving on Mars: A Coding Problem
8–10 Exhibitor Workshop

Have your students wondered how driverless cars work? Have you considered the math that it takes for vehicles to drive on Mars? In this session, we will code robotic vehicles using mathematics to drive, make turns, and complete a challenge. Best part: no coding experience needed!

Texas Instruments
Dallas, Texas

612, Washington State Convention Center

76.3 **EW**
**GROWTH**
Reading and Math: The Wisdom That Connects Both Subjects
Pre-K–2 Exhibitor Workshop

A reading person or math person … which one are you? Do you have to be one or the other? This hands-on session will present research to help understand how reading and math are related and to explore how they work together, so students and teachers can enthusiastically master both and experience an increase in measurable outcomes in both subject areas.

Curriculum Associates
North Billerica, Massachusetts

310, Washington State Convention Center
1:30 P.M.–2:45 P.M.

77 ASSESS
A Journey from Fraction Division to Fractional Exponents with a Stopoff at Inverse Proportionality
8–10 Workshop
This workshop focuses on proportions, inverse proportionality, and fractional exponents. Participants will examine their knowledge, understand the thinking of others, create questions to reveal students’ understanding, and critique the effectiveness of questions in revealing thinking and moving discussions toward important outcomes.

George Bright
University of North Carolina Greensboro (Retired), Seattle, Washington

401, Washington State Convention Center

78 PRAC
Children’s Thinking (CGI): How We Notice, Support, and Extend to Enhance Equity
Pre-K–2 Workshop
This session explores how attending to the details and partial understandings of children’s thinking can enable teachers to engage students in learning together, making use of the resources that each student brings. We will work together on classroom practices that draw on student thinking and leverage different forms of participation.

Megan Franke
Twitter: @meganfranke
University of California, Los Angeles

4 C4, Washington State Convention Center

79 GROWTH
Contributing and Belonging to the MTBoS: Enhancing the Professional Learning Network
Coaches/Leaders/Teacher Educators Workshop
Professional learning can continue outside conference opportunities! Come explore various ways to use social media for professional learning both to enhance teaching and to contribute to the broader endeavor of developing effective mathematics teaching practices and resources, which ultimately enhance students’ mathematical learning experiences.

Judy Larsen
Twitter: @JudyLarsen3
University of the Fraser Valley, Abbotsford, British Columbia, Canada

4 C1, Washington State Convention Center

1:30 P.M.–2:45 P.M.

80 PRAC
Developing Fact Fluency Using Models, Language Supports, and Relational Thinking
3–5 Workshop
This session will engage participants in research-based activities designed to increase students’ fluency with basic multiplication, addition, and subtraction facts. Examples from classroom work as well as key research findings will be shared. Connections to multidigit operations and algebraic thinking will also be addressed.

Sam Strother
DMT Institute, Boise, Idaho
Jonathan Brendefur
Boise State University, Idaho
Jana Estes
Boise State University, Idaho

307/308, Washington State Convention Center
81  CURRIC  
Early Learning: Cultivating Effective Student Discourse to Enhance Mathematical Understandings  
Pre-K–2 Workshop  
When we are born, we hear mysterious sounds and try to make sense of them. For children, the same is true for mathematical vocabulary. In this session, you will dive into the early learning classroom and see how the language of math is cultivated and honored, and how children catapult themselves to success through the art of communication.  
Jessica Bobo  
Twitter: @SGR_SPRNKL8_LDY  
ORIGO Education, Earth City, Missouri  
Debi DePaul  
ORIGO Education, Earth City, Missouri  
608, Washington State Convention Center

82  PRAC  
Engaging All Students in Rigorous Mathematics with Problem Strings and Talks  
8–10 Workshop  
Problem strings and talks are powerful lesson formats where all students learn, have access to the problems, and are challenged. The success hinges on the order, the discussion, and on the teacher modeling student strategies to build connections. Come experience powerful teaching routines that promote sense making, strategizing, and mathematizing.  
Pamela Harris  
Twitter: @pwharris  
Texas State University, San Marcos  
609, Washington State Convention Center

83  AGENCY  
Engaging Students with Special Needs in Rich Tasks and Mathematically Productive Struggle  
6–8 Workshop  
The routines and activities we will engage in in this workshop provide access for all students to engage in challenging mathematics and productive struggle. They enable teachers to monitor student progress so that they can respond to student needs through modifications, accommodations, remediation, challenges, and extensions.  
Jill Perry  
Rowan University, Glassboro, New Jersey  
303, Washington State Convention Center

84  PRAC  
Extending Curiosity and Wonder with “What if” Questions  
6–8 Workshop  
Fostering student curiosity and wonder leads to student engagement with math content. Extending this builds an appreciation for and a value of the subject. Participants will investigate math problems that foster curiosity and use question stems such as “What if . . .” to build student agency, extend curiosity, and foster creativity in math class.  
Michael Wiernicki  
Twitter: @mikewiernicki  
Henry County Schools, McDonough, Georgia  
613/614, Washington State Convention Center

Shop and save at the NCTM Bookstore in NCTM Central!
1:30 P.M.–2:45 P.M.

85 TOOLS

Hands-On Activities + Technology = Mathematical Understanding through Authentic Modeling

8–10 Workshop

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

Thomas Beatini
Union City Board of Education, New Jersey

605/610, Washington State Convention Center

3:00 P.M.–4:00 P.M.

88 CURRIC

Place Value Progression K-5: The ABCs of NBT

3–5 Workshop

Experience hands-on activities that will help you understand the K–5 progression of place value in the NBT standards from counting objects to working with decimals. Make connections to the Math Practices and leave with ideas and free online tools to use tomorrow!

Lori Bluemel
Math Learning Center, Chandler, Arizona
Jennifer Ranum
Math Learning Center, Windsor, Colorado

607, Washington State Convention Center

86 PRAC

Let the Sun Shine! Using Trigonometry to Model Daylight Data

10–12 Workshop

Math is EVERYWHERE! Participants will collect and model data for the hours of daylight for world cities using trigonometric functions. Comparisons between the results of various world cities lead to interesting discoveries, discussion, and mathematical extensions. Leave with an activity proven to motivate and engage students in learning.

Scott Knapp
Twitter: @scottknapp
Glenbrook North High School, Northbrook, Illinois

602/603, Washington State Convention Center

87 PRAC

Manage Flow and Let Go

10–12 Workshop

Participants will engage in math tasks in an environment that is conducive to thinking. Based on research by Dr. Liljedahl, these tasks will enable us to dig deep into the components of a thinking classroom. Collectively, let us learn to manage flow and let go to create a student-centered experience.

Alex Overwijk
Twitter: @alexoverwijk
Ottawa Carleton District School Board, Canada

606, Washington State Convention Center

89 EMPOW

Adjusting Instruction for a Culturally Responsible Classroom

3–5 Session

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

Eugene Glover Jr
Twitter: @EugeneTGloverJr
University of Alabama, Tuscaloosa

615, Washington State Convention Center

90 TOOLS

Great Tasks and Technology Enhance Learning

8–10 Session

A great task engages students with an interesting problem involving essential content. It builds deeper understanding, supports discourse, and provides the opportunity to persevere. Technology alone does not solve it—nor does technology replace thinking. Learning is enhanced when we leverage classroom technology to guide students to deeper math.

Connie Schrock
Twitter: @cfryschrock
Emporia State University / NCSM President, Kansas

4 C2, Washington State Convention Center
3:00 P.M.–4:00 P.M.

91 GROWTH
Innovative Grants for Mathematics Educators from the Mathematics Education Trust

General Interest Session

The MET Board provides different grants and funding options for classroom teachers and other math educators designed to support innovative ideas for teaching and learning. Join us on a tour of grant opportunities and hints on how to prepare a successful application. Getting funding for that math project is easier than you think! Exciting lessons and professional development for mathematics.

Richard Seitz
Chair, MET Board of Trustees

604, Washington State Convention Center

92 CURRIC
Modeling with Mathematics in Science Class: Maximizing Opportunities to Enrich the STEM Experience

3–5 Session

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.

Michael Flynn
Twitter: @MikeFlynn55
Mount Holyoke College, South Hadley, Massachusetts

4 C3, Washington State Convention Center

CPM EDUCATIONAL PROGRAM

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

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+ Problem-based lessons for active student engagement
+ Free, comprehensive professional learning progression to support teacher expertise, growth, and leadership
+ Educational nonprofit 501(c)(3)

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

MORE MATH FOR MORE PEOPLE

CPM EDUCATIONAL PROGRAM
3:00 P.M.—4:00 P.M.

93 **CDM**
*Oregon Math in Real Life Project: Engaging Students through Authentic Contexts*

**8–10 Session**

Oregon awarded six regional grants for the Math in Real Life project whose objective is to create innovative lessons in grades 7–10 that would be shared under an open Creative Commons license. In this session, lessons created by this grant will be shared as well as insights gained through this project in developing applied math lessons.

**Mark Freed**
Twitter: @FreedMath
Oregon Department of Education, Salem
**Tom Thompson**
Oregon Department of Education, Salem

616/617, Washington State Convention Center

94 **PRAC**
*Splat! The Explosively Popular Inkblot Math Strategy*

**General Interest Session**

Splat! The visual math strategy that has propelled powerful number sense conversations in classrooms around the world will be showcased in this session. Participants will learn how to use powerful questions in key moments to leverage the strategy and will leave with over 100 animated, ready-to-use PowerPoint Splat! lessons.

**Steve Wyborney**
Twitter: @stevewyborney
Ontario School District, Oregon

Ballroom 6C, Washington State Convention Center

95 **GROWTH**
*Teaching: The Struggle Can Be Real, But We’re Here to Help!*

**General Interest Session**

As younger teachers in our profession, we have reflected upon what we learned (and wish we would have learned) before entering our first years of having our own classrooms. Come join us for conversations about how to best support new(er) teachers as they join our community of lifelong learners.

**Tina Nocella**
Twitter: @mrstnocella
Adlai E. Stevenson High School, Lincolnshire, Illinois
**Gary Chu**
Niles North High School, Skokie, Illinois

620, Washington State Convention Center

96 **PRAC**
*The Status Quo in High School Mathematics Is Unacceptable*

**10–12 Session**

Today, it seems as if nearly everyone agrees that high school mathematics needs to change, especially algebra 1 and 2, which seem mostly unchanged from decades past. This session will discuss the major changes that are needed to improve curriculum and instruction in high school. Additionally a plethora of algebra 1 modeling tasks will be presented.

**Eric Milou**
Twitter: @drMi
Rowan University, Glassboro, New Jersey

Ballroom 6B, Washington State Convention Center

97 **PRAC**
*Using Literacy and Vocabulary to Make Sense of Problems*

**6–8 Session**

Reading math problems can frustrate students to the point of shutting down. This session will feature classroom-tested strategies for helping students comprehend problems containing a lot of text and recognize that mathematical vocabulary has more than one connotation. Takeaways include a video link, a graphic organizer, and photos of student work.

**Aaron Rumack**
Twitter: sngndnc
White River School District, Buckley, Washington

618/619, Washington State Convention Center
3:00 P.M.—4:00 P.M.

98.1 CDM
What Math Lives Here? Uncovering Mathematics in Studio and Outdoor Experiences
Pre-K–2 Session

What mathematics can be uncovered in different places and spaces? During this session, examples of students engaged in mathematical thinking and learning in studio and outdoor spaces will be shared. Frameworks for planning for inquiry-based approaches and capturing student learning in alternative learning environments will be shared.

Janice Novakowski
Twitter: @jnovakowski38
Richmond School District, British Columbia, Canada

Ballroom 6A, Washington State Convention Center

98.1 CDM
When Adaptive Learning Meets Interactive Storytelling, Students Conquer FRACTIONS!
3–5 Exhibitor Workshop

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

Amplify Education
Brooklyn, New York

612, Washington State Convention Center

98.2 CDM
BYOD: Mathspace—Using Data to Inform Your Teaching Practice. Did I Mention It’s Pre-Graded?
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. Bring your own device to try the award-winning Mathspace live, and ask about a free classroom trial.

Mathspace
New York, New York

611, Washington State Convention Center

98.3 CDM
Teaching Math through Problem Solving: How Japan Math Develops and Nurtures Mathematical Thinkers
Pre-K–2 Exhibitor Workshop

Please join us for Dr. Akihiko Takahashi’s workshop. Using our four-step problem-solving method, students are discovering the importance of reasoning, reflection, organization, and expression, leading to a deeper understanding of mathematics.

Japan Math
Chicago, Illinois

310, Washington State Convention Center

3:15 P.M.—4:30 P.M.

99 PRAC
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
Twitter: davidwees
Independent Consultant, Denman Island, British Columbia, Canada

Russell West
New Visions for Public Schools, New York, New York

Sara Toguchi
New Visions for Public Schools, New York, New York

608, Washington State Convention Center
### 100 CURRIC

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

**3–5 Workshop**

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

**Lindsay Gold**  
Twitter: @lindsayanngold  
University of Dayton, Ohio  

**Michael Houston**  
Riverside Beaver County School District, Ellwood City, Pennsylvania  

**John Ashurst**  
T^3 National Instructor, Baxter, Kentucky

4 C1, Washington State Convention Center

### 101 PRAC

**Fostering Student-Centered Conversations**

**10–12 Workshop**

What would happen if you observed quietly as your students sat in a circle and spent the period conducting their own class discussion about mathematical ideas from a shared text? What new questions would arise and what new shared understandings could be reached? Seminars create space for students to actively learn through collaborative sense making.

**Pearl Ohm**  
NYC Department of Education/Essex Street Academy, New York, New York  

**Daniel August**  
NYC Department of Education/Essex Street Academy, New York, New York

401, Washington State Convention Center

### 102 CURRIC

**Instructional Routines to Increase Student Discourse and Build Mathematical Ideas**

**6–8 Workshop**

Routines in the Illustrative Mathematics 6–8 Math curriculum provide a structure to elicit mathematical ideas, facilitate productive discourse, support the Standards for Mathematical Practice, and place a focus on student voice. In this session, we will engage in the routines as learners and reflect on the mathematics and structures as teachers.

**Ashli Black**  
Twitter: mythagon  
Illustrative Mathematics, Edmonds, Washington

606, Washington State Convention Center

### 103 EMPOW

**Learning to Talk about Inequities in Mathematics Classrooms to Improve Learning for All Students**

**Coaches/Leaders/Teacher Educators Workshop**

Supporting teachers in enacting equitable teaching practices requires that we learn to recognize inequities and facilitate conversations with colleagues, teachers, administrators, and community members. In this session, we will engage with a case study of inequity and discuss how to lead this work in our own contexts.

**Leslie Nielsen**  
Twitter: PSESDMathLeslie  
Puget Sound Educational Service District, Issaquah, Washington

303, Washington State Convention Center
3:15 P.M.–4:30 P.M.

104 **GROWTH**

**Let’s Talk about Assumptions about Math and What They Have to Do with Equity and Justice**

8–10 Workshop

This interactive session is a space for educators to reflect and engage in a conversation around equity, social justice, and mathematics. Small group discussions, led by UW faculty and graduate students, will be facilitated through focused prompts related to your practice, problems of practice, experiences, and visions of equity and social justice.

Starlie Chinen  
University of Washington, Seattle  
Meixi Ng  
University of Washington, Seattle  
Taylor Stafford  
University of Washington, Seattle

307/308, Washington State Convention Center

105 **PRAC**

**Looking at Proof Logically**

8–10 Workshop

Participants will engage in instructional activities and simple games as they investigate a developmental plan for teaching and assessing geometric proof.

Mark Cote  
CPM Educational Program, Elk Grove, California

602/603, Washington State Convention Center

106 **CDM**

**Math Anywhere! Noticing and Responding to Mathematical Moments**

**Pre-K–2 Workshop**

Children naturally make use of mathematics as they play, explore, and observe the world around them. Teachers and parents can leverage these mathematical moments if we first learn to notice as they happen. This session will highlight approaches to look for and respond to children’s mathematical thinking within the context of everyday situations.

Molly Daley  
Twitter: @mdaley15  
Educational Service District 112, Vancouver, Washington

607, Washington State Convention Center

107 **CURRIC**

**Meeting Environmental Challenges with Mathematics**

6–8 Workshop

In this STEM-focused workshop, discover hands-on activities that use real-world data to create mathematical models as a way to understand trends in land use, population growth, climate change, and more. Build students’ environmental I.Q. while developing skills in measurement, data analysis, modeling, and problem solving.

Jenny Cunningham  
IslandWood, Bainbridge Island, Washington

4 C4, Washington State Convention Center

108 **TOOLS**

**Operations on Fractions? There’s an App for That!**

3–5 Workshop

Explore four free apps that provide the means to model operations on fractions, share your solutions, and justify the results. Engage your students and integrate authentic technology in your lesson with apps compatible with iPads, Chrome books, and whiteboards through collaboration and inquiry. Families will appreciate the easy access too!

Pia Hansen  
The Math Learning Center, Salem, Oregon

605/610, Washington State Convention Center

109 **PRAC**

**Visual Reasoning: Seeing and Learning Mathematics**

**Pre-K–2 Workshop**

Problem-solving tasks that engage children in visual reasoning challenge them to use and connect representations while developing mathematical ideas. Come and examine activities designed for children to use their visual abilities while learning number, geometry, and measurement concepts.

Kay Wohlhuter  
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Minnesota Duluth

609, Washington State Convention Center
3:15 P.M.–4:30 P.M.

110 **ASSESS**
**What Do They Know and What Can They Do: Digging Deeper into Assessment**
**10–12 Workshop**
What do we communicate to students when we assess them, and does it help their learning progress? Too often we inform students about what they’re not doing or not understanding. What if assessment focused on what students CAN do? We will dig deeper into assessment in terms of what we assess, how we assess, and when we assess.

Marc Garneau
Twitter: @314Piman
Surrey School District, British Columbia, Canada
613/614, Washington State Convention Center

4:30 P.M.–5:30 P.M.

111 **TOOLS**
**Exploring the Connection between Recursive Sequences and Composition of Functions**
**10–12 Session**
We will examine multiple representations of recursive sequences through iterative techniques. Various learning styles will be addressed through modeling of real-world situations. See how handheld technology promotes algebraic thinking and a deeper understanding of sequences, functions, and limits to help students move from algebra to calculus.

David Kapolka
Twitter: dkapolka
Forest Hills Public Schools (Emeritus), Alto, Michigan
Ballroom 6A, Washington State Convention Center

112 **PRAC**
**Intersections Instead of Integration: Making Meaningful Connections between Math and Science**
**General Interest Session**
Math and science integration is a hot topic, particularly with the adoption of the Next Generation Science Standards (NGSS). Is it possible to integrate in a way that advances meaningful learning in both disciplines? Should the subjects be fully integrated? We will investigate integration by identifying and leveraging intersection points in the content in 6th grade through college.

Jessica Cohen
Western Washington University, Bellingham
Ballroom 6C, Washington State Convention Center

113 **ASSESS**
**Learning from Children’s Mathematical Thinking: A CGI Approach to Formative Assessment**
**3–5 Session**
In this session, we’ll explore a formative assessment approach based on the research of cognitively guided instruction (CGI). We’ll share how K–5 teachers can use CGI frameworks to gather detailed information about their students’ current understandings about counting, number and operation, fractions, and equality, and then make instructional decisions.

Kendra Lomax
Twitter: @kendralomax
University of Washington, Seattle
Becca Lewis
University of Washington, Seattle
Taylor Stafford
University of Washington, Seattle
618/619, Washington State Convention Center
Lessons Learned from Lesson Study

Coaches/Leaders/Teacher Educators Session

Lesson study is growing powerfully in our region. Come dive into what we have been learning about getting started, developing teachers' research questions, supporting teachers to articulate their working hypotheses, effective post-lesson discussions, consolidating shared understandings, and facilitating lesson study cycles open to the public.

Ryan Dent
Twitter: @4ryandent
Idaho Regional Math Center, Lewiston

604, Washington State Convention Center

Let's “Number” Talk!

General Interest Session

Promoting mathematically productive talk is essential for students to develop conceptual understanding. In this session, participants will learn the how and why behind the successful implementation of Number Talks. Leave with an understanding of how the mathematical disposition of your students can be transformed through Number Talks.

Susan Loveless
Twitter: SusanLoveless23
Rutherford County Schools, Murfreesboro, Tennessee

620, Washington State Convention Center

LT-Squared—Learning and Teaching with Learning Trajectories Tool: Support for Professional Learning

Pre-K–2 Session

LT2 (LT-Squared), the Learning and Teaching with Learning Trajectories tool, is a research-based scalable professional development resource for trainers and teachers in diverse settings. Teachers delve deeply into understanding their children’s thinking with sequences of videos along the trajectories and use videos and pdfs of effective activities.

Douglas Clements
Twitter: dhclements
University of Denver, Colorado
Julie Sarama
University of Denver, Colorado

4 C2, Washington State Convention Center

Math Routines to Build Number Sense in K–8

3–5 Session

Build number sense through quick 5- to 15-minute routines you can work into your existing K–8 math program. In this very practical session, you will engage in a variety of math routines through peer discussion, hands-on materials, and technology. You will walk away with a bank of routines you can easily implement the next school day.

Joshua Angiola
School District 40 New Westminster, British Columbia, Canada
616/617, Washington State Convention Center

Promoting Algebraic Thinking through Visual Pattern Tasks

6–8 Session

Encourage learners in algebraic reasoning by supporting productive struggle and exploring visual pattern tasks. Participants will take part in a number of activities, including solving a visual pattern task, anticipating the ways students will solve the task, and reflecting on how to aid students’ learning without taking over the thinking for them.

Jose Francisco Sala Garcia
Twitter: @JoseFSala
IES Santa Maria d’Eivissa, Ibiza, Spain

4 C3, Washington State Convention Center

The Decision-Making Protocol for Mathematics Coaching: A Tool to Empower Mathematics Teacher Leaders

Coaches/Leaders/Teacher Educators Session

The Decision-Making Protocol for Mathematics Coaching is a four-phase reflective cycle that guides coaches as they work with individuals and teams of teachers. The guiding questions in the protocol purposefully bridge mathematics content considerations, research-based Mathematics Teaching Practices, and effective coaching practices.

Melinda Knapp
Twitter: @KnappMelinda
Oregon State University–Cascades, Bend
Courtney Baker
George Mason University, Fairfax, Virginia

615, Washington State Convention Center
4:30 P.M.–5:30 P.M.

120  PRAC
Using Inquiry to Build Thinking Classrooms
8–10 Session
What does a thinking classroom look like? How can we make our classrooms spaces where students are actively engaged in thinking about and doing meaningful mathematics? Participants will do some math, explore strategies to promote inquiry, and explore what contributes to an environment focusing on students and their learning.

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

Ballroom 6B, Washington State Convention Center

123  GROWTH
Math Camp for Teachers: How to Put on Beneficial Professional Development for K–12 Teachers
Burst
Learn how teachers from an urban, Title 1 school district planned and implemented a math camp within their district. Come away with ideas for two to three days of PD full of learning, activities, and planning that focus on developing math mindsets, conceptual understanding, number sense, and guided math.

Mandy Harvell
Twitter: @MandyH_79
Ritenour Middle School, St. Louis, Missouri
Melissa Crowley
Ritenour School District, Saint Peters, Missouri

608, Washington State Convention Center

5:00 P.M.–5:30 P.M.

121  TOOLS
Bringing Math to the Table with Google
3–5 Burst
With access to technology, K–5 teachers now have opportunities to promote exploration and inquiry, all while encouraging collaboration. Keep the devices out and help students really engage with the content.

John Stevens
Twitter: @jstevens009
CJUHSD, Ontario, California

609, Washington State Convention Center

122  ASSESS
Looking beyond the Answer to What Students Really Know
8–10 Burst
During this presentation, we will consider the idea that a right answer may not be indicative of mathematical understanding. We will discuss what it means to look for conceptual understanding in students’ work and how to design assessments that provide opportunities for students to fully express their understanding of mathematical concepts.

Sharon O’Kelley
Francis Marion University, Florence, South Carolina

4 C4, Washington State Convention Center

124  PRAC
Math Relay: A Partner Protocol to Increase Student Engagement and Build Perseverance
3–5 Burst
Using a precise and clear partner-work protocol, participants will engage in a hands-on math problem-solving activity that gets students talking and moving in the math classroom. This “Math Relay” model is perfect for differentiation, and teaches perseverance by keeping the responsibility of the math work on the students, not the teacher.

Laura Nelson
SMc Consulting, Newberg, Oregon

401, Washington State Convention Center

124.1
Storytelling with the Computational Layer of the Desmos Activity Builder
10–12 Burst
The Desmos Activity Builder allows you to create dynamic, interactive lessons and learn how students are thinking about the material. Activating the computational layer gives you the power to explore larger stories on this platform. Explore how FHA housing policy affected families years ago, and learn some CL tricks along the way.

Carl Oliver
City-As-School, New York, New York

608, Washington State Convention Center
5:00 P.M.–5:30 P.M.

126  PRAC  Powerful Moments in Math Class: Why Certain Experiences Stand Out and How We Create More of Them  
Pre-K–2 Burst  
As teachers, we want each of our lessons to leave a long-lasting impression on students. According to Heath and Heath (2018), memorable positive experiences are dominated by four elements: elevation, insight, pride, and connection. In this burst, we will learn how to embrace all four to create memorable mathematical experiences for all students.  
Michael Flynn  
Twitter: @MikeFlynn55  
Mount Holyoke College, South Hadley, Massachusetts  
613/614, Washington State Convention Center

127  EMPOW  Real Math for All Students  
General Interest Burst  
What does it mean to mathematize? What is real math? How can we mentor mathematicians? There are three perspectives that get in the way. We’ll describe these perspectives, identify limiting belief systems, and discuss ways of teaching that promote mathematical practices, in both teachers and students.  
Pamela Harris  
Twitter: @pwharris  
Texas State University, San Marcos  
607, Washington State Convention Center

128  CURRIC  Using Benches as Bridges to Bring Alive Geometry Curriculum  
8–10 Burst  
This presentation will focus on a unit plan for building tree benches. The presentation will discuss each step from the start of the project where students are given parameters and are asked to create blueprints for the benches, the informative paper students must write, and the end of the project where they build the benches.  
John Hostetler  
Midland Valley High School, Graniteville, South Carolina  
4 C1, Washington State Convention Center

129  PRAC  When You Standard Alone: SBG in a Traditional Grade Setting  
General Interest Burst  
“This is how it’s always been done.” “This is what colleges are looking for.” “But what’s my GRADE?” Convincing parents, students and administrators of the benefits of a standards-based approach can be a Sisyphean task, especially when you’re the only teacher in your district. Come discuss failures, successes, and what I’ve learned so far.  
Justin Aion  
Twitter: @JustinAion  
Leechburg Area School District, Pennsylvania  
307/308, Washington State Convention Center

Get social! Stay informed and get connected with attendees by following #NCTMregionals on social media.
A math intervention program for K–5

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

Join our session about Bridges Intervention on Friday, Nov. 30 from 9:30 to 10:30 in Room 611 or stop by booth 208 to learn more.
HIGHLIGHTS
Regional Conference Overview & Orientation, 130
Anxiety, Mindset, and Motivation: Bridging from Research to Action, 163
New and Preservice Teachers Workshop, 168
Making Multiplicative Reasoning and Problem Solving Accessible for All Students!, 179
Neurodiversity and the Mathematical Practices: Increasing Engagement for All Minds in Mathematics, 197
Technology That Thinks WITH Students, Not FOR Students, 199
Making and Breaking Conjectures: Using Counterexamples to Supercharge the Thinking Process, 208
Experience the Power of Rehearsals & Teacher Time-Outs to Grow in Our Visions of Teaching for Equity, 229

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

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

REGISTRATION HOURS
7:00 a.m.–12:00 p.m.

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

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

130 **GROWTH**
Regional Conference Overview & Orientation

*General Interest Session*

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

DeAnn Huinker  
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; University of Wisconsin–Milwaukee

Daniel J. Teague  
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; North Carolina School of Science and Mathematics, Durham

*609, Washington State Convention Center*

8:00 A.M.–9:00 A.M.

131 **CDM**
“Here’s How to Help”: Engaging & Empowering Families to Further Students’ Mathematical Understanding

*Coaches/Leaders/Teacher Educators Session*

All parents want the best for their children, but, for parents raised on math facts and rote memorization, reinforcing current best practices in math at home can be a challenge. This workshop will arm teachers, administrators, and staff developers with tools to teach parents of students in their care how to support their children as mathematicians.

Adam Seidman  
The School at Columbia University, New York, New York

Françoise Saint-Clair  
The School at Columbia University, New York, New York

*604, Washington State Convention Center*

8:45 A.M.–9:45 A.M.

132 **PRAC**
Become a Guided Math Guru: Differentiating Math Instruction in the Elementary Classroom

*3–5 Session*

Do you love teaching math every day? Or are you overwhelmed by standards, curricular changes, and technology in your math program? Unlock the power of small group guided math instruction! In this workshop, participants will learn how to introduce, setup, and develop guided math groups as a way to engage all learners. Make teaching fun!

Kerry Murphy  
Charleston Day School, South Carolina

Emily Shortridge  
Charleston Day School, South Carolina

*616/617, Washington State Convention Center*

8:45 A.M.–9:45 A.M.

133 **PRAC**
Engaging Students through Classic Problems to Promote Curiosity and Reasoning about Mathematics

*10–12 Session*

Strategies to engage students in mathematical reasoning and sense making will be explored including the use of classic problems. Participants will be presented with a selection of famous math problems and given the opportunity to discuss problem solutions as well as possibilities for classroom implementation to promote student engagement.

Tena Roepke  
Ohio Northern University, Ada

*615, Washington State Convention Center*

134 **PRAC**
From Tense to Confident: Build Bravery for Teachers

*General Interest Session*

When a teacher closes the door to their classroom and operates in a vacuum, the result is a double bummer: None of that teacher’s greatness is shared and no other greatness can enter. Taking a risk in front of peers is scary. Let’s give teachers the tools to model bravery with each other and for their students. Teachers and teacher leaders welcome.

Matthew Vaudrey  
Bonita USD, San Dimas, California

*Ballroom 68, Washington State Convention Center*
8:00 A.M.–9:00 A.M.

135 CDM
Integrating Computational Thinking into Elementary Mathematics
3–5 Session
National interest in broadening participation in computer science has led states to develop standards for computational thinking. Ideas from CS make useful contributions to mathematics learning in elementary grades, fitting well with Standards for Mathematical Practice. Learn about units that integrate ideas from computing with grade 1–6 mathematics.

E. Paul Goldenberg
Twitter: @epaulgoldenberg
EDC, Waltham, Massachusetts
Anne DeMallie
Massachusetts Department of Elementary and Secondary Education, Malden
Kevin Waterman
EDC, Waltham, Massachusetts

Ballroom 6C, Washington State Convention Center

136 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.

Benjamin Walker
Twitter: @bwalkerq
Walter Payton College Prep, Chicago, Illinois
Scott Gasbon
Walter Payton College Prep, Chicago, Illinois

4 C2, Washington State Convention Center

137 PRAC
The Homework Inequality: 1 Great Problem > 39 Repetitive Exercises
6–8 Session
Don’t you hate when students can’t solve problems in March that they could solve in November? Interleaved practice and open-middle problems are two ways to promote long-term retention, because they force students to choose—not just use—a strategy. Come learn how to mix great problems with basic exercises to create more effective assignments.

Patrick Vennebush
Twitter: @pvennebush
Discovery Education, Silver Spring, Maryland
Ballroom 6A, Washington State Convention Center

138 PRAC
Three-Act Tasks in Primary
Pre-K–2 Session
Come explore the power of using three-act tasks to engage all of your students in problem solving, with an emphasis on modeling with mathematics and conceptual understanding. Participants will learn how to enact three-act tasks and will view and discuss K–2 examples.

Jennifer Barker
Twitter: @Barkerjbarker
Surrey School District #36, British Columbia, Canada

618/619, Washington State Convention Center

139 PRAC
Triple Your Learning with Questions
8–10 Session
Learn three effective techniques to adapt tasks in order to increase access for all students and to enable students to acquire and demonstrate conceptual understanding. Practice using Reversibility, Flexibility, and Generalization on our tasks, and then use them in rewriting a task of your own.

Frederick Dillon
Consultant, Strongsville, Ohio
Brock Strickland
Denver Public Schools, Colorado

4 C3, Washington State Convention Center
8:00 A.M.–9:00 A.M.

140 ASSESS
What’s the Point?: A Discussion about Grades
General Interest Session
What should grades represent? How can they help students focus on learning? These are just a few questions that started our journey to transforming the way we grade, and how they brought us (and you) here. Extra credit if you attend this session!
Gary Chu
Twitter: @mrgarychu
Niles North High School, Skokie, Illinois
Tina Nocella
Adlai E. Stevenson High School, Lincolnshire, Illinois
620, Washington State Convention Center

142 PRAC
Be Intentional: Stepping toward Computational Fluency
Pre-K–2 Workshop
Students learn addition and subtraction strategies to tackle a variety of computation situations. These strategies assist them in being flexible, accurate, and efficient during their process. Come explore the steps necessary to move students from counting in kindergarten to reasoning by the end of grade 2.
Rob Nickerson
ORIGO Education, Lakewood, Colorado
Craig Willmore
ORIGO Education, Earth City, Colorado
605/610, Washington State Convention Center

8:00 A.M.–9:15 A.M.

141 PRAC
3 Powerful Number Sense Tools for Every Primary Classroom
Pre-K–2 Workshop
To build strong number sense, students need to have number flexibility and quickly make pairs to 10. This workshop focuses on games that foster those skills through play. Attendees will learn strategies that build number sense with the DecaDeck and DecaDomingoes, and they will be introduced to the brain-based magic of 10 Park. All resources are free.
Jen Hunt
SMc Consulting, Newberg, Oregon
4 C1, Washington State Convention Center

144 PRAC
Challenge Your Students Every Day!
3–5 Workshop
Do you struggle to differentiate in math? In this session, we explore Math Menus/Concept Quests, collections of high-cognitive demand tasks that engage students in rich mathematics content and practices. We will discuss how to successfully create and implement challenging task collections that apply, deepen, and extend students’ understanding.
Kim Markworth
Western Washington University, Bellingham
606, Washington State Convention Center

Need funding for professional development? Check out grant opportunities from the Mathematics Education Trust. Visit the MET area in NCTM Central to learn more.
8:00 A.M.–9:15 A.M.

145 **ASSESS**
Engaging and Inspiring Assessment Strategies to Promote Student Learning
6–8 Workshop
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 three key actions needed to create a meaningful assessment process.

Mona Toncheff
Twitter: @toncheff5
NCSM President-Elect, Phoenix, Arizona
Sarah Schuhl
Educational Consultant, Gresham, Oregon

401, Washington State Convention Center

146 **CURRIC**
Engaging Exponential Equation Activities
8–10 Workshop
Experience many problems and investigations around exponential equations. The problems are engaging and lead to a better understanding of exponential growth. We will also look at the development of exponential understanding through connections to geometric sequences and multiple representations.

Darrell Trussell
CPM Educational Program, Elk Grove, Oregon

609, Washington State Convention Center

147 **PRAC**
Engaging Ways to Promote High Level Thinking and High Level Talk In Mathematics!
3–5 Workshop
During this session, participants will learn how to motivate students to talk about math through hands-on concept circles and wanted number activities. These activities promote math talk and high level thinking. Ensure that your students have the skills they need to effectively communicate their thinking in all areas of the math curriculum!

Cathy Marks Krpan
Twitter: @Cathy.Marks.Krpan
University of Toronto, Ontario, Canada

4 C4, Washington State Convention Center

148 **CURRIC**
Lost In Space: Bone Density
8–10 Workshop
This session will explore the problems of traveling in space, with regards to loss of bone density. Participants will use different types of regression to estimate how long an astronaut can safely stay in space without damaging their bones. The data used comes directly from NASA and can be a fun way to introduce regression to your students.

Tracey Zak-Johnson
Twitter: @traceylovesmath
Consultant, Aledo, Texas
Denise Young
Blue Valley School District, Stilwell, Kansas

303, Washington State Convention Center

149 **AGENCY**
Math Learning Disabilities, Dyslexia, and ADHD: Connections and Solutions
6–8 Workshop
80 percent of people with SLI and 31 percent of people with ADHD struggle with math, yet many students never get high-quality math remediation. Join board-certified educational therapist Diana Kennedy to learn the symptoms and causes of math LDs and their relationship with dyslexia and ADHD. Learn games, lessons, and precepts to help all math students excel.

Diana Kennedy
Twitter: TeacherDBK
MindSpark, San Anselmo, California

608, Washington State Convention Center
8:00 A.M.–9:15 A.M.

150 PRAC Observations in a Thinking Classroom
10–12 Workshop
This session will showcase three changes anyone can make to their classroom to improve student thinking and engagement in mathematics: Visibly random groups, vertical non-permanent surfaces, and rich tasks. Participants will be actively involved in a transformative structure while engaging with mathematical tasks.

Michael Pruner
Twitter: @cafedepruner
North Vancouver School District, British Columbia, Canada
613/614, Washington State Convention Center

151 EMPOW Real-World Problems: Whose World Is Represented in Our Math Tasks?
Pre-K–2 Workshop
Sharing pizza, buying toys, and planting gardens are common story problem situations. In this session, we’ll consider how we can expand our repertoire of math contexts to both normalize worlds outside children’s own lived experiences and allow them to see their own world reflected in the math classroom.

Anita Lenges
University of Washington, Seattle
Kendra Lomax
University of Washington, Seattle
602/603, Washington State Convention Center

152 GROWTH Transforming Professional Learning Communities to Support Student-Centered, Problem-Based Learning
Coaches/Leaders/Teacher Educators Workshop
In this session, math coaches and teacher leaders will: (1) Evaluate their existing teacher teams; (2) Understand student-centered, problem-based learning; (3) Explore 12 collaboration vehicles for PLCs that move instructional practice forward; and (4) Plan which vehicles are the best fit for their teacher teams and how to introduce them in the coming school year.

Thomas Stricklin
Salem-Keizer Public Schools, Oregon
Sharon Rendon
CPM Educational Program, Elk Grove, California
307/308, Washington State Convention Center

9:30 A.M.–10:30 A.M.

153 ASSESS Assessment without Grades in a Senior Mathematics Class? Yes, It’s Possible!
10–12 Session
Thinking about moving away from a dependence on number/letter grades in your senior mathematics classes? This session will share the story of one teacher’s journey to change the focus from marks to learning in her precalculus and calculus classes, and provide an opportunity for a professional conversation about assessment without grades.

Susan Robinson
Twitter: @srobinsonSD64
School District 64 (Gulf Islands), Salt Spring Island, British Columbia, Canada
Ballroom 6A, Washington State Convention Center

154 CDM Bringing Parents to the Table: Practical Ways to Enhance Parent Engagement
General Interest Session
Oftentimes, we leave our biggest ally—parents—on the sidelines of their child’s education. In our time together, we will explore ways in which we can engage the parent community, make math more accessible in the home, and leave with a list of free resources that can be used immediately, all while empathizing with a variety of parent scenarios.

John Stevens
Twitter: @jstevens009
Table Talk Math, San Bernardino, California
Ballroom 6B, Washington State Convention Center
9:30 A.M.–10:30 A.M.

**155  PRAC**
Daily Mathematical Routines: Engage Your Students in Practicing Math!
3–5 Session
Students can practice their number sense in meaningful ways through daily mathematical routines. By understanding the number sense continuum and implementing these routines, you will see greater student engagement and deeper number sense. These routines will have students growing in confidence as they make sense of their mathematical thinking.

Selina Millar
Twitter: @SelinaMillar
Retired, Surrey, British Columbia, Canada

4 C2, Washington State Convention Center

**156  ASSESS**
Implementing Error Analysis and an Action Plan to Teach Students Self-Regulation
10–12 Session
Understand how students can take ownership of their learning and actions, set goals, strategically plan, and evaluate goals and learning strategies to master mathematics. Connect these best learning practices to self-regulation, a self-directive process by which students transform their mental abilities into academic and problem-solving skills.

Kathy Clemmer
Loyola Marymount University, Los Angeles, California
Katie Laskasy
Loyola Marymount University, Los Angeles, California
Cyndia Acker-Ramirez
Culver City Unified School District, California

618/619, Washington State Convention Center

**157  GROWTH**
Increasing Student Achievement through Content-Focused Professional Learning
Coaches/Leaders/Teacher Educators Session
How can a district or building implement effective math-specific professional learning, and why should they? Research on the effectiveness of teacher professional learning indicates greater impact when the learning is job-embedded and connected to specific content and materials with which teachers work. Explore the why and how of content-focused PD.

Angie Miller
Twitter: @mrsmillergrade1
Anacortes School District, Washington
Jennie Beltramini
Student Achievement Partners, Anacortes, Washington

615, Washington State Convention Center

**158  PRAC**
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, Reston, Virginia; Michigan State University, East Lansing

Ballroom 6C, Washington State Convention Center

**159  CURRIC**
Making the Most of Meaningful Models
3–5 Session
Versatile models and tools support the coherent progression of content as they are used across many elementary grades. This session will examine the models of whole number, fractions, and decimals that are used to develop deep conceptual understanding.

James Burnett
Twitter: @jamesburnett69
ORIGO Education, Brendale, QLD

604, Washington State Convention Center
9:30 A.M.–10:30 A.M.

160 CURRIC
Motivating Primary Peeps to Love Math! Practice with Early Number Sense through Songs and Stories!
Pre-K–2 Session
This session will model how to create an environment for early K-2 number sense activities without using a pencil. Participants will enjoy games and activities that highlight subtilizing, composing, and decomposing numbers. We all will sing and move and use every moment to empower students to love math!

Kim Sutton  
Twitter: @Creative_Math  
Consultant, Arcata, California

612, Washington State Convention Center

161 PRAC
Rich Investigations with Embedded Skill Development
6–8 Session
Inquiry can be a dynamic way to embed practice of basic skills while engaging students in intriguing problem solving, math reasoning, and communication. Core and curricular competencies are engaged well within these structures. Come experience and discuss ways to enhance arithmetic skills within inquiry questions.

Fred Harwood  
Twitter: @HarMath  
SD #38 Richmond, British Columbia

611/617, Washington State Convention Center

162 PRAC
“Say What?” Vocabulary Instruction in the Math Classroom
General Interest Session
We know math vocabulary is a foreign language for students. With multiple exposures, opportunities to use math words to talk and write with precision, and the use of engaging games, students will develop rich math vocabularies. With this vocabulary, students develop a deeper understanding of concepts and skills, leading to mathematical proficiency.

Ellen Edmonds  
Twitter: @Edmonds_elleno  
W.H. Sadlier, Charlotte, North Carolina

620, Washington State Convention Center

162.1 EW TOOLS
Promoting Productive Struggle in the Math Classroom
8–10 Exhibitor Workshop
Effective teaching of mathematics consistently provides students with opportunities and supports to engage in productive struggle. How do we intentionally design instruction to include opportunities for all learners to notice and question? This session will focus on instructional strategies for using TI technology to promote productive struggle.

Texas Instruments  
Dallas, Texas

162.2 EW EMPOW
Bridges Intervention—Delivering Clear and Systematic Instruction
3–5 Exhibitor Workshop
Searching for an effective K–5 intervention resource with built-in assessments and frequent progress monitoring? Discover how Bridges Intervention uses the power of visual models to reach struggling students. Organized by content rather than grade, each session includes warm-ups, lessons, and practice pages focused on key standards.

The Math Learning Center  
Salem, Oregon

162.3 EW CDM
Talking Math! Creating Understanding through Student-Led Conversation
3–5 Exhibitor Workshop
Ready Classroom Mathematics is a discourse-driven core program that creates equitable math opportunities ensuring success for all students. Come and experience how routine-driven instruction enables intentional, focused conversations in the math classroom.

Curriculum Associates  
North Billerica, Massachusetts

310, Washington State Convention Center
9:45 A.M.–11:00 A.M.

163 PRAC Anxiety, Mindset, and Motivation: Bridging from Research to Action
8–10 Workshop
Developing a supportive class culture and growth mindset can reduce students’ anxiety, allowing learners to engage thoughtfully with each other around mathematics. Participants will discuss the challenges of shifting mindsets, experience routines as learners and leave with resources and ideas to implement these structures in their classroom.
Lisa Bejarano
Twitter: @lisabez_manitou
Academy School District 20, Colorado Springs, Colorado
Dylan Kane
High Mountain Institute, Leadville, Colorado
606, Washington State Convention Center

164 PRAC Build Conceptual Understanding through Engaging Games
Pre-K–2 Workshop
Does your math center need new games? Experience class activities and games that help students develop understanding of some big concepts in K–2 math. Activities will focus on subitizing, counting, addition and subtraction strategies, and developing fact fluency. Activities and website materials available.
Laurie Boswell
Big Ideas Math, Franconia, New Hampshire
4 C4, Washington State Convention Center

165 EMPOW Leveraging Coherent Connections to Ensure ALL Students Have Access to Grade Level Mathematics
3–5 Workshop
All students can be empowered to be successful with grade level mathematics when coherence within topics is leveraged in lessons to provide access to rigorous math. In this hands-on session, participants will explore ways lessons and tasks can be structured to address unfinished learning in service of access and opportunity for all students.
Jennie Beltramini
Twitter: @JennieBeltro
Student Achievement Partners, Anacortes, Washington
Angie Miller
Anacortes School District, Washington
607, Washington State Convention Center

166 PRAC Making Algebra Visible
6–8 Workshop
We will explore how we use manipulatives and models to assist our students in developing their algebraic thinking. We will focus on areas such as writing expressions, creating equations, and solving equations (including systems) through a conceptual and visual manner before focusing on algorithms and symbolic manipulation.
Ashlee LeGear
University of Wisconsin–River Falls
Erick Hofacker
University of Wisconsin–River Falls
Jenni McCool
University of Wisconsin–La Crosse
605/610, Washington State Convention Center

Join us at the NCTM 2019 Regional Conferences & Expositions:
Boston, Massachusetts | September 25–27
Nashville, Tennessee | October 2–4
Salt Lake City, Utah | October 16–18
167 PRAC Models, Manipulatives, and Math Facts
Pre-K–2 Workshop
Learn instructional strategies for using models and manipulatives to develop number sense and fact fluency while promoting flexibility, efficiency, and accuracy. Leave with hands-on activities that will also foster the Standards for Mathematical Practice as well as free online tools that can be used in the classroom and at home.

Jennifer Ranum
Twitter: @jennifer_ranum
Math Learning Center, Windsor, Colorado
Stephanie Korkow
Math Learning Center, Scottsbluff, Nebraska

608, Washington State Convention Center

168 GROWTH New and Preservice Teachers Workshop
Pre-K–12 Early Career 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

401, Washington State Convention Center

169 PRAC Playful Mathematics: How Joyful Engagement Builds a Positive Classroom Culture
General Interest Workshop
Mathematics is a notoriously disliked school subject, yet mathematicians often refer to its beauty and fun. By bringing these authentic mathematical experiences to our classrooms, we can bring the joyful and aesthetic experiences that help students fall in love with math. In this workshop, I will explain how play helps students engage joyfully,

Melissa Sommerfeld Gresalfi
Vanderbilt University, Peabody College, Nashville, Tennessee
Lara Jasien
Vanderbilt University, Nashville, Tennessee

307/308, Washington State Convention Center

170 PRAC Strategies, Models, and Games That Promote Fact Fluency in Multiplication and Division
3–5 Workshop
Students will gain greater understanding of basic multiplication facts when they conceptualize them using real-world examples, visual models (arrays), and connecting them through practice and games. Participants will use these strategies and powerful visual models coupled with effective games to promote fluency of multiplication and division facts.

Craig Willmore
ORIGO Education, Orem, Utah
Rob Nickerson
ORIGO Education, Lakewood, Colorado

613/614, Washington State Convention Center

171 CURRIC Taking Trig to Task
10–12 Workshop
The transition from the static perspective of right triangle trig ratios to the dynamic perspective of circular trig functions, and from measuring angles in degrees to measuring angles in radians, can generate roadblocks and misconceptions. In this session we will examine a sequence of tasks that reveal, rather than obscure, trigonometric ideas.

Scott Hendrickson
Twitter: scott9870
Mathematics Vision Project, American Fork, Utah

609, Washington State Convention Center

172 CURRIC Tasks That Connect Progressions and Practices
8–10 Workshop
Principles to Actions outlines eight teaching practices that promote quality mathematics instruction. These teaching practices facilitate the realization of the CCSSM Standards for Mathematical Practice. Come participate in a learning progression of tasks that connects both the teaching practices and the mathematical practice standards. All tasks are free!

Travis Lemon
Twitter: @TravisLemon
Mathematics Vision Project, Lehi, Utah

4 C1, Washington State Convention Center
NCTM Regional Conferences & Expositions

BOSTON | SEPTEMBER 25–27
NASHVILLE | OCTOBER 2–4
SALT LAKE CITY | OCTOBER 16–18


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

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

Who should attend?
- Pre-K–Grade 12 classroom teachers
- Math coaches
- Administrators
- Math teacher educators
- Preservice teachers
- Math specialists

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

Save the Date!

Learn more at nctm.org/regionals and follow us on #NCTMregionals
9:45 A.M.–11:00 A.M.

173 PRAC The World of Make-Believe and Mathematics
10–12 Workshop
Why do we often stress that mathematics MUST be applicable to real life? Much like creative writing requires imagination and is done for pleasure, I will present fascinating mathematics problems that require much imagination, which students solve purely for enjoyment. This hands-on workshop will consist of problem solving and discussion.

Elysia Dubland
Surrey School District, Burnaby, British Columbia, Columbia

303, Washington State Convention Center

173.1 PRAC A Four-Part Model for Promoting Rich Discourse through Mathematical Argumentation
6–8 Workshop
Breaking mathematical argumentation into four parts makes it more accessible to all teachers and students. Using stages of generating cases, conjecturing, justifying, and concluding, participants will engage in rich discourse about important middle school mathematics topics in algebra and geometry. Teaching moves will be modeled and discussed.

Jennifer Knudsen
SRI International, San Antonio, Texas
Hee-Joon Kim
SRI International, Menlo Park, California
Teresa Lara-Meloy
SRI International, Menlo Park, California

602/603, Washington State Convention Center

11:00 A.M.–12:00 P.M.

174 GROWTH Creating Shared Values around Student Problem Solving within the Instructional Core
Coaches/Leaders/Teacher Educators Session
Engage in an instructional rounds protocol to analyze student problem solving and adapt to implement at your site. Understand why rounds help teachers develop a common understanding of the Math Practices, examine student evidence, and make instructional decisions that support increasing positive mathematical identity for all students.

Kathy Clemmer
Loyola Marymount University, Los Angeles, California
Katie Laskasky
Loyola Marymount University, Los Angeles, California
Cyndia Acker-Ramirez
Culver City Unified School District, California

604, Washington State Convention Center

175 PRAC Developing Mathematical Habits and Routines for Effective Teaching and Learning
General Interest Session
Mathematical habits and routines are essential features of productive teaching and learning. We will explore how these teaching habits and routines ignite students’ thinking and promote interactions in mathematically productive ways.

Ruth Heaton
Teachers Development Group, West Linn, Oregon
Kerry Morton
Bend-LaPine Schools, Oregon
Cary Cermak-Rudolf
Roseburg Public Schools, Oregon

Ballroom 6C, Washington State Convention Center
176 **TOOLS**

Do You Desmos? Using Desmos to Increase Engagement and Understanding in Your Classroom

8–10 Session

Come learn with a Desmos Fellow! I will be sharing activities and teacher moves that have created deeper learning, more relevant and thoughtful discussions, and a greater level of engagement in my classroom through Desmos’ Activity Builder. These free activities can be used immediately in your classroom.

Kathy Henderson
Twitter: @kathyhenderson
Seven Hills School, Walnut Creek, California / Desmos Fellow

618/619, Washington State Convention Center

177 **PRAC**

Inside the Math Teacher's Studio: How Do We Teach ______?

10–12 Session

How do we teach students the law of cosines in a way they can understand? Or completing the square? The fundamental theorem of calculus? Bowen and Joe routinely engage in these types of conversations, professionally and personally for fun. Participants will be able to ask for a discussion of how to teach any topic in high school mathematics.

Joseph Obrycki
Niles Township District 219, Skokie, Illinois
Bowen Kerins
Illustrative Mathematics, Tucson, Arizona

4 C2, Washington State Convention Center

178 **AGENCY**

International Viewpoints from ICME-13: Highlighting Students with Disabilities

General Interest Session

Highlights from the International Congress on Mathematics Education ICME-13 in Germany will be shared to engage participants in a discussion focused on students with disabilities to include shifting from a deficit thinking model, developing a positive mathematical agency, and examining selected instructional strategies from around the world.

Shawna Veit
Twitter: @sveit
Oakland Schools, Waterford, Michigan

620, Washington State Convention Center

179 **AGENCY**

Making Multiplicative Reasoning and Problem Solving Accessible for All Students!

Pre-K–2 Session

Moving from additive to multiplicative reasoning is a major transition for students. Accessibility is the first step in creating equitable environments for learning to solve multiplication problems. This session will explore ways to create access to multiplicative reasoning while maintaining appropriately high expectations and cognitive demands.

Andrew Gael
Twitter: @bkdidact
Cooke School and Institute, New York, New York

Ballroom 6B, Washington State Convention Center

180 **EMPOW**

Math Modeling Can Make You Filthy Rich

6–8 Session

Mathematical modeling is the closest we can come to giving our students HUGE potential to make them filthy rich. So much of what we teach is instantly irrelevant because of devices we carry in our pockets. In this age of technology, the difference between wildly successful and out of business is the quality of a mathematical model. I’ll share an intuitive structure with you that will help separate fake mathematical modeling from what will really help our students become complex problem solvers.

Robert Kaplinsky
Downey Unified School District, California

Ballroom 6A, Washington State Convention Center

181 **EMPOW**

Multiple Representations and Perseverance: A Tool for When the Going Gets Tough

8–10 Session

Getting students to create multiple representations and connect the key features of the representations is a strategy that teachers can develop in students to give them a pathway to pursue when they are stumped and don’t know how to proceed. The focus will be on how representations can help students persevere and make sense of the mathematics.

Janet Sutorius
Mathematics Vision Project, Nephi, Utah

4 C3, Washington State Convention Center
11:00 A.M.–12:00 P.M.

182.1 **CURRIC**
**ST Math: The Neuroscience of Deeper Learning**
Coaches/Leaders/Teacher Educators Exhibitor Workshop
When math moves beyond procedure and into creative problem solving, students experience mathematics in a whole new way—richer engagement, independent thought, and deeper learning. In this interactive session, participants will engage in solving fascinating low floor/high ceiling math tasks and receive valuable on how the brain works.

MIND Research Institute
Irvine, California
612, Washington State Convention Center

182.2 **ASSESS**
**Facilitating a Data Culture with Teachers**
CLTE Exhibitor Workshop
Data can be a powerful tool for building a positive community focused on what matters most: student growth. In this session, participants explore strategies and tools for facilitating effective “data chats” with teachers and role-play to practice data conversations.

Curriculum Associates
North Billerica, Massachusetts
310, Washington State Convention Center

182.3 **PRAC**
**Rich Mathematical Routines with a K–3 Focus**
Pre-K–2 Session
Let’s work smarter not harder to develop students’ mathematical understanding through daily routines. By using engaging routines, opportunities for students to communicate, think, and learn strategies will be created. Number sense, computational fluency, and positive attitudes will develop. Come explore routines that will support student learning.

Sandra Ball
Twitter: SandraBall1
Surrey School District #36, British Columbia, Canada
616/617, Washington State Convention Center

182.4 **EW, CDM**
**Grades 6–12 Escape Room Workshop and Reality-Based Modeling Session**
8–10 Exhibitor Workshop
Put your problem-solving and teamwork skills to the test to unlock the clues and solve the mystery to escape! Experience problem-solving and mathematical modeling activities that can be used in the classroom in this lively and challenging Escape Room environment!

Pearson
Chandler, Arizona
611, Washington State Convention Center

11:30 A.M.–12:00 P.M.

183.1 **TOOLS**
**Cold, Warmer, HOT: A Dynamic Digital Lesson Strategy for Precalculus and Calculus**
10–12 Burst
Graphs programmed with adaptive “Cold, Warmer, HOT” hints allow students to play hide-and-seek in precalculus and calculus. These dynamic interactive graphs, created with Desmos, purposefully guide students as they explore concepts, make conjectures, and build intuition. Many graphs will be shared. Stop in to check it out—you’re getting warmer!

Dave Cesa
Twitter: @davec3a
Charlotte Latin School, North Carolina
4 C4, Washington State Convention Center
184  **PRAC**

**Equity Stances into Practice: What Is Possible for Preservice Secondary Mathematics Candidates?**

**Burst**

This session is focused on sharing findings from a research project with preservice secondary mathematics candidates in a Pacific Northwest Teacher Education program. We examine how preservice candidates move from equity stances into practice and highlight the equity-oriented practices they are able to enact in classrooms during student teaching.

Filiberto Barajas-Lopez  
Twitter: @DrBarajasLopez  
University of Washington, Seattle

Saraswati Noel  
University of Washington, Seattle

307/308, Washington State Convention Center

185  **PRAC**

**Fish Tanks, Scheduling, and Coloring??**

**General Interest Burst**

In these times, coloring can be a great stress reducer. Let’s look at the mathematics of coloring: Camille Jordan’s Two Color Theorem, Four Color Problem, and their applications such as maps and their related vertex graphs, fish tanks, party invites, and scheduling.

Mary McMahon  
Twitter: MaryNCC  
North Central College, Naperville, Illinois

607, Washington State Convention Center

186  **GROWTH**

**Improve Your Classroom Teaching by Teaching Outside of Your Classroom**

**General Interest Burst**

Teaching in a math summer or weekend program, or leading math circles or clubs, can help teachers grow professionally and inform their classroom teaching practices. Learn about the takeaways that will benefit your classroom and how to identify such opportunities. Experiences of math teachers in an enrichment summer program will be shared.

Frannie Worek  
Johns Hopkins Center for Talented Youth, Baltimore, Maryland

4 C1, Washington State Convention Center

187  **TOOLS**

**Improving Children’s Fraction Understanding through the Use of Number Line Techniques**

**Research Burst**

Fractions are complex mathematical concepts that children struggle with. We will present findings from two types of innovative instruction to fourth graders highlighting the use of number lines, scaffolding, and gesturing to enhance children’s knowledge of fractions. One intervention used paper-and-pencil and the other used gaming technology.

Meghna Soni  
University of California, Santa Barbara

Yukari Okamoto  
University of California, Santa Barbara

303, Washington State Convention Center

188  **TOOLS**

**Interactive Introduction to Desmos and GeoGebra**

**6–8 Burst**

Desmos and GeoGebra offer free access to all with top-of-the-line, highly reviewed websites. Integrating them into the classroom makes math more relevant, engaging, visual, conceptual, and fun for today’s digital native students. This interactive session will cover the basics of each website and include strategies for learning.

Scott Walker  
Twitter: @SWalkerBIL  
Larson Texts, Fleming, Colorado

605/610, Washington State Convention Center

189  **PRAC**

**Promoting Productive Struggle in the Pre-K–2 Classroom**

**Pre-K–2 Burst**

In this session, a variety of problem solving tasks spanning pre-K through grade 2 will be shared. Ways to ensure that all students have the opportunity to productively struggle while engaged in each task will also be discussed.

Jenni McCool  
University of Wisconsin–La Crosse

Jennifer Kosiak  
University of Wisconsin–La Crosse

Kim Markworth  
Western Washington University, Bellingham

606, Washington State Convention Center
11:30 A.M.–12:00 P.M.

190 **PRAC**
Task Rotations: Group Problem-Solving to Facilitate Meaningful Mathematical Discourse
3–5 Burst
This group problem-solving protocol gives students time to both process independently and work with others to make sense of problems. As groups move through the rotations, they must analyze and critique the reasoning of the teams that came before them, and are expected to improve their own work and mathematical discourse at each opportunity.
Laura Nelson
SMc Consulting, Newberg, Oregon
609, Washington State Convention Center

191 **EMPOW**
What in the World Matches Common Core Math Clusters? Connecting Social Justice & Middle School Math
6–8 Burst
Students need rich inquiry tasks involving high cognitive demand, connections to their lived experience, and development of their identities as mathematicians and as citizens. This presentation will help teachers and students choose social justice tasks suited to individual interests, local issues, or timely concerns while also meeting math goals.
Julie Wright
Twitter: @julierwright
da Vinci Arts Middle School, Portland Public Schools, Oregon
608, Washington State Convention Center

1:30 P.M.–2:30 P.M.

192 **PRAC**
Enhancing Inquiry-Based Instruction
General Interest Session
Are you committed to the idea of inquiry-based math learning, but feeling stuck on how to begin, or how to improve your practice? In this session, we will identify several critical domains of an inquiry-based math classroom and provide concrete strategies for improving each domain.
Allyson Rohrbach
Twitter: MathSenseLLC
MathSense Consulting, LLC, Brooklyn, New York
Amy Hand
MathSense Consulting, LLC, Brooklyn, New York
620, Washington State Convention Center

193 **PRAC**
Focus on Meaning: The Role of Models in Number Talks
Pre-K–2 Session
How can we best use models during Number Talks? We will examine four stages of using models as tools for thinking that help increase the effectiveness of Number Talks and support students in developing number relationships and structure of numbers and ultimately computational proficiency.
Sue Dolphin
Math Perspectives, Henderson, Nevada
618/619, Washington State Convention Center

194 **EMPOW**
I Think . . . Doesn’t Belong Because . . .
3–5 Session
Reading, writing, speaking, and listening might seem different in math class, but teachers need to support language learning in math, too! Engage in a “Which One Doesn’t Belong?” routine to experience sentence frames with vocabulary word banks. Predict student responses and plan language supports for your class. Build your teaching toolbox!
Jennifer Bell
Twitter: @jkjohnsonbell
Oregon City School District, Tigard
4 C2, Washington State Convention Center
1:30 P.M.–2:30 P.M.

195 **EMPOW**
Increasing Student Interest and Achievement through Culturally Responsive Mathematics Teaching

**General Interest Session**

Learn from the efforts of teachers from several districts to increase student interest and success through a culturally responsive approach that engages cultural, linguistic, and community knowledge. Explore the research base that informed this effort, see examples of math tasks, discuss instructional practices, and examine student impact.

Mark Ellis  
Twitter: EllisMathEd  
California State University, Fullerton

**Ballroom 6B, Washington State Convention Center**

196 **PRAC**
Merging Vocabulary Development with Math Practice Standards

**3–5 Session**

Front-loading vocabulary words and their definitions for students to memorize excludes many students from participating in important discussions and understanding key concepts. Let’s look at a powerful way to co-develop mathematical practices, content, and formal vocabulary that starts with student-authored definitions and ideas.

Ryan Dent  
Twitter: @4ryandent  
Idaho Regional Math Center, Lewiston  
**4 C3, Washington State Convention Center**

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197 **AGENCY**
Neurodiversity and the Mathematical Practices: Increasing Engagement for All Minds in Mathematics

**General Interest Session**

How do neurodiverse students engage in the standards for mathematical practice? How can teachers support increased engagement for these students? Beginning with the theory of neurodiversity, we will explore current research on neurodiverse students and math, focusing on effective teacher moves to increase engagement in the mathematical practices.

Rachel Lambert  
Twitter: @mathematize4all  
Chapman University, Orange, California  
**616/617, Washington State Convention Center**

198 **ASSESS**
Standards-Based Assessment in Algebra 1: Reporting Proficiency without Percentages or Point-Grubbing

**8–10 Session**

Students often care more about points than about understanding math because percent-based grading systems distract from key outcomes. Hear how teachers turned algebra 1 standards into term-long novice-expert rubrics that transformed curriculum and enriched assessment. Learn how to improve differentiation, student performance, and rigor in any course.

Tim Hudson  
Twitter: @DocHudsonMath  
DreamBox Learning, Bellevue, Washington  
**Ballroom 6A, Washington State Convention Center**

199 **TOOLS**
Technology That Thinks WITH Students, Not FOR Students

**6–8 Session**

Technology can amplify student thinking and creativity, helping students create and understand like they haven’t before. It can also think and create FOR students, dazzling them without inspiring or educating them. We’ll look at technology (including handheld calculators, Sketchpad, and Desmos) that thinks WITH you and your students, not FOR them.

Eli Luberoff  
Twitter: eluberoff  
Desmos, San Francisco, California  
**Ballroom 6C, Washington State Convention Center**
1:30 P.M.–2:30 P.M.

200 PRAC Understanding Income Tax Brackets with Precalculus and Calculus Projects
10–12 Session
Income tax brackets are fascinating. Precalculus students can fit regressions of linear, polynomial, and rational functions to model income taxes. Calculus students can investigate the connection between tax rates and total taxes paid, which is a derivative-integral relationship. The presenters will share projects of student-designed tax systems.

T. Russell Hanes
Northwest Academy, Portland, Oregon
Gabriel Edge
Oregon Episcopal School, Portland

604, Washington State Convention Center

201 PRAC 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 Mathematical Practice’s 2, 7, and 8 into your daily lessons. These tools will provide your students’ with critical thinking skills.

Sue Ellen Vozza
Twitter: @SueVozza
Adlai E. Stevenson High School, Lincolnshire, Illinois
Jennifer Parisi
Adlai E. Stevenson High School, Lincolnshire, Illinois
Valerie Tomkiel
Adlai E. Stevenson High School, Lincolnshire, Illinois

615, Washington State Convention Center

201.1 CW ASSESS Rethinking Acceleration Practices
6–8 Exhibitor Workshop
“To accelerate or not to accelerate?” that’s the question. Learn how this naïve question has led districts to challenge the status quo of acceleration in grade 8. Participants will receive the latest research and learn which data points are helpful to rethinking acceleration practices to put students on a path toward greater achievement.

Curriculum Associates
North Billerica, Massachusetts

310, Washington State Convention Center

201.2 CW ASSESS Re-Thinking Data to Ensure Student Growth: From Progress Monitoring to Student Success
Coaches/Leaders/Teacher Educators Exhibitor Workshop
How can I ensure that my students master foundational math skills? Routine, focused progress monitoring is just the beginning; teachers responding to data is what leads to student success. Join us to learn how you can turn progress-monitoring data into successful plans of action that maximize student learning and growth.

MasterTrack Solutions
Seattle, Washington

612, Washington State Convention Center

1:30 P.M.–2:45 P.M.

202 ASSESS Assessment and Feedback: Connecting the Two in a Practical Way
8–10 Workshop
Research is clear that when teachers engage in formative assessment, students’ learning is increased—but what are practical ways to make that happen? Come experience a process where you will look at tasks in a collaborative setting to examine students’ thinking and make decisions about how to best provide feedback to the learner to move them forward.

Sharon Rendon
Twitter: @srendon2
CPM Educational Program, Summerset, South Dakota
Karen Wootton
CPM Educational Program, Elk Grove, California

4 C4, Washington State Convention Center

203 CURRIC Fraction Division and the Mathematical Practices: Ways of Thinking That Lead to Ways of Doing
6–8 Workshop
This session will explore the progression of fraction division in Illustrative Mathematics’ 6–8 Curriculum. We will highlight key Mathematical Practices students engage in as they move from concrete diagrams that build ways of thinking, to more abstract ideas that lead to the algorithm for dividing fractions.

Kristin Gray
Twitter: @MathMinds
Illustrative Mathematics, Tucson, Arizona
Ashli Black
Illustrative Mathematics, Tucson, Arizona

606, Washington State Convention Center
1:30 P.M.–2:45 P.M.

204  PRAC  FUN with Inverse FUNction

10–12 Workshop

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

Christine Larson
Twitter: CLLarson2718
South Dakota State University, Brookings
Sharon Vestal
South Dakota State University, Brookings

4 C1, Washington State Convention Center

205  EMPOW  Implementing Mathematically Productive Instructional Routines to Support Learning for ALL Students

Coaches/Leaders/Teacher Educators Workshop

We will explore how Mathematically Productive Instructional Routines (MPIRs) provide equitable mathematics instruction by attending to language learning and culturally relevant teaching. We will experience MPIRs, analyze how MPIRs can be used regularly to support all students, and leave with resources to incorporate into classroom practice.

Leslie Nielsen
Twitter: PSESDMathLeslie
Puget Sound Educational Service District, Issaquah, Washington

613/614, Washington State Convention Center

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

Pre-K–2 Workshop

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

Beth Kobett
Twitter: @bkobett
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Stevenson University, Eldersburg, Maryland

602/603, Washington State Convention Center

The NCTM Annual Meeting & Exposition is coming up!
San Diego, CA | April 3–6, 2019
208 **PRAC**
Making and Breaking Conjectures: Using Counterexamples to Supercharge the Thinking Process
3–5 Workshop
We want mistakes to be a launchpad to learning. But is that how students see them? By inviting students to make conjectures and break them with counterexamples, we can create a classroom culture that promotes productive struggle, healthy debate, and real understanding. Come try out this structure with a hands-on series of explorations.

Dan Finkel  
Twitter: @mathforlove  
Math for Love, Seattle, Washington  
605/610, Washington State Convention Center

209 **ASSESS**
Making Mathematics Tasks & Assessments More Fun Than Recess
3–5 Workshop
Empower your students to use their intuitive mathematics knowledge and sense making when solving rich tasks/word problems. Learn strategies that students use in solving CCSS problem types and design instruction and assessments that lead to deep conceptual understanding and increased student achievement. Determine what students CAN do versus what they cannot.

Barbara Rock  
Twitter: @barbrokk  
Sedro-Woolley School District, Washington  
Kellie Georgio  
Sedro-Woolley School District, Washington  
Shauna Johnson  
Sedro-Woolley School District, Washington  
608, Washington State Convention Center

210 **PRAC**
SmudgedMath: Blurring Tasks Sparks Mathematical Curiosity, Conversation, and Critique
6–8 Workshop
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 implementing and designing SmudgedMath tasks.

Judy Larsen  
Twitter: @JudyLarsen3  
University of the Fraser Valley, Abbotsford, British Columbia, Canada  
Peter Liljedahl  
Simon Fraser University, Burnaby, British Columbia, Canada  
Norma Gordon  
Public Schools of Brookline, Massachusetts  
609, Washington State Convention Center
1:30 P.M.–2:45 P.M.

212 PRAC
What Do Point-Slope Form, Vertex Form, and Exponential and Logarithm Rules All Have in Common?
10–12 Workshop
There’s another reason why logarithm rules work, it’s not just because of exponent rules and inverses. During this interactive workshop, we will explore connections among concepts associated with transformations of linear and quadratic functions, then we will use our learning to make sense of the exponential and logarithmic operations.

Kristi Martin
Tumwater School District, Washington
David Parascand
Tumwater School District, Washington

607, Washington State Convention Center

213 PRAC
Word Problems? No Problem!
Pre-K–2 Workshop
The importance of using underlying structures, rather than key words or story-related actions to solve word problems, has found expression in CCSS. Using visual models and graphic organizers, we will experience ways to create success for our students in working with change problems, group problems, and compare problems in K–grade 2.

Paula Muehler
Math Learning Center, Salem, Oregon

401, Washington State Convention Center

Looking for lessons, activities, and teacher resources? Check out nctm.org/crcc.

3:00 P.M.–4:00 P.M.

214 PRAC
Arrays: Access to Complex Properties of Multiplication and Division
3–5 Session
We will experience how students develop and understand the meaning of multiplication and division through the array. We will explore the progression of the array to the area model and analyze how the model supports understanding of the distributive property.

Lori Sponenburgh
Great Minds, Washington, D.C.
Tracy Gautreau
Great Minds, Washington, D.C.

615, Washington State Convention Center

215 PRAC
Counting Matters: Instructional Activities to Build Number Sense in the Intermediate Grades
3–5 Session
We all agree that counting is important in the early years, but counting is also important in the intermediate grades. In this session, we’ll share ways to use two instructional activities—choral counting and counting collections—to develop student understanding of whole and rational numbers and to promote student discourse and sense making.

Teresa Lind
Twitter: talind50
Lakeridge Elementary School, Renton School District, Seattle, Washington
Stephanie Latimer
Bryn Mawr Elementary School, Renton School District, Seattle, Washington
Kendra Lomax
College of Education, University of Washington, Seattle

4 C3, Washington State Convention Center
3:00 P.M.—4:00 P.M.

216 **TOOLS**
**Desmos for Calculus: Animating All the Greatest Hits!**

10–12 Session
Augment your calculus teaching by using Desmos to animate its greatest hits! We will share ready-made examples, plus lift the hood to show how to dynamically visualize such classics as secants approaching tangents, derivative sketching, related rates, Riemann sums, the fundamental theorem of calculus, Taylor polynomials, and polar curves.

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

**Ballroom 6B, Washington State Convention Center**

217 **EMPOW**
**Empowering Diverse Learners to Learn Algebra through the Implementation of the CRA Approach**

8–10 Session
Participants attending this session will learn how to teach introductory algebra to struggling students by implementing the concrete-representational-abstract technique through using specific hands-on activities and manipulatives. The topics covered include algebraic expressions and solving equations at the concrete and pictorial level.

Brooke Callan
Webster University, O’Fallon, Illinois
Joseph Sencibaugh
Webster University, St. Louis, Illinois

**616/617, Washington State Convention Center**

218 **PRAC**
**Math Tasks + Manipulatives: A Winning Combination**

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

Kevin Dykema
Twitter: @kdykema
Board of Directors, National Council of Teachers of Mathematics, Reston, Virginia; Mattawan Consolidated Schools, Michigan

**Ballroom 6C, Washington State Convention Center**

219 **GROWTH**
**Play/Pause/Reset--PLC 2.0: How Video Reflection Brought the Instructional Focus Back to Our PLC**

General Interest Session
There’s a reason to evaluate and possibly press the reset button on your professional learning community (PLC). What are your goals and vision? What stuck points are you encountering? Why was integrating video reflection into PLCs a game changer for implementing NCTM’s eight Effective Mathematics Teaching Practices? Hear our story, and begin to write your own!

David Parascand
Twitter: @ParascandMath
Tumwater School District, Washington
Zachary Suderman
Tumwater School District, Washington

**620, Washington State Convention Center**

220 **AGENCY**
**Seizures! Thousands of Them! . . . and Teaching Math!**

General Interest Session
According to the CDC, “about 3 million U.S. adults and 470,000 children” had active epilepsy in 2015—and that number is on the rise! I teach math, have lived with epilepsy for over thirty-five years, and have contributed to classrooms around the world. I will share about the challenges of being a student—and a teacher—grappling with epilepsy.

Steve Wyborney
Twitter: @stevewyborney
Ontario School District, Oregon

**604, Washington State Convention Center**
Building Mathematical Thinkers

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

Visit booth 208 in the exhibit hall to learn more.

mathlearningcenter.org/bridges
3:00 P.M.—4:00 P.M.

221
Strategies for Cultivating Mathematical Thinking in All Learners

Session
All students need opportunities to think deeply about mathematics, including—and especially—those who struggle with it. Using examples from the classroom, we will name what mathematicians do in student-friendly language and explore instructional routines that build agency and empower all students to identify as mathematical thinkers.

Heidi Fessenden
Twitter: @heidifessenden
Cambridge Public Schools, Massachusetts

Ballroom 6A, Washington State Convention Center

222
Teaching Mindset Mathematics--Viva la Revolution!

8—10 Session
Stanford’s Dr. Jo Boaler is leading the revolution towards changing the mindset of students and teachers of mathematics. She professes that students with a growth mindset outperform those with a fixed mindset, love math when it’s not just about the answer, and celebrate mistakes as opportunities to learn. The science is there. Viva la revolution!

Sue Sheets
Cary Academy, North Carolina

618/619, Washington State Convention Center

223
Visual Patterns & Visualizing Patterns: Growing Algebraic Understanding

6—8 Session
Multiple representations have grown children’s understanding of arithmetic. Connecting growing patterns, pictures, tables, graphs, and algebra will also deepen mathematical understanding. We will “see” how the patterns connect and speak through these various representations in powerful ways.

Fred Harwood
Twitter: @HarMath
SD #38 Richmond, British Columbia, Canada

4 C2, Washington State Convention Center

3:15 P.M.—4:30 P.M.

224
Algebra 1 and Algebra 2 STEM Activities

10—12 Workshop
Want to engage your students in hands-on STEM activities, but have difficulty finding activities appropriate for your classroom that are worthwhile, easy, AND inexpensive? Come to this workshop! We’ll be collecting data and using graphing calculators to make predictions. All of the activities are appropriate for algebra 1 and algebra 2 classes.

Denise Young
Blue Valley School District, Stilwell, Kansas
Tracey Zak-Johnson
Consultant, Aledo, Texas

307/308, Washington State Convention Center

Interested in speaking at one of the 2019 Regional Conferences next year in Boston, Nashville, or Salt Lake City? Submit your proposal at nctm.org/speak before December 1, 2018.
225 **TOOLS**
Developing Deeper Conceptual Understanding to Better Prepare Students for the Redesigned ACT and SAT

10–12 Workshop

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

Tom Reardon
Twitter: @tomreardon3
Fitch High School / Youngstown State University, Poland, Ohio

608, Washington State Convention Center

226 **ASSESS**
Developing Standards and Targets to Support Flexible Standards-Based Grading Implementation

Coaches/Leaders/Teacher Educators Workshop

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

Darshan Jain
Twitter: @djain2718
Adlai E. Stevenson High School, Lincolnshire, Illinois

602/603, Washington State Convention Center

227 **AGENCY**
Empowering Critical Thinking for All: Exploring Routines That Engage Every Student

6–8 Workshop

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

Melynee Naegele
Twitter: @MNmMath
Will Rogers Junior High, Claremore, Oklahoma
Adrienne Sanogo
Oklahoma State University, Stillwater
Jessyca Naegele
Oklahoma State University, Stillwater

613/614, Washington State Convention Center

228 **CDM**
Engaging Parents in a Family Math Night

Pre-K–2 Workshop

Engaging parents is critical to the success of students in schools in every part of your state. This workshop will focus on planning a family math games night. Ideas for collaborating with PTA and staff will be shared. Workshop participants will get to play games using cards, dice, and dominoes and will leave with information to begin planning!

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

303, Washington State Convention Center
230 ASSESS
Math Games That Build the Brain Matter—Using Games for Assessment
Pre-K–2 Workshop
Teachers use games all the time, but they often struggle with how to have students do meaningful response activities and may have difficulty selecting appropriate ones. As math coaches, our role is to model lessons that show the potential for using games for both teaching and formative assessment. Participants will receive games along with coaching tools.

Jane Felling
Twitter: @Boxcarseduc
Box Cars and One-Eyed Jacks, Edmonton, Alberta, Canada
4 C4, Washington State Convention Center

231 CURRIC
Mathematical Modeling: Bringing Algebra to Life
8–10 Workshop
Mathematical modeling involves students having choice and making assumptions about real-world situations in which they present recommendations and a solution. We will explore mathematical modeling in Algebra by challenging the audience to design a race between two competitors. Then they will test their race designs.

Ashlee LeGear
University of Wisconsin–River Falls
Erick Hofacker
University of Wisconsin–River Falls
609, Washington State Convention Center

232 PRAC
Passing Notes in Math Class: Using Dialogue Journals to Support Rich Mathematical Discourse
3–5 Workshop
Dialogue journals are a highly engaging way to get students thinking, writing, and talking with each other like young mathematicians. In this interactive workshop, you will collaborate to solve rich problems by engaging in the dialogue journal process—and then learn how to implement DJs to create and support a discourse-rich math classroom.

Jill Perry
Rowan University, Glassboro, New Jersey
605/610, Washington State Convention Center
3:15 P.M.–4:30 P.M.

233 PRAC 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
David Wees
Independent Consultant, Denman Island, British Columbia, Canada
Russell West
New Visions for Public Schools, New York, New York

401, Washington State Convention Center

234 TOOLS Use Benchmark Percents & Desmos to Guide Problem Solving
6–8 Workshop
Learn to integrate benchmark percents with Desmos tables and graphs to develop a percent backstory for a given situation. The number lines, tables, graphs, and equations discussed highlight the proportionality of percents and present students with a mathematical backstory to guide their decision making when solving percent problems.
Jennifer Vadnais
Twitter: @RilesBlue
Redlands Unified School District, California

606, Washington State Convention Center

A big thank you to our exhibitors, sponsors, volunteers, and speakers!
Using our four step problem solving method, students are discovering the importance of reasoning, reflection, organization and expression, leading to a deeper understanding of mathematics.

1. Try
2. Understand
3. Apply
4. Master

Please join us for Dr. Takahashi’s workshop:
Teaching Math Through Problem Solving: How Japan Math Develops and Nurtures Mathematical Thinkers
Thursday, November 29th, 3pm – 4pm, Room 310

Akihiko Takahashi, Ph.D.
DePaul University
Editor in Chief
Primary Math International

Email info@japan-math.com for free kindergarten through 2nd grade samples, available in English & Spanish, while supplies last.
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Once you have joined NCTM, membership in an NCTM Affiliate is a terrific way to round out your professional involvement. Affiliates offer you an opportunity to link with teachers in your state, region, or city for support, professional development opportunities, community outreach, political advocacy, and information sharing.

A list of Partner Affiliates in the conference’s region and the Affiliates-at-Large appears listed on page 71. To join one of these organizations, e-mail the Affiliate contact for membership information. NCTM has more than 200 Affiliates throughout the United States and Canada. For a list of all organizations affiliated with NCTM and information on how to join, visit the Affiliate Directory at nctm.org/Affiliates/Directory.

About the Host Organization

The Washington State Mathematics Council is a professional organization that exists to promote and influence mathematics education. The membership is committed to developing, supporting, and encouraging opportunities that lead to quality mathematics curricula and effective instruction. WSMC promotes high professional standards and serves as a communication network for anyone interested in mathematics education.

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

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

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

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

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

Imagine a journal that goes beyond the printed word.
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enVision A|G|A was carefully crafted and sequenced to be a focused curriculum. The program is designed to foster coherence and connections across topics. enVision A|G|A’s focus and coherence is best seen in the program Table of Contents, where students spend the majority of time on the major prerequisites for college and career.
NCTM has designed a series of workshops to help you incorporate the best instructional practices into your mathematics teaching. The workshops are based on extensive research about student learning outcomes. These workshops come to you and can be customized to address the needs of your school or district.

**Current Workshops:**
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- Supporting Students’ Productive Struggle (Pre-K–Grade 12)
- Algebra Readiness for All Students (Grades 6–8)
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Cash on the Side offers books, music, supplies, and manipulatives that our presenters use in many of their presentations. Many of these materials are exclusive to Creative Mathematics and are both entertaining and powerful tools that can help improve your teaching now!
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Founded in 1969, Curriculum Associates creates research-based print and online instructional materials, screens and assessments, and data management tools. The company’s products and outstanding customer service provide teachers and administrators with the resources necessary for teaching diverse student populations and fostering learning for all students. Learn more at www.curriculumassociates.com.

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NCSM

NCSM is a mathematics leadership organization for educational leaders that provides professional learning opportunities necessary to support and sustain improved student achievement. NCSM envisions a professional and diverse learning community of educational leaders that ensures every student in every classroom has access to effective mathematics teachers, relevant curricula, culturally responsive pedagogy, and current technology.

NCTM Equity Affiliates

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

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Angela Barlow is the newly appointed Editor-in-Chief of Mathematics Teacher: Learning and Teaching Pre-K–12, which launches in January 2020.

Come say hello to the Associate Editor team of Mathematics Teacher: Learning and Teaching Pre-K–12 in NCTM Central.

Angela Barlow

Mathematics Teacher: Learning and Teaching Pre-K–12

November 28–30, 2018 | Seattle, WA
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*Note: PD time earned should be the time actually spent in sessions and/or workshops.*

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TOTAL Professional Development Hours Accrued:  

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

Ken Krehbiel  
Executive Director, NCTM  
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